THE ECONOMIC SEQUESTRATION POTENTIAL OF AGRICULTURAL SOILS IN CANADA IN RESPONSE TO A CARBON MARKET

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ABSTRACT

The Canadian greenhouse gas offset system was proposed and developed with the objective of assisting Canada in achieving its Kyoto target by means of low cost emission reduction. This study estimates the potential of agricultural soils in Canada to provide carbon credits. Carbon sequestration practices such as moderate till, no-till and perennial crop activities were considered in the analysis. Crops under different tillage regimes, hay and alfalfa were also included in the study. Simulation analysis was undertaken using the Canadian Regional Agricultural Model (CRAM) for carbon prices ranging from \$5 to \$100/ t of CO_2e. Carbon credits generated as a result of the sequestration activities were estimated by endogenizing a carbon price for the sequestration activity into the CRAM model. The analysis was done regionally, provincially, and nationally. Two scenarios were investigated; one that included tillage practices and perennial crops (Policy All) and the other that only included tillage practices (Policy Till). Cropping pattern changes, carbon sequestration levels, carbon revenues, and adoption rates were estimated in the simulation. In addition, the role of transaction costs in the offset system was also examined.

The results of the simulation indicated that crop shifts towards hay and alfalfa occurred in the Policy All scenario, while practice shifts towards moderate and no-till occurred in the Policy Till scenario. Simulation analysis indicated that carbon sequestration levels vary by province and region. Among the provinces, the Prairie provinces had the highest carbon sequestration levels ranging from 50 percent under the Policy Till scenario, while under the Policy All scenario it was close to 97 percent. Nationally at a medium price of \$15/t of CO_2 approximately 1.08 Mt of CO_2 and 0.11 Mt of CO_2 were sequestered under Policy All and Policy Till scenario. When transaction costs were included in the analysis, approximately 30 to 40 percent less sequestration from the baseline was estimated. The results varied by province and region.

RÉSUMÉ

Le système Canadien des titres compensatoires de carbone fut proposé et développé dans le but d'aider le Canada à atteindre son objectif de Kyoto par le biais de réductions d'émissions de gaz à effet de serre à moindre coût. Cette étude estime le potentiel des sols agricoles du Canada à produire des crédits de carbone. Les procédés de capture du carbone comme les systèmes de culture sans labour ou avec un minimum de travail du sol, et ceux qui incorporent des plantes vivaces, seront considérés dans l'analyse. Des récoltes sous différentes sortes de labours, en plus du foin et de la luzerne, seront aussi inclus dans l'étude. Une analyse par simulation a été faite avec l'aide du Modèle d'Agriculture Régionale Canadienne (CRAM) pour une gamme de prix de carbone de 5$ à 100$/tonne d'équivalence de CO_2. Les crédits de carbone générés par les activités de capture furent estimés en incluant un prix pour le carbone séquestré dans le modèle CRAM. L'analyse a été faite par région, par province, et à travers le pays. Deux scénarios ont été examiné : l'un inclus les pratiques de culture sous différents labours et les récoltes vivaces "Policy All" et l'autre inclus seulement les pratiques de culture sous différents labours "Policy Till". Différentes rotations des cultures, niveaux de séquestration de carbone, revenus de carbone, et taux d'adoption furent estimés dans la simulation. De plus, le rôle des coûts de transaction du système des titres compensatoires de carbone a été étudié.

Les résultats de la simulation indiquent un mouvement des récoltes vers le foin et la luzerne dans le scénario "Policy All" et un mouvement des pratiques vers les systèmes de culture sans ou avec peu de labour dans le scénario "Policy Till" La simulation démontre que les niveaux de séquestration de carbone varient par province et par région. Parmi les provinces canadiennes, les provinces de la prairie ont les plus hauts taux de capture : 50% sous le scénario "Policy Till" et près de 97% pour le scénario "Policy All" Au niveau national et à un prix moyen de 15$/tonne de CO_2, approximativement 1.08 Mega tonnes de CO_2 et 0.11 Mega tonnes de CO_2 ont été capturées sous les scénarios "Policy Till" et "Policy All" respectivement. Lorsque les coûts de transaction sont inclus dans l'analyse, une baisse du carbone séquestré de l'ordre de 30% à 40% est observée. Les résultats varient par province et par région.

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Introduction

1.1 Background

The problem of global warming is a classical example of a negative externality. Global warming is caused by the enhancement of the greenhouse effect. The scientific description of the greenhouse effect was given by Cline (1991). Greenhouse gases such as carbon-dioxide, methane, nitrous oxide, and chlorofluorocarbons trap the sun's radiation from the earth's surface and this is referred to as the greenhouse effect. Greenhouse gases act as a "blanket", trapping the outbound radiations from the earth. This "blanket" is getting thicker due to the emissions of greenhouse gases (GHG) from anthropogenic sources such as fossil fuel combustion, crop production, livestock activities, industrial emissions, etc. As a result, to maintain the energy balance the earth gets warmer and this effect is referred to as "global warming".

The effects of global warming are multidimensional across boundaries. Estimates by the Intergovernmental Panel on Climate Change (IPCC,2001) indicate that there has been an increase of 0.6 ± 0.2 °c in the global average temperature since the late 19th century. Some of the effects of global warming include sea level rise, precipitation, and drought cycles. Global warming also affects sustainable economic growth. Fankhauser and Tol (2005) studied the dynamic effects of climate change with the use of dynamic growth models and concluded that climate change will affect industrial output, which would lead to a proportional reduction in investment that depresses economic growth. The issue of climate change gained momentum when economic growth was seen to be negatively affected. To address the problem of climate change and maintain sustainable economic growth, the United Nations Framework Convention on Climate Change (UNFCCC) was formed with an ultimate objective of "*stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner*"(Article 2, UNFCCC,2007).

With several rounds of negotiations among countries (also referred to as Conference of Parties (CoP)), a landmark treaty to address the problem of climate change was reached in 1997 by the UNFCCC. This treaty is known as the Kyoto Protocol. An important feature of the protocol is the commitment undertaken by 39 developed economies and economies in transition to curb GHG emissions by 5.2 percent of the 1990 levels during the commitment period 2008-2012. As of December 2006, a total of 169 countries have signed and ratified the protocol (UNFCCC, 2007). Under the Kyoto Protocol, Canada has committed to lower its GHG emissions by 6 percent below its 1990 levels during the commitment period 2008-12.

The Kyoto Protocol has three mechanisms built in it for the purpose of flexibility to make the protocol more adaptable. The three mechanisms are Joint Implementation, Clean Development Mechanism, and Emission Trading. Joint Implementation allows developed countries to jointly implement emission reduction projects. The Clean Development Mechanism allows developed countries to co-operatively implement emission reduction projects with developing countries that ratified the protocol. This promotes emission reduction in these countries along with sustainable economic growth. Emission trading allows reductions to be traded either domestically or internationally.

There are two types of environmental policy to counter the problem of climate change. One is command and control instruments and the other is economic instruments. With command and control instruments, a certain limit on emissions is fixed by the regulator. In contrast, economic instruments allow a price to be set on the emissions and the decision is left to the producers about how to respond to the policies. The Royal Society (2002) argued that command and control instruments are less favorable than economic instruments due to the high cost of technology standards and the ineffectiveness of the instrument in achieving the target. The Royal Society (2002) pointed out that "*Economic Instruments are set out to minimize compliance costs by maximizing the flexibility of response*" (p.5).

Focusing on economic instruments, the two kinds of economic instruments available are a price based approach and a quantity based approach. An example of a price-based approach is a tax. A tax on pollution would cause polluters to adjust emissions by lowering them or by using technology that could lower the emissions (Royal Society, 2002). On the other hand a quantity-based approach fixes a quantity of pollution that should be reduced by an emitter. The emitter has the choice of reducing his emissions by cutting down their emissions, or by cutting emissions to a point that is affordable and buying the remaining emission reductions from providers of emission reduction credits. The Royal Society (2002) viewed taxes as setting price and the polluter adjusts the quantity of emissions based on the tax, while in tradable permit systems the quantity is fixed and the price adjusts according to the supply and demand for permits. Economists' opinion about the efficiency of the two approaches is divided.

There are different kinds of tradable permits system, among them are two that have been widely studied - Allowance Trading and Emission Reduction Credits (ERC's). In Allowance Trading, also known as a cap and trade system, an emission quota is allocated to each of the emitters and they can emit up to the quota and beyond that emissions should be based on the credits they procure from other providers. The Royal Society (2002) commented that issues of defining the baseline level of emissions, initial allocation of quota, procedures for quantification, and methods of certifying emission reduction are difficult issues to address and the most controversial is the initial allocation of credits. The other system of tradable permits is Emission Reduction Credit trading. With the Emission Reduction Credit trading system the same issues of the initial allocation, quantification, and certification occurs but at a lower degree of complexity than allowance trading. With this system, emitters create the emission reduction credits by reducing emissions below the baseline although the quota is fixed by the regulator. Emission reduction credits are also known by other names, such as offsets, joint implementation, banking, bubbling, and netting. This study focuses on the offset system of Canada.

Unlike most other industrial sectors, agriculture is directly affected by climate change since it interacts directly with the environment. Global warming affects temperature, precipitation, and soil moisture, which have positive and negative impacts on regions, depending on regional climate and soil conditions. Kulshreshtha *et al* (2002) stated that climate change will have positive and negative effects. The positive effects include increased yield levels in crops like corn, millet, and sorghum due to elevated CO_2 levels. The negative effects include loss of soil organic matter, leaching, erosion, increased run off and higher incidence of insects and pests. Reily and Bucklin (1989) estimated that the agriculture sector contributed 25.6 percent of the total world GHG emissions, and Duxbury, Harper, and Mosier (1993) estimated that agricultural soils contribute 15 percent of the global GHG emissions. In addition to soils, the other sources of agricultural emissions include emissions from ruminants, paddy rice production, biomass burning and land use conversion. Among the GHG's emitted from agriculture, nitrous oxide forms a major component of the profile followed by methane, with CO_2 occupying a minor share in the composition profile (Duxbury, Harper and Mosier, 1993).

In Canada, total GHG emissions for the period 2004-05 were estimated to be 747 Mt CO_2 equivalents (Environment Canada, 2007). The total indicates that the emissions were 25.3 percent above the revised 1990 total of 596 Mt, which represents 32.7 percent above the Kyoto target. Approximately 7.7 percent of the total GHG emissions for 2004-05 were contributed from the agricultural sector. The agriculture sector contribution to the total GHG emissions in Canada is below the world average. Liu (1995) pointed out that stabilization of cropland acreage, attainment of carbon equilibrium in soils, and lower importance to rice production, a major source of methane emissions account for the low emission percentages from agriculture in Canada. Desjardins (1997, as quoted by Kulshreshtha *et al* (2002)), estimated that agriculture emits 17 Mt CO_2 annually, 20.4 Mt CO_2 equivalents from methane emissions, and 12.2 Mt CO_2 equivalents of nitrous oxide. The agriculture sector is different from other sectors due to its composition of GHG emissions. While other sectors emit CO_2 as their major GHG, agriculture emits more methane and nitrous oxide than carbon-dioxide. Agriculture can be a source or a sink of GHG's depending on the practices followed. The potential for agriculture lies in the fact that in addition to reducing GHG's, such as nitrous oxide and methane, agriculture can contribute to GHG emission reduction by sequestering carbon into the soil or biomass.

The domestic offset system in Canada was proposed by the Canadian government as a way to develop cost-effective emission reduction projects, not covered under the federal greenhouse gas regulations. The plan identifies agriculture, forest, and landfill projects as activities that could increase sinks, reduce emissions, and thereby create potential carbon offset credits. The carbon credits created by the producers could be sold to the climate fund, large final emitters, and to other domestic buyers. The objective of the offset system is to assist in achieving Canada's Kyoto target using low-cost emission reductions. The offset system helps to achieve the least-cost emission reductions, considering other possibilities with respect to the Kyoto target. Since the offset system will function as a market where producers sell credits and emitters will buy credits, transaction costs will be incurred in an offset system. The efficient functioning of the offset system depends on how the issue of transaction costs is addressed and the ways to reduce them.

1.2 Problem Statement and Objectives

Agriculture's role in climate change is dualistic in nature. It can act as a source or a sink of emissions depending on the management practices and land use. So in this regard, what could be the agricultural sector's role, particularly in terms of soil management, in addressing the problem of climate change? Specifically what are the potential of soils in Canada to mitigate climate change? Thus the purpose of this study was to estimate the potential for soil carbon sequestration from the agriculture sector that could occur with different carbon credit prices.

Considering the above problem the objectives of the study are as follows:

i. To estimate the potential of the agricultural sector of Canada, specifically soils, to sequester carbon and their role in the offset system.

ii. To estimate the quantity of carbon credits, sequestration levels, carbon revenues, and cropping pattern changes associated with carbon market opportunities.

iii. To estimate the impact of transaction costs on the supply of carbon credits to the domestic emission trading system.

1.3 Scope of the study

The study uses the Canadian Regional Agricultural Model (CRAM) to address the objectives of the study. The study accounts for regional, provincial, and national levels of carbon obtained as a result of carbon sequestering crop activities. All ten provinces of Canada are considered in the analysis. These are modeled as 55 CRAM crop regions that are disaggregated provincially.

The carbon sequestering crop management strategies included in the analysis are no-tillage, moderate tillage, and perennial crop activities. Crops included in the analysis are: wheat, barley, oats, flax, canola, lentils, field peas, soy, and corn. The crops are classified as being produced using moderate till and no-till activities. Perennial crop activities include hay and alfalfa. In addition to the carbon sequestering crops mentioned above, other crops are also included in the analysis to study changes in the general cropping pattern.

To determine the carbon sequestration levels in the presence of a carbon offset system, simulation analysis was carried out using CRAM. The carbon prices used in the analysis were \$5, \$10, \$15, \$30, \$50, and \$100/t of CO_2 equivalents (CO_2e). The last two carbon prices were considered very high and were included in the study to investigate the response rate of producers and corresponding sequestration levels.

1.4 Organization of the thesis

The study is organized with chapter one as a general introduction to climate change, and highlights the importance of the Canadian Domestic Offset system in mitigating climate change. Chapter two is the literature review. This chapter reviews the literature on soil carbon dynamics, the economics of carbon sequestration in agricultural soils, and a description about the role of transaction costs in carbon sequestration. Chapter three explains why mathematical programming was chosen for the study, and describes the CRAM model and its suitability for the research undertaken. Chapter four presents and discusses the simulation results of the study. The final chapter concludes the study with a review of the findings, limitations, and directions for future research.

Chapter 2

Literature Review

Carbon is stored in a variety of ways by biological and physical systems. As outlined by Lal (2004), there are five global pools of carbon: oceanic, geologic, pedagogic, biotic, and atmospheric. All the pools are interconnected as carbon circulates among them. Lal (2004) estimated the global soil organic pool (pedagogic) to be made up of 2500 Gt of soil organic carbon. Lal describes the magnitude of the soil organic pool as the following: "*the soil C pool is 3.3 times the size of the atmospheric pool (760 Gt) and 4.5 times the size of the biotic pool (560 Gt)*" (2004, p.1623). In a study by Post *et al* (1982), a micro-estimate of the soil organic carbon (SOC) under undisturbed natural vegetation cover ranges from 40 to 400 Mg C/ha depending on the soil properties, profile characteristics, terrain characteristics, temperature, and rainfall. An imbalance between the pedagogic and the atmospheric pool is created when the undisturbed natural ecosystem is converted to an agricultural ecosystem. Fearnside and Barbosa (1998) defined the equilibrium in a carbon stock as the balance between inflows and outflows. If the equilibrium is disturbed by cultivation practices, a new equilibrium is reached, determining the sink capacity of the soils. SOC in most soils are below their equilibrium levels due to extractive soil management practices, i.e. in most soils the outflows are greater than inflows which make soils a potential sink for GHG management.

From 1850 to 1998, Houghton (1999) estimated 136 ± 55 Pg C (1 Pg= petagram = 10^{15} g = 1 billion t) were emitted into the atmosphere by land-use change. The conversion of natural ecosystems to agricultural ecosystems has depleted the SOC to as much as 60 percent in temperate climatic soils, while in the tropics it is greater than 75 percent. Lal generalized that the soil organic carbon loss amounts to between 20 and 80 tonnes per hectare, which is more than half of their SOC under natural vegetation cover. The conversion of terrestrial ecosystem has certainly enhanced the atmospheric C pool, thereby creating an imbalance in the global C cycle. Since soils have already lost more than half of their SOC, this creates an opportunity that the terrestrial pool could be a sink of GHG, rather than a source. The C sink capacity, according to Lal, was estimated to range between 55 and 78 Gt (2007). This is further supported by the IPCC (1996) which stated that world soils could sequester between 0.4 and 0.8 Pg C/year. The gain in carbon sequestration can be achieved by means of effective land use and soil management practices. Also, the increase in the SOC can lead to other potential benefits, or co-benefits, that can enhance the economic viability of GHG policies.

2.1 Soil Carbon loss and sequestration capacity of soils in Canada

Since the study analyzes the effect of a carbon price, a profile of the carbon loss in soils and their estimated sink capacity is reviewed regionally. Gregorich *et al* (2005) reported a loss of 10 - 20 Tg of C if the soils were cultivated continuously for a period of 50 to 100 years. On a percentage basis across Canada, 24 ± 6% of SOC was lost by land conversion (vanden Bygaart *et al*, 2003). In Western Canada, the loss was 34 ± 14 % for soil depths ≤ 30 cm, and for Eastern Canada it was 22 ± 10 % of initial C levels. The estimates of the mean losses varied by climate, soil type, soil texture, etc... A study conducted by Smith, Desjardins, and Grant (2001) simulated the rate of SOC change for a period of 10 years using historic soil loss data. They concluded that carbon losses, as a percentage of total losses, for the Prairies was 90 percent, given that 80 percent of Canada's agricultural land is in the Prairies. Given the estimates of soil loss regionally, soil carbon outflows are greater than inflows and a new equilibrium had been reached, which makes soil a potential sink. In this context, soil management practices aimed at restoring carbon could make soils a net carbon sink.

Under the Kyoto Protocol, Article 3.3 and Article 3.4 identify eligible sink activities with respect to forestry and agriculture sectors. Under Article 3.3 of the Kyoto Protocol, direct human-induced measures of afforestation, reforestation and deforestation since 1990 should be considered in the GHG balance of a country. Article 3.4 includes activities such as forest management, cropland management, re-vegetation and grazing land management, which include soil carbon sinks and sources. Soil management practices like tillage management, manure management, growing perennials, reducing summer fallow, soil fertility management, and improving irrigation methods can enhance the SOC in the soils. But soils have an upper bound in storing carbon, and beyond the sink capacity SOC is lost from the soils. So if land management and conservation practices to restore carbon are followed, what will be the potential of agricultural lands in Canada to restore carbon?

A national study by vanden Bygaart *et al* (2003) comprised 62 long-term studies that estimated the rate of SOC change for different soil management practices. The effect of no-till on SOC was studied and the results claimed a net difference of 0.4 ± 1.5 Mg ha^{-1} of carbon on conversion from conventional to no-till, which translated to a carbon storage capacity of 5 ± 16 g cm^{-2} yr^{-1}. With respect to Eastern and Western Canada, the carbon storage rate was found to be -7± 27 g cm^{-2} yr^{-1} and 32 ± 15 g cm^{-2} yr^{-1} respectively. This correlates inversely to the SOC losses in Western and Eastern Canada. The authors pointed out that soils with low SOC have a higher potential to regain carbon than soils with high SOC. Apart from mitigation practices, factors such as tillage, soil moisture, cropping systems, and soil biota contribute to huge differences in carbon storage. But an important dimension in the study was the carbon storage capacity of the chernozemic soils of the Prairies that had an upper limit of 63 ± 24 g cm^{-2} yr^{-1}. West and Post (2002) determined the global average of carbon storage to be 57 ± 14 g cm^{-2} yr^{-1}, taking into account 93 tillage comparisons. This means the Prairies, which counts 80 percent of its land in agriculture, can be viewed as a potential sink to sequester carbon, since their sequestration average is more than the global average. Further, this indicates that tillage practices in the Prairies can be more effective than in the rest of Canada. Overall, the effectiveness of management practices varied by region, management scenario, and climatic conditions. Decreased tillage and fallow, and using hay in rotation were viewed by the authors as effective management strategies to sequester carbon.

Apart from tillage, there are other mitigation strategies that can effectively sequester carbon in soils. Smith *et al* (2001) estimated changes in the SOC associated with different management practices such as permanent cover, addition of forage, minimum till, no-till, and varying proportion of fertilizers for the seven major soil groups of Canada. The SOC change was simulated by the CENTURY model, widely used in soil simulation studies by considering data from 1970 to 2040. The different management practices were introduced in 2000, and the carbon coefficients were averaged after 10 years, estimating the rate of carbon change at 5 year intervals. The estimated carbon change for different management practices varied considerably depending on the soil texture and soil type. Carbon sequestration was higher for permanent cover, forage, and tillage among the soil management practices. The overall estimates of carbon change after the introduction of management practices were 3.75, 2.38, and 4.60 Tg CO_2 yr^{-1} respectively, for no-till, permanent cover, and the addition of forage. Other mitigation strategies, such as fertilizer management and reduced fallow were found to produce minimal amounts of carbon storage. Although the efficiency of different management practices varies, the authors concluded that using a variety of management practices was preferred over any single management practice.

McCarl and Schneider (2000) cite four reasons for using soils for GHG mitigation:

1. Agriculture as a source should reduce its emissions.
2. Carbon sequestration in agriculture could act as a sink and reduce its emissions.
3. Agriculture can provide substitutes for fossil fuels such as biomass for power plants and ethanol whereby greenhouse gas emissions can be reduced.
4. The policies directed towards emission reduction would also influence the agriculture sector by increasing input prices.

Examining the incentives needed, possible externalities involved, and farmer's participation behavior, the authors commented "*Agriculture certainly will respond if proper incentives or markets are provided.*" (p.136).

2.2 Economics of Sequestering Carbon in Agricultural Soils

The role of economics in climate change is to provide the incentives to reduce GHG emissions and to increase carbon sequestration. This would include taking into account the welfare of stakeholders and potentially developing a carbon market. Soil carbon sequestration is one of many sequestration techniques considered by economists and policy makers. The economic analysis in this regard should consider three dimensions: the land use changes associated with the policy, the incentives required by the proponents to undertake the mitigation strategy, and finally management strategies to overcome the challenges in a carbon market. These three dimensions of soil carbon are reviewed in this section.

When a carbon sequestration policy is implemented, there would be changes in the land use according to the incentives provided to the producer. Lubowski, Platinga, and Stavins (2005) analyzed changes in six different land uses in the U.S: forest, crop, pasture, range, urban, private, and the Conservation Reserve Program (CRP), and their associated carbon sequestration supplies with respect to a carbon tax or subsidy. A land base consisting of 74 percent of the total cropland, covering major states in the U.S., was taken from the Natural Resources Inventory (NRI) to study the land use pattern. A nested logit model was used for the economic analysis to simulate landowners' responses, in terms of carbon sequestration to a subsidy on desirable land use changes and taxes on undesirable practices. A carbon sink model was developed to take into account the carbon changes associated with land use changes.

Combining these two models a carbon sequestration supply function can be estimated. To estimate the carbon sequestration supply function, a simulation analysis was undertaken with subsidies ranging from \$0 - \$ 350/acre in increments of \$50. Under the baseline scenario, the largest shifts in land use were towards urban land and the largest decrease was in crop lands. Forest land increased initially but declined after 50 years. When a \$100 subsidy was in effect, forest area doubled for the simulation period, and larger declines were estimated in cropland, rangeland, pasture, and the CRP. The area of cropland increased for several decades before starting to decline as initially pasture, range, and CRP were converted to cropland due to the subsidy, while cropland conversion to forest was minimal. But as the time path reaches maturity, cropland declines as these lands moved to forests. With regard to carbon storage, there is an increase in carbon storage when agricultural land is converted to forestry. During the initial period of conversion from other land uses to forests, there is a small amount of decline in carbon for all simulation levels. The authors pointed out that higher net returns increased the crop area initially, as urban lands, pasture, and rangelands were taxed, which caused a negative flow of carbon. But after conversion of cropland to forest, the net carbon flow decreased. The increase in subsidy rates caused an increase in the carbon supply but at a decreasing rate, due to an upper limit of the sink capacity of soils. The authors concluded that the marginal cost estimates were greater for this study compared to other sectoral optimization models, as it took farmers direct responses into account, and they pointed out that forest carbon sequestration will be a cost-effective portfolio strategy to achieve emission targets. The inclusion of a tax/subsidy leads to favorable changes in land use towards forestry and agriculture, depending on the level of subsidy.

Several studies have assumed agriculture and forestry will be efficient providers of sequestered carbon credits and have evaluated different mitigation measures available for these sectors. Schneider, McCarl, and Murray (2001) examined the relative contribution of agriculture and forestry in an emission reduction program, while considering the relative desirability of sequestration in forest and agricultural soils. The Agriculture Sector Model – Green House Gas (ASMGHG), a widely used policy analysis model for U.S agriculture, was used to develop cost curves based on a range of carbon prices. ASMGHG depicts production, consumption, and international trade of 63 U.S regions, taking into account crop, livestock, and processed products sectors. The GHG market was simulated for prices ranging from \$0 - \$500 per tonne of carbon and the market equilibrium was solved for commodity and factor prices, production levels, trade, resource usage, environmental, and GHG indicators. The gamut of management strategies included soil carbon sequestration (tillage), afforestation, biomass, livestock management, and crop carbon (fertilization alteration, input alteration). The total amount of carbon sequestered by agriculture and forestry sectors aggregated to a high of 326 Mt per year. The low-cost strategy identified by the study was soil carbon sequestration, and to some extent afforestation, fertilization, and manure management. The estimated abatement cost curves implied the cost per tonne of carbon was generally in the range of \$50 - \$100, but went as high as \$227. Comparison estimates of alternate strategies revealed interesting patterns. Soil sequestration practices were viable up to \$50/tonne, but biofuel prices are not competitive below \$50/tonne. Also, reliance on individual strategies can increase costs. For example, a soil carbon sequestration strategy alone costs \$30/tonne for sequestering 60 MMT of carbon, but a portfolio approach would decrease it by half. Regarding the feasibility of mitigation strategies with lower costs, i.e. \$10-\$50/tonne of carbon, soil carbon sequestration by tillage would be viable, while at higher costs, afforestation and biomass production activities would be profitable choices. The authors recommended a portfolio approach as an efficient solution to GHG mitigation rather than individual strategies.

Other studies have investigated the incentives required for a decision maker to adopt mitigation strategies at the farm level. Pendell *et al* (2006) studied the incentives in dollar terms needed to adopt no-till, compared to conventional tillage with varying applications of nitrogen fertilizer and manure. Conventional tillage and no-till operations with 84 and 168 Kg N/ha from manure and fertilizer were taken as production systems. Annual yields, input rates, input types, and corn prices were observed for nine years from 1991-99 for different experimental stations in Kansas. The net returns for the simulated prices were obtained using the model Simulation and Econometrics to Analyse Risk (SIMETAR), developed by Richardson *et al* (2004). The analysis was built on a criterion that the manager of a firm would be indifferent between conventional and no-till systems if the dollar value of the system with greater sequestration rate and smaller returns is equal to a system with a lower sequestration rate and higher returns. The no-till system resulted in greater carbon gains than conventional tillage, and manure systems had more carbon gain than fertilizer systems. The manure systems contributed more carbon due to the extra carbon built in them. The highest carbon gains were obtained from no-till with 168 Kg/ha of manure system (NT168M), followed by no-till with 168Kg of nitrogen fertilizers (NT168N) at 2.66 and 2.53 Mg C/ha/yr. The carbon gains were lower with CT84N at 1.16 Mg C/ha/yr. For a manure-fertilized tillage system to be economically equivalent to a N-fertilized tillage system it would need a carbon credit price in the range of $28.76 to $136.61 per Mg of C. The estimates were found to be consistent with the European Union carbon credits price that ranged from $33 to $117 per Mg of C.

Producers need an economic incentive to adopt carbon sequestration strategies, and there are a variety of strategies that can increase soil carbon sequestration. These may be in the form of an individual strategy or a portfolio approach. Kurkalova, Kling and Zhao (2006) studied the financial incentives needed for adopting conservation tillage in the state of Iowa by considering National Resource Inventory (NRI) points, homogenous soil, and climatic conditions. The study was designed in such a way that only one tillage operation (either conservation or conventional tillage) was adopted at a particular NRI point. The adoption rate of conservation tillage was estimated logistically with the help of a discrete choice model. The specification of the model was that the farmer adopted conservation tillage when the probability of returns from conservation tillage were greater than the sum of the probability of net returns from conventional tillage, with a premium needed to avoid risk. They calculated the subsidy as the sum of the adoption premium and the difference between the net income from conventional and no-till production. The premium needed by the producers to adopt conservation tillage for compensating the uncertainty associated with conservation tillage was found to be 13 percent of the annual expected returns to conventional tillage. In this regard, a risk-averse producer won't adopt conservation tillage despite expected returns being higher. A subsidy of $4 - $6 per acre would be required to induce adoption and the authors pointed out that the estimates were comparatively low since 65 percent of the crop area is already under conservation tillage. The model also predicted that a subsidy of $19.50 per acre would result in 90 percent of the lands going to conservation tillage. If a uniform subsidy was given to all producers, then costs to induce adoption makes up only 13 percent of the project costs, while income transfers account for 86 percent of the project costs. The authors suggested that policy makers should adopt green insurance policies, if producers are risk averse. However, if the barrier is irreversible fixed investments then they should develop a subsidy program.

A carbon price provides market incentive for producers to adopt mitigation strategies. A subsidy is usually used to provide an incentive for non-adopters to adopt a mitigation practice. This can cause policy makers equity problems with regards to early adopters who did not receive this subsidy.

Pautsch and Babcock (2005) evaluated the relative efficiency of a single subsidy Environmental Quality Incentives Program (EQIP) versus the minimum expected cost EQIP subsidy program in a number of states in the U.S. Their study included crops such as: corn, soybeans, wheat, sorghum, and crop rotations. A single subsidy EQIP gave all producers a uniform subsidy regardless of soil and biophysical characteristics, while the minimum cost EQIP subsidy program subsidized producers according to the soil and biophysical characteristics. Empirical analysis used the Acreage Response Modeling

System (ARMS) where crop choices and environmental indicators were simulated. The output of the crop choices and crop rotations produced by ARMS were input into a conservation tillage adoption model. A probit model was then used to estimate the probability of adopting conservation tillage and to evaluate the difference in carbon emissions from conventional and conservation tillage. In the baseline, approximately 39.8 per cent of the study area was under conservation tillage and this sequestered 11.45 million metric tonnes (MMT) of carbon. In a single EQIP, an incentive of $8.40 and $20.50 per acre sequestered 18.44 and 23.90 MMT of carbon respectively. The carbon supply reaches a vertical maximum after an initial rise in the sequestration levels. Comparing the single EQIP program with the minimum-cost EQIP, the cost estimates for sequestering 13.18 and 23.90 MMT of carbon were $172 million and $3.4 billion for the single subsidy program; and $53 million and $2.6 billion for the minimum subsidy program. For low levels of carbon supply, the cost of the single subsidy EQIP is 180 per cent higher than the minimum EQIP program. But the efficiency of the single subsidy program decreases over a period of time due to the loss of flexibility. This means that as carbon supply increases, low cost providers will be minimal after a period of time, and thereby fewer producers will be selling their fixed supply of carbon. More than the sequestration strategies, the study indicated that the level of GHG abatement was determined by the design and techniques of carbon sequestration.

Generally, carbon sequestration studies, consider only gross sequestration, neglecting the carbon and other gases released to the atmosphere as a result of sequestration. An inventory approach considers net soil carbon sequestration that accounts for the carbon and other gases released to the atmosphere in addition to soil carbon sequestered. Desjardins *et al* (2001) used two approaches to estimate the potential of mitigation strategies in Canada. In the first one, the CENTURY model was used to estimate soil carbon change in response to several management practices in Canada. The second approach taken by the authors was to predict the GHG emissions associated with a change in management practices using the Canadian Economic Emissions Model for Agriculture (CEEMA). Management scenarios were simulated by taking the outputs; i.e. crop acreage and livestock numbers, from the CRAM model and using them as inputs into CEEMA. Based on expert opinion, several realistic changes in management practices were considered; such as a 21 per cent increase in no-till and a 12 per cent reduction in minimum tillage; a 1.8 M.ha reduction in summer fallow, the conversion of 1 M.ha of cropland to grasslands, and 2.8 M.ha to forage crops and livestock management strategies. The soil carbon change studies showed that by adopting practices such as permanent cover, addition of forage, no-till, reduced summer fallow, and fertilizer management, could result in a reduction of 17.6 Tg of CO_2 per year. Fertilizer management, forage, and no-till sequestered more carbon relative to other options. The CEEMA model took an inventory approach, that took into account management practices and their associated GHG's sequestered and emitted. With an increase in forage crop area, CRAM predicted an increase in livestock numbers that would lead to an increase in methane and nitrous oxide emissions. Analyzing all the options by adopting a systems approach, no-till was identified as the most significant potential emission reduction strategy, as other practices seemed to have minimal reductions. At the time of the study agricultural soils were not recognized as sink activities in the Kyoto Protocol, however the authors stressed that they should be in order to make sequestration viable.

A provincial analysis of the cropping sector response to a carbon market in Quebec was studied by Morand and Thomassin in 2005. They used the CRAM to undertake the analysis, and endogenized a monetary demand for GHG reduction in the objective function and thereby simulated carbon prices in the range of \$5 - \$50 per tonne of CO_2e. Mitigation strategies included in the model were no-till, moderate till, and permanent cover crops. The model solved for the optimal solution considering the range of carbon prices. The results indicated that the potential of the Quebec agricultural sector to supply GHG emission offsets to a carbon market would be very low. Among the three mitigation strategies considered, the largest potential, according to the authors, was in the conversion of crops to permanent cover. The authors suggested that a greater potential may occur in changes in livestock management strategies; such as manure handling and storage. They advocated the inclusion of co-benefits associated with the tillage practices as a means of increasing the adoption rate of tillage in Quebec. Unless co-benefits and other management strategies would be considered, the potential of the Quebec cropping sector to supply carbon credits to the GHG market would be very limited.

Thomassin (2002) analyzed the macroeconomic impacts on Canada of four GHG mitigation strategies – soil nutrient management, no-till, permanent cover, and improved forage quality, using the Agriculture and Agri Food Canada (AAFC) Input – Output model. Mitigation strategies and their impacts were studied not only for the agricultural sector but also for the industrial and household sectors of the economy: i.e. direct, indirect and induced effects of a mitigation strategy were considered. From a macroeconomic perspective, increased forage quality alone had positive impacts on the economy, while other strategies' impacts ranged from minimal to negative. A distinct point of the analysis was the impact of including agricultural soils as a carbon sink, since at the time they were not included in the Kyoto Protocol. When soils were excluded, soil nutrient management, permanent cover, and improved forage quality reduced GHG emissions by 1.47, 0.91, and 0.36 percent respectively from the baselines, while no-till increased emissions. However, when agricultural soils are considered, no-till provided the highest reduction of 3.06 percent, followed by permanent cover (1.73%), soil nutrient management (0.37%), and improved forage quality (0.07 %). All four strategies could reduce agriculture emissions collectively by 6.23 per cent below the 1990 levels, if carbon sinks were included, and by 2.13 percent if excluded. Thomassin advocated a portfolio approach to the problem would be economically efficient in Canada rather than a single mitigation strategy regarding soil carbon sequestration.

2.3 Transaction cost studies in relation to carbon sequestration

Economists agree that agricultural and forest carbon sequestration can be a low-cost option to reduce GHGs. However Schneider (2002) pointed out that the statement must be viewed with caution, since the associated costs and benefits accompanying the strategy could make it a low-cost or high-cost adoption strategy. Zeuli and Skees (2000) identified transaction costs, risk, and perverse incentives as the major barriers for an efficient functioning carbon market. There are different kinds of risk such as, yield risk, political risk, and market risk. These can all hamper farmer behavior and thereby influence the functioning of the carbon market. Perverse incentives are an important component to be considered when designing GHG mitigation options. Perverse incentives arise because some farmers might have adopted mitigation strategies early and may not be eligible for the benefits of sequestering carbon. If a policy subsidizes only new adopters, then perverse incentives arise in the form of farmers reversing their actions. Zeuli and Skees (2000) advocated following a two-tier structure of carbon payments; one for stored carbon and the other for newly sequestered carbon or, making a one-time payment by the government for the sequestered carbon. The other important barrier, and greatest challenge to a properly functioning carbon market, is transaction costs. The author viewed transaction costs associated with bargaining will be highest for the agriculture sector due to the large number of agents involved and many potential sellers of small amounts of carbon (Hahn and Stavins, 1995). Neglecting the challenges of risk, transaction costs and perverse incentives may result in highly overstating the benefits of the carbon market.

In a GHG offset system, administration and transaction costs play an important role in the efficient functioning of the system. Marabek Consultants (2004) defined transaction costs as "*costs other than project costs, borne by the project proponent in completing a transaction*" (p.4). They define administration costs as "*costs borne by the government or program authority for the GHG offset system*" (p.4). Transaction costs involve costs associated with the project such as: project evaluation, project initiation, project proposal, project validation, monitoring and quantification, verification and required replacement costs. Pooling and permanence are the two design option with respect to transaction costs that play a significant role in the design of the GHG offset system. The cost estimate of the offset system for the above study was obtained from a host of international and domestic GHG emission projects and from the data on transaction costs. With regard to agricultural projects, the transaction costs estimates ranged from a low of $ 0.08 per tonne of carbon to a high of $ 21.88 per tonne of carbon, depending on the design options such as pooling, permanence and baselines.

Pejovich(1995) defined transaction costs as "*the costs of discovering exchange opportunities, negotiating contracts, monitoring and enforcing implementation and maintaining and protecting the institutional structures*" (p.9). van Kooten, Shaikh, and Suchanek (2002) identified three sources of transaction costs, namely: search costs to identify potential buyers and sellers, negotiation costs consisting of bargaining costs during the contract process, and finally, costs involved in the preparation of contracts that deal with monitoring and verification. van Kooten *et al* investigated carbon sequestration strategies, such as afforestation and other BMP's, and analyzed farmer's adoption response when transaction costs are involved. The study used a mail out survey for Canadian producers in the Prairies. Producers were provided with information about the functioning of the carbon market and the associated transaction costs, and were asked whether they would participate in a GHG offset system. Among the survey respondents, 75 per cent showed interest in the carbon market, if they could sell carbon credits or be subsidized for their actions. Landowner response favored reduced tillage and accounted for 60 percent of the responses. Other carbon sequestration strategies included afforestation and shelterbelts. The study investigated what kind of institutions the producers favored by comparing four institutional structures for carbon sinks: government, non-governmental organizations (NGO's), private contracts, and co-operatives. The producers opted for a contract mechanism for selling their credits, rather than a market mechanism to avoid interference of other economic agents. Within the contract mechanism, farmers favored government or large company contracts to that of environmental NGO's. Also, 82 percent of the respondents opted for co-ops to sell carbon credits, as farmers in the study region had a lot of experience with co-ops. So given a proper institutional mechanism designed by the government, Canadian experience suggests producers would enter into the carbon market even in the presence of transaction costs.

Hahn and Stavins (1995) stated that efficient markets are characterized by minimized transaction costs, adequate monitoring, enforcement, and sufficient trading volume. In this regard, transaction costs could be reduced if proper institutions are in place. Kurkalova, Kling and Zhao (2003) empirically estimated the cost savings associated with proper measurement technologies for sequestered carbon, and thereby highlighting the role of institutions in a carbon market. A government sponsored subsidy was analyzed with varying measurement accuracies ranging from field, county, district to statewide levels and the associated carbon gains and monetized values were compared. The following aspects of program design were investigated. First was the choice of baseline; i.e. whether payment is made for carbon stored above the baseline, or based on the total carbon stored in the soil. The second design element was the ability of the government to differentiate payments to farmers when field level sequestration is not known. Four institutions were considered for the analysis: all carbon paid for, carbon above initial baseline paid, cost discrimination where farmers with lower opportunity cost receive lower payments, and no cost discrimination where producers were paid equally. These four institutions were studied with respect to a government sponsored subsidy policy. The latter study was undertaken in the state of Iowa considering 13,345 NRI points and their corresponding carbon sequestration capacity using the EPIC model. Thirty-year simulations were estimated for each point for both conservation and conventional tillage, and the probability of adoption was estimated using a discrete choice model. The analysis estimated the marginal costs for sequestering 500,000 t of carbon, at $30 per tonne if new adopters were paid, and $100 per tonne if all adopters were paid. Regarding measurement accuracy, moving to a field level from a county level with low carbon budgets (< $5 million), carbon gains would be higher for policies favoring new adopters while at high budget levels, uniform payment would suffice. If the role of agriculture in the mitigation options is set relatively high, measurement technologies by institutions would play a crucial role in the cost savings. When proper monitoring mechanisms are in place, cost saving would range from 11.2 percent to 47.3 percent. If soil carbon sequestration were to play a major part in the emission reduction scenario, then paying all adopters uniformly was a viable option, whereas if the role of soils is minimal, then paying new adopters would be viable. This means that institutions would play a significant role in the cost savings of these practices, making sequestration viable in spite of the transaction costs associated with it.

Another study by Zeuli and Skees (2000) stressed the need for institutions for the successful functioning of a carbon market. The authors considered a case study in Iowa where farmers were already participating in a carbon emission trading market operated by Insurance Guarantee Fund – Carbon Sequestration (IGF-CQUEST). The company used formulas developed by the United States' Department of Agriculture (USDA) to calculate carbon sequestered by alternate mitigation strategies on individual farms, operating on contracts, and monitored them individually. The authors viewed government as a regulator in the carbon market and this would decrease transaction costs. IGF argued that a more efficient role of government was to collect, maintain, and distribute free and unbiased information about land use and sequestration estimates to market agents. This would greatly reduce the transaction costs.

The trading of carbon emissions reduction credits between a producer and an industrial entity must consider the length of issues associated with the transaction in order to make the carbon market operate efficiently. To reflect the real net emission reductions for an agricultural carbon sequestration project, according to Murray, Sohngen and Ross (2007), the issues of permanence, leakage, and additionality must be considered when measuring emission reductions. Incorporating these issues would incur transaction costs for measurement, which can further increase the costs of emission reductions and lead to a decline in the profits for the project proponent. Among the three issues, permanence and additionality would incur higher transaction costs than leakage. The authors showed that a producer would adopt the project if the profit from the agricultural carbon sequestration project, discounting for permanence, leakage, and transaction costs exceed the profits from conventional agriculture. The authors estimated discount rates for these practices. They estimated this discount rate would consume nearly one-third to almost 95 percent of project revenue in extreme cases. In their analysis the permanence problem had the largest discount rates. The authors concluded that instead of a single mitigation measure, if a portfolio approach is followed, the cost of the sequestration program would be feasible, and stated *"permanence, leakage and additionality are artifacts of a project based narrowly targeted approach to mitigation"* (p.143). Regarding carbon prices, the authors said even with high-price discounts, adoption of GHG practices would be profitable in the price range of $10 - $20 per tonne of CO_2 under a portfolio approach.

While the issues of permanence, leakage, and transaction costs increase the project costs, another dimension of a sequestration project is positive environmental benefits associated with the sequestration strategies. Conservation tillage and other GHG mitigation practices, apart from carbon sequestration benefits, can yield a host of other benefits commonly called co-benefits or ancillary benefits, related to soil quality, water quality and wildlife habitat. Co-benefits are positive environmental externalities when a mitigation strategy is undertaken by the producer. If the environmental benefits are included in the project, and if their benefits and costs are accounted for, the projects could be cost effective.

Kurkalova, Kling and Zhao (2003) studied how multiple benefits of a carbon sequestration policy, such as conservation tillage, can be targeted by comparing a practice-based policy with a performance-based policy. The practice-based policy maximized the acres of land in conservation tillage and the evaluation of co-benefits was secondary, while the performance-based policy targeted the environmental benefits directly. The performance-based policy considered four benefits: carbon sequestration, reduced nitrogen runoff, reduced soil erosion by wind, and water. The adoption rate of conservation tillage by farmers in the state of Iowa was modeled logistically using a discrete choice model, and the environmental co-benefits were computed as the difference between EPIC outputs under conservation and conventional tillage averaged over 30 years. Approximately 40 budget levels of carbon sequestration regimes were constructed for practice and performance-based policies. The study concluded that practice-based policy, where conservation tillage was targeted, provided a higher proportion of other benefits, than the performance based policy that targeted benefits directly at higher budgetary levels. Further, a doubling of budgets lead to a less than a doubling of benefits as least-cost farmers joined the program first and high-cost producers followed. Regarding transaction costs, the authors argued that performance-based policies required higher transaction costs because of measurement cost, thereby reducing the cost-effectiveness of the policies.

Another study by Feng and Kling (2005) analyzed the co-benefits associated with carbon sequestration in the upper Mississippi River basin, considering land retirement from cropland to perennial grasses under the CRP. The authors studied the relationship between the marginal cost of carbon sequestration and the marginal co-benefits associated with it. While the total carbon supply increased with marginal costs, the marginal co-benefits as a function of total carbon supply revealed a zigzag pattern, which implied co-benefits may be high or low depending on the parcel of land. In summary, the authors state that "*The efficient level and location of carbon sequestering practices depend on* *more than just the total amount of carbon to be sequestered and in doing so: the magnitude and location of cobenefits are also critical.*" (p.21).

Considering the issues of carbon sequestration, transaction costs, permanence, leakage, additivity, and co-benefits, the need for institutions could be stressed for three reasons. First, there is a need for reliable information on land use changes and carbon sequestration estimates regionally. Second, institutions are needed for the proper measurement and monitoring of GHG mitigation projects to lower the transaction costs associated with them. Finally institutions could facilitate market transactions between producers and industries.

The inclusion of agriculture as a potential sink in the mitigation of GHG's can be a good strategy to support Canada's Kyoto commitment. Gillig, McCarl, and Sands (2004) estimated the responses of production, prices, welfare and environmental indicators in the presence of GHG mitigation policies. A multiplicative functional form was used to estimate the response of carbon markets to carbon price, fuel price, domestic agricultural demand, and exports as independent variables, and GHG dimensions such as emissions, sequestration, market conditions, land use, and welfare as dependent variables. The base function was estimated at a zero carbon price, and carbon scenarios were simulated with prices ranging from \$0 - \$400 per tonne of CO_2e. The abatement-cost curves were estimated considering various mitigation strategies such as: soil carbon sequestration, afforestation, biomass and livestock manure management. From the estimated abatement-cost curves, agricultural soil sequestration can be considered a viable option at low levels of emission reduction, however at high levels of emission reductions, the feasibility of carbon sequestration becomes less, and afforestation and biomass GHG become viable alternatives. Regarding the economy-wide effects, there were both positive and negative effects of the carbon market. Positive effects of the carbon market included: as the carbon price increased, emissions decreased and sequestration increased. Regarding negative effects, agricultural production and exports decreased while agricultural prices and imports increased. Crop and pastures land decreased, while biofuel and tree plantations increased. They concluded that the inclusion of GHG policies in an economy would lead to positive and negative effects on the economy.

CHAPTER 3

METHODOLOGY

3.1 Mathematical models in Agriculture

In the words of Hazell and Norton (1986), "*Models provide a link between economic theory and data, on the one hand, and practical application of problems and policy orientation on the other*"(p.2). This two-fold nature of economic models linking economic theory with policy implications makes models a useful tool for policy analysis. Models can range from a simple linear programming model to complex Computable General Equilibrium (CGE) models. Depending on the type of study and policy decision, the model that best suits the needs of the situation should be identified and built. Some relevant policy models, as identified by Garforth and Rehman (2005), are General Equilibrium models, Econometric Optimization Models and Mathematical Programming models. Computable General Equilibrium models are large-scale models that have the ability to model the economy as a whole, i.e. involving all the sectors. The major limitation of these type of models is that they do not provide the necessary detail concerning regional physical production constraints for agriculture. Garforth and Rehman (2005) defined econometric optimization models as a set of statistically estimated functions for one or more sectors, but noted that they are less comprehensive than CGE models. The authors identify a translog profit function as an example of an econometric optimization model. The major strength of econometric models lies in the sector response to price changes, for descriptive purposes, and for statistical estimation along with a confidence interval. But econometric models effectiveness in modeling policy changes and their responses are limited.

Mathematical programming models operate with an objective of maximization or minimization, subject to a set of constraints and solved for the optimal mix of resources. Mathematical programming models can be used to depict the agricultural situation on a farm, and the model can be well suited for agricultural policy analysis when aggregated. Though mathematical programming models had several limitations for policy analysis in their initial stages, they can be constantly modified and updated to account for economic theory and mathematical logic. Buysee *et al* (2007) viewed this limitation as one of the advantages of the model. Howitt (1995) cites three reasons why mathematical programming models are well suited for agricultural policy analysis: (1) mathematical programming models can be constructed with minimal data sets i.e., when models need to be built and where time series data is limited or absent due to structural changes in the economy, (2) sets of programming constraints in the model are suited for the resource, policy, and environmental constraints, and (3) the Leontief production function or the von Leibig production function, as addressed by many authors, can be a good way of representing the inputs when modeling a farm. Mathematical programming models are well suited for policy analysis in the agricultural sector because of the production function specification, resource constraint specification, and ability to optimize within a minimal data set. The present study uses a mathematical programming (MP) approach as the method to analyze the policy changes associated with the agricultural sector.

Programming models have developed to reflect policy analysis that can be applied to the real world. These models optimize based on the constraint structure, but no information is provided regarding how to maximize the objective, i.e. the shadow prices of the variables need to be calculated separately. But the dual of the same primal problem will yield the shadow prices of the variables. So, duality is an important concept in programming models (Howitt, 1995). Two variants of MP models are: Normative Mathematical Programming models (NMP) and Positive Mathematical Programming (PMP) models.

Normative mathematical programming models are simple for two reasons. First, they only require a minimal data set for modeling. Secondly, only a basic knowledge of the system is required because the model is not calibrated. In policy modeling, the procedure used is to construct a baseline, a policy is introduced as a variable, and then the system changes are studied and analyzed. But in a NMP model the baseline formed by the model doesn't resemble observed behavior since a new optimum is reached according to the binding constraints. Hence NMP policy responses cannot be relied on to model observed behavior. Despite this limitation, Buysee *et al* (2007) identified three situations where NMP models are useful: when data availability is minimal; when the economist is interested in only studying decision variables and constraining factors instead of optimal solutions; and finally when the NMP model forms the basis of other mathematical programming models, which help to refine the mathematical programming models further. For the present study, a NMP model would be an inappropriate method to analyze the inclusion of a carbon market in the agricultural sector and its response because a baseline solution that replicates the observed behavior is necessary for the analysis. So a NMP model cannot address the economic question in an efficient way.

To overcome the normative limitations of NMP models, Positive Mathematical Programming (PMP) models were developed. The name "Positive" is used because the model reproduces observed data. The advantage of PMP models have over NMP models is that PMP models can calibrate themselves to a base year solution equaling the observed activity levels. The model's robustness lies in predicting the producer's reactions to external changes (Buysee *et al*, 2005).

Decision makers' prefer PMP models over NMP models for three reasons. The first one stems from the normative nature of NMP models. As argued by Howitt (1995), policy models should calibrate against a base year to form the baseline solution that is equal to the observed behavior. Due to the constraint structure inherent in programming models, the results are normative in nature; therefore the model can't reproduce observed data. Howitt also noted that the problem will increase in regional models, where a wide diversity of crop production and few empirical constraints could severely enhance the problem. Several authors suggested ways to overcome the overspecialization problem, but Howitt commented that the procedures either had large deviations in results, or required additional data. But PMP models, with the minimal data available to the NMP model, calibrate the model to the observed data successfully, and simulations can be done with reasonable confidence.

The second reason is that NMP solutions will have discontinuous shifts in the decision variable when changes occur in the resource constraint. In PMP, Howitt (1995) explains the boundary point as a combination of the constraints and first order conditions. From an economic point of view, diminishing returns are accounted for in PMP models and not in NMP models. The last regards the scope of the models by Buysee *et al* (2007). NMP models are useful when the decision maker is interested in the optimal solution rather than the policy responses. PMP models won't be of much use in optimal allocations, as they assume allocations are optimal in the baseline, but are highly suited for policy analysis.

The reason why NMP models don't calibrate is due to the overspecialization problem. NMP models assume full knowledge of production technology available to the modeler, but this can be observed only as a cost function (which is a proxy for technology). But in most situations, perfect knowledge of technology is not available to the modeler. Howitt (1995) suggested that a non-linear cost function can capture the variable cost associated with the dual price of constrained factors and can eradicate the overspecialization problem, and discontinuous shifts, thereby calibrating activity levels to the observed levels. So PMP is more useful in policy modeling than NMP models.

The PMP procedure is a three step procedure:

1. The first step is writing a mathematical programming model, by adding a set of limiting resource constraints and a set of calibration constraints that bound the activities to observed levels in the reference period. The first order conditions from this step produce a dual variable. In the perspective of a decreasing yield function as provided by Howitt (1995), the dual represents the difference between the activity average and marginal value products.
2. The second step of PMP consists of using the dual variables to calibrate the parameters of the non-linear objective function.
3. The third step uses the calibrated non-linear objective function in a non-linear programming problem similar to the original one except for the calibration constraints. The resulting calibrated non-linear model exactly reproduces observed activity levels and original duals of the limiting resource constraints.

Howitt (1995) in his paper *"Positive Mathematical Programming"* showed how the calibrating parameters can be calculated from a minimal data set. The author undertakes non-linearity in the supply side of the profit function, to calibrate the model properly. Ricardo (1993) argued that the source of non-linearity in the supply side would probably be heterogeneous land quality and declining marginal yields. He used a primal approach by keeping the variable cost constant, and a yield function with decreasing marginal yield per acre as a linear function of crops planted. The author used a Leontief production specification and pointed out that any kind of production function could be specified and solved in the model.

The yield function for a single output with land and two other inputs is specified as:

$$y_i = (\beta_i - \delta_i)\, min\ \ (x_i, a_{i2}x_i, a_{i3}x_i) \qquad (3.1)$$

Where

y_i	output from cropping activities
β_i, δ_i	intercept and slope of marginal yield function of crop i
x_i, a_i	combination of inputs

The primal PMP that calibrates the model is written as:

$$max\ \sum_i P_i(\beta_i - \delta_i x_i)x_i - \sum_{j=1}^{3} \omega_j a_{ij} x_i \qquad (3.2)$$

subject to $Ax \leq b$ and $x > 0$

where

P_i	price of crop *i*
β_i, δ_i	intercept and slope of marginal yield function of crop i
x_i	acreage of land allocated to crop i
ω_j	cost per unit of the j^{th} input
$a_{i1} = 1$	

The second step in the model is to calculate the calibrating yield parameters, i.e. the slope and the intercept. The slope of the yield is calculated first by using the value of the dual on the LP calibration constraint (λ_2), and by substituting the slope in the average yield function, the intercept is calculated. Howitt derives λ_1 and λ_2 mathematically and showed that the binding constraint λ_1 is related to constraining resources and λ_2 with the most profitable crops. In the example illustrated by Howitt, the dual value of the calibration constraint is equal to the difference between the value average product (VAP) and the value marginal product (VMP) of the most profitable crop. A single element of λ_2 could be expressed as:

$$\lambda_{2i} = P_i(\beta_i - \delta_i x_i) - P_i(\beta_i - 2\delta_i x_i) \qquad (3.3)$$

$$\lambda_{2i} = P_i \delta_i x_i \qquad (3.4)$$

The slope parameter of the yield function is calculated from the above equation

$$\delta_i = \lambda_{2i} / P_i x_i \qquad (3.5)$$

The average yield function for crop *i* is represented as:

$$\bar{y}_i = \beta_i - \delta_i x_i \qquad (3.6)$$

and rearranging it yields the intercept for the yield function.

$$\beta_i = \bar{y}_i + \delta_i x_i \qquad (3.7)$$

The next step in the calibration process is substituting the slope and the intercept parameters in the objective function of the primal problem. As a result, the model is now calibrated to the base year solution along with the original constraint structure. The three steps mentioned in the example form the basis of how a PMP problem is framed and solved. The above mentioned steps calibrate the baseline to observed activity levels, and from this policy analysis can be undertaken.

3.2 Agricultural Sector Models

The present study investigates the response of the agricultural sector to a carbon market. In this regard, a brief description of the model of the agricultural sector is given. Sector models are entirely different from the micro level and economy-wide models. A sector model doesn't fit into the micro-model category because it describes the sector as a whole; and since it neglects the interaction effects with other sectors, they don't fit into the CGE model category. One of the main characteristics of a sector model is it accounts for all of the sources of supply and demand for the particular sector. Also, the supply and demand functions can be considerably aggregated into a few producing regions, which is a major strength of these models.

Hazell and Norton (1995) stated that every sector model should consist of the following 5 elements.

1. A description of producer's economic behavior, which constitutes the decision rules of the producers on output composition like profit maximization and scale.
2. A description of the production function that relates yield to inputs and technology sets to account for dualism in the agricultural sector. To make the model realistic, the sets are defined regionally.
3. Resource endowments such as land, irrigation, and family labour held by each group of producers are included. Some models take into account the opening stocks of crops, livestock, and machinery. The variability in resource endowments, even with the same technology, could produce different output mixes and output levels.
4. The market environment of the producer depicts the various forms of the market, the associated consumer demand functions, marketing, and the costs of agricultural products and trade possibilities
5. To specify the policy environment of the sector. For example, import quotas, tariffs, subsidies, and taxes can be specified in the policy environment.

These five components define the agriculture sector as an economic unit. The sector model, as defined above, has the characteristics of both an economy-wide model and a micro model. It displays characteristics of economy-wide models as prices are exogenous and complete specification of the demand and supply functions are included. It has micro theory elements as it contains production functions and producers' decision rules. So, the behavior of the sector as an economic identity can be defined by different tools of analysis such as production and consumption theory, theory of risk aversion, trade analysis, and analysis of fiscal choices.

3.2.1 The composition of sector models

Sector models are built to address questions related to how the sectors would react to a policy change. The policy problem could be the optimal allocation of resources, issues with trade, or promotion of other goals such as subsidies and taxes. The analysis of a sector model would be incomplete or ineffective if there is no policy response to the scenarios for the producer. Therefore a sector problem has two dimensions. At the macro level, policy makers optimizing their multiple objectives subject to constraints and uncertainty, and at the micro level, producers' response to policies given their objectives and limitations. The uncertainty the policymaker faces is the producer's response to a policy change. In order to reduce uncertainty, producers' production activities should be included in the model. This is accounted for in a sector model by constructing a model reflecting the producers' constraints, objectives, and opportunities, and solving the model under varying assumptions and policies. So a policy problem can be decomposed into predicting the producer's response to a policy and the allocation of resources for the response. In a sector model, both the producers' response and resource allocation problem can be viewed as an optimization problem consisting of the following components: objective function and its policy goals, the policy, constraints on the policy, and the sectors reaction to the policy changes.

The first step in the development of a sector model is to identify the regions, firms, and the available data. The next step is to take account of the production technologies of each unit while considering issues of representative production function and technological dualism. Following this, activities such as production, marketing, domestic consumption, input supply, imports and export activities are specified. Corresponding to the components mentioned above, the model consists of the equations for supply-demand balances, resource and other restrictions, miscellaneous equations and objective function.

Supply-demand balances are specified for inputs and outputs at the regional and national levels. At the regional level, supply-demand balances refer to the movement of farm products to marketing and processing centers. Supply-demand balances at the national level equate supply of processed products to retail demand. In the supply function specification, labor and inputs, such as irrigation and cropping, are also considered. The next step is to provide input balances together with marketing costs and international trade activities. Given the demand and supply specifications for inputs and outputs, a properly defined objective function can simulate market equilibrium.

The demand specification in a sector model is another issue in terms of the form the objective function should take to drive the solution to a competitive market outcome. The cost minimizing, policy-oriented objective function is not a good representation because it won't provide the economist with the policy response of the producer. Samuelson (1952) demonstrated that downward sloping demand functions will simulate market equilibrium for a competitive market. If the objective function is specified as the Marshallian surplus (sum of producer and consumer surplus), i.e. the area between the demand and the supply curves, maximizing this area would converge the model towards market equilibrium (Samuelson 1952). To make the equilibrium outcomes operational, a quadratic programming approach was advocated by Hazell and Norton (1986) to overcome the hurdles of measuring the area and the mathematical expression.

Hazell and Norton (1986) described the Samuelson model that drives the objective function towards a market equilibrium geometrically and algebraically. Geometrically, the Samuelsonian objective function consists of two areas: the total area under the demand function and the total area under the supply function. In Figure 3.1.1, there are three areas: Consumer surplus (A), Gross margin of producers (B) i.e area OP_eeQe and the total cost of production (C). Producer surplus is the difference between the area B and C. So in the objective function both enter with opposite signs.

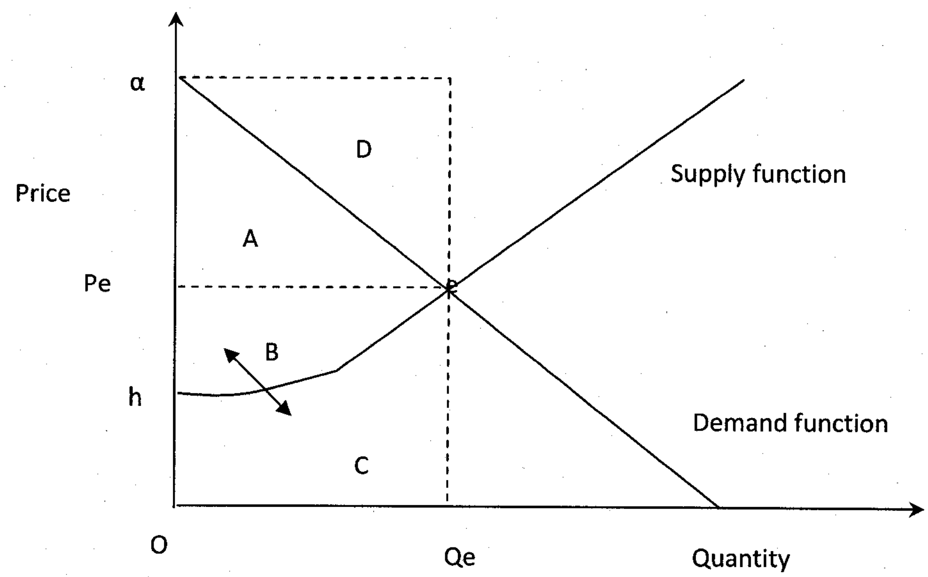


Fig3.1.1. The geometry of the objective function

The objective function could be denoted as:

$$Z = A + B - C \tag{3.8}$$

At the equilibrium solution (P_e, Q_e), assuming a linear demand function, the value of the objective function can be expressed as:

$$Z = \frac{1}{2}(\alpha - P_e)Q_e + P_e Q_e - C \tag{3.9}$$

Where

P_e	price of the commodity
Q_e	quantity demanded of the commodity
C	total cost function

Substituting equation C with $C(Q_j)$, the objective function for a good (j) thus becomes:

$$Z_j = \tfrac{1}{2}(\alpha_j - P_j)Q_j + P_j Q_j - C(Q_j) \qquad (3.10)$$

To make the objective function more workable, the inverse demand function can be written as:

$$P_j = \alpha_j - \beta_j Q_j \qquad (3.11)$$

where β_j is a positive constant equal to the absolute value of the slope of the demand function.

Combining both the equations yields a quadratic function of Q_j

$$\begin{aligned} Z_j &= \tfrac{1}{2}(\beta_j Q_j)Q_j + (\alpha_j - \beta_j Q_j)Q_j - C(Q_j) \\ Z_j &= (\alpha_j - \tfrac{1}{2}\beta_j Q_j)Q_j - C(Q_j) \end{aligned} \qquad (3.12)$$

To prove that the represented quadratic function provides an appropriate structure for the objective function of a market simulating LP model, production S_j is distinguished from sales Q_j, under the assumption of one production technology.

$$S_j = y_j X_j \qquad (3.13)$$

where

S_j	production of commodity j
y_j	output of commodity j
X_j	activity levels

With the above assumptions, the market equilibrium for the sector model can be set up and solved using the following optimization problem.

$$\max Z = \sum_j (\alpha_j - \tfrac{1}{2}\beta_j Q_j)Q_j - \sum_j C(S_j) \qquad (3.14)$$

subject to

$$Q_j - S_j \leq 0 \; for\; all\; j \; [\pi_j]$$

$$\sum_j a_{kj}X_j - \sum_j (a_{kj}/Y_j)S_j \leq b_k \qquad all\; k\; [\lambda_k]$$

$$Q_j, S \;\; \geq 0, all\; j$$

where

a_{kj}	unit requirements of fixed resources *k* in producing good *j*
b_k	resource availability of the *k* type of resources
π_j	shadow prices associated with commodity balances
λ_k	shadow prices associated with resource restrictions.

To solve for the market equilibrium, the Lagrangean is formed to evaluate the first order conditions for an optimal solution. The Lagrangean takes the form of:

$$L = \sum_j (\alpha_j - \tfrac{1}{2}\beta_j Q_j)Q_j - \sum_j C(S_j) - \sum_j \pi_j [Q_j - S_j] - \sum_k \lambda_k \left[\sum_j (a_{kj}/y_j)S_j - b_k\right] \quad (3.15)$$

The necessary Kuhn-Tucker conditions are:

$$\frac{\partial L}{\partial Q_j} = \alpha_j - \beta_j Q_j - \pi_j \leq 0 \qquad all\, j \qquad (3.16)$$

$$\frac{\partial L}{\partial S_j} = -C'(S_j) + \pi_j - \sum_k (a_{kj}/y_j)\lambda_k \leq 0 \qquad all\, j \qquad (3.17)$$

Apart from the Kuhn-tucker conditions, the non-negativity restrictions in the optimization model implies:

$$\pi_j = \alpha_j - \beta_j Q_j = P_j \tag{3.18}$$

$$P_j = \pi_j = C'(S_j) + \sum_k (a_{kj} / y_j)\lambda_k \tag{3.19}$$

Equation 3.18 states that the shadow prices of commodity balance equations are equal to the corresponding commodity prices at the optimal solution. The second equation, 3.19, states that the commodity price is equal to the marginal costs of production plus the opportunity costs of fixed resources at the margin. In this equation, λ_k predicts the Marshallian surplus for an additional unit of resource k, and the ratio a_{kj} / y_j gives the amount of resource k required to produce a unit of j. The second term gives the resource opportunity cost of an incremental increase in product j. With price equaling marginal cost, the fundamental characteristic of a competitive market is thus framed and solved by the optimization model.

3.3 Canadian Regional Agricultural Model

CRAM is a non-linearly optimized, static, sector equilibrium model. CRAM was developed by Webber, Graham, and Klein in 1986, at the University of British Columbia. The initial version of the model was programmed in FORTRAN for manipulating data, constructing linear programming matrices, and to interpret the results. CRAM is an economic model, used to analyze various agriculture policies in Canada. The first application of CRAM as a policy tool was undertaken by Webber in 1986 to analyze the implications of introducing medium quality wheat on the Prairies. The model was continually updated and modified to take into account the response of the agricultural sector to various policy measures such as: trade agreements, government payments, and environmental assessments. CRAM was initially developed in a FORTRAN/MPSX framework and the formulation had limitations in terms of usability, accessibility, and portability. In order to make the model user friendly, the model was converted to the GAMS system in 1991 and also adopted a PMP-calibration.

CRAM consists of data files, an optimization model, and result tables. The data files are endogenized in the CRAM model and have region specific resource, demand, and production information. The optimization model is written in the GAMS language, which has the ability to generate different structures of mathematical programming matrices based on the nature of the problem. With the help of programming statements, the results are generated in a table format, which makes the interpretation easier. The underlying strength of CRAM is the specification of production responses at the regional level and linking the outputs with provincial demand and world markets through a transportation matrix.

3.3.1 Overview of economic activities

CRAM consists of three major economic activities in matrix form. These are production and processing activities, trade and transport activities, and domestic sales of products produced. Production and processing activities consist of activities involving crop, forage, and livestock production. The trade activities simulate interprovincial and international trade for both crop and livestock sectors. The quantities demanded of the various commodities and the prices for the crop and livestock production are determined by the domestic sales blocks, and these prices and quantities are used to calculate the Marshallian surplus in the objective function.

Resource constraint equations, commodity balance equations, and ratio equations are identified in the model. Resource availability, such as land and opening and closing livestock numbers, constitute the resource constraint equations. Supply utilization of the commodities ensures their use doesn't exceed supply and are dealt within the commodity balance equations and ratio equations that consist of demand allocation provincially, as well as some biological relationships in the livestock sector. Crop and livestock are interrelated in CRAM as livestock feed consists of certain grains and forage crops. For feed requirements to be satisfied, limited substitution of feeds is allowed. Forage export outside the province is not considered in CRAM.

3.3.2 Regionalization in CRAM

CRAM is disaggregated regionally based on available information and homogeneity of production conditions. CRAM is disaggregated at several levels: National, Eastern and Western Canada, provincial, crop producing regions and Export/Shipping points. There are 55 crop producing regions, and the livestock sector is disaggregated provincially. Vancouver and Thunder Bay are the two export ports for prairie grains. Global trade activities by the rest of the provinces are permitted for all other commodities.

3.3.3 Crop Production module

Each province is represented as a region and some regions are further disaggregated into a total of 55 sub-regions. Crop production activities are grouped into two areas: regional crop production activities and trade activities that transfer commodities provincially and internationally if domestic consumption is met. Crop production activities include cereals, oilseeds, hay and pasture. Land classes consist of cropland, tame hay, tame pasture, unimproved pasture, and summer fallow, and are used to constrain the base cropping pattern. Leontief production functions are assumed in the model, and the variable costs for all 55 crop producing regions are included in the model. The major crops included in the model are: wheat, barley, canola, corn, field peas, flax, lentils, oats, potatoes, soybeans, along with crops grown under practices such as summerfallow, forage, improved pasture, and unimproved pasture. Crops are also classified according to three tillage practices: intensive, moderate, and no-till. The CRAM crop module output consists of area and production of various crops and economic indicators such as producer and consumer surplus, production values, government payments, and trade variables regionally.

3.3.4 Livestock module

The livestock module of CRAM contains four provincially disaggregated activities: beef, dairy, hogs, and poultry. The beef and hog sectors are calibrated using PMP, while the dairy and poultry sectors are modeled using linear programming. The data required by the livestock module are: (1) feed requirements, costs, and production (2) culling, replacement, birth and death rates, and (3) opening stocks (i.e. the opening number of the animals for the present year). Beef production activities are covered in greatest detail due to the complexity and importance of the industry (Horner *et al*, 1992). The complexities arise from the length of the cattle cycle. So in addition to the above data, beef closing stocks, ratio of cows to bulls, beef yield, and some technical constraints are also included. The livestock module output consists of livestock production, in addition to processed products.

3.3.5 Demand Data

Domestic or international markets can be established for any commodity in the model with the use of demand functions. The data required for domestic demand are the equilibrium price and quantity, demand elasticity, and consumers' regional proportion within a province. Either an elastic or perfectly elastic demand function can be specified in the model. The decision of the functional form depends on the demand elasticities and the type of policy.

3.3.6 Transportation data

The transportation module consists of the following basic information: port of origin, destination point, commodity, and unit shipping and handling costs of crops, beef products, and animals, pork and hogs, processed dairy products, and poultry products. To account for port capacity constraints, an upper and lower bound on the quantity of the goods shipped can be specified within the model.

Finally, the objective function in the model is a modified welfare function consisting of producer and consumer surplus less transporting and processing costs. The objective function is maximized subject to a set of linear constraints facing various sectors of Canadian agriculture.

Algebraically, the objective function is represented as:

$$Z = x'y\,[\lambda - \tfrac{1}{2}\,\beta xy] - c'x - [\alpha'x + \tfrac{1}{2}\,x'\gamma x]$$

where

x is a vector of activity levels

y is a vector of yields per unit of x

λ is a vector of intercepts of the commodity demand functions

β is a vector of slopes of the commodity demand functions

c is a vector of variable costs of production per unit of x

α is a vector of PMP marginal cost function intercepts

γ is a vector of PMP marginal cost function slopes.

Some recent developments in CRAM include Integrated Economic/Environmental modeling. Bouzaher *et al* (1995) developed the CRAM/EPIC model that estimated the economic impacts of wind and water erosion for the three Prairie Provinces. Recent developments in integrated modeling include linking CRAM to a GHG component that can be used to estimate the amounts of CO_2, N2O, and CH_4 released from primary agriculture. The integrated model is called the Canadian Economic and Emissions Model for Agriculture (CEEMA).

3.4 Policy Scenario

The policy scenario to be investigated is the use of emission trading as identified in the Kyoto Protocol, as a cost effective way of reducing GHG emissions. The Domestic Emission Trading (DET) system as proposed for Canada would allow emitters with excess GHG emissions to purchase carbon credits. The DET system proposed for Canada is based on a baseline and credit scheme. With this program, firms must meet regulated intensity targets defined for their industry. Firms would have to purchase carbon credits when GHG emissions exceed their intensity target, while firms that are more efficient than the intensity target will receive carbon credits that can be sold in the carbon market. The offset system includes sectors that are not regulated by intensity targets but can generate GHG emission reductions that can be sold in the carbon market. The agriculture sector is part of the offset system. Agriculture producers can adopt projects, such as Best Management Practices (BMP's) that reduce GHG emissions from their baseline and thus generate carbon credits. The incentive to adopt BMP's to reduce GHG emissions will depend on the price of the carbon credit that can be sold in the market. One important policy question that needs to be addressed is to estimate the potential of the agriculture sector to supply carbon credits to the market. It is expected that the agriculture sector will be a low-cost supplier of carbon credits. For this policy analysis, the CRAM model was modified from its original version.

3.4.1 Modifications in CRAM

CRAM was modified to take into account the carbon market. The components of interest for this analysis are changes in cropping and livestock patterns on one side and the corresponding emission reduction levels and changes in economic variables on the other. CRAM includes all of the data for production and consumption activities. The additional data required for the study were the carbon coefficients associated with various management practices and the price levels. The approach to undertake this analysis is similar to that used by Morand (2004). The demands for crop sector-based GHG reductions are endogenized within the model by means of soil carbon coefficients that are formulated in the model by means of Net Emission Reduction Levels (NERL). NERL represents quantities on the demand curves to be introduced into the model that correspond to the different prices of carbon credits. The unit of trade for a carbon credit will be a tonne of carbon dioxide equivalent (CO_2e).

NERL = Net Emission Reduction Coefficient (NERC) * Emission Reducing crop levels in ha (CSEQCROPLVL)

NERL = NERC * CSEQCROPLVL

NERL = Total transferable emission reduction units

In sector models, producers are assumed to be price takers in a competitive market, and so carbon prices are set exogenously in the model. In this regard, carbon credit revenue is:

Carbon Credit Revenue = Carbon price * NERL

Carbon Credit Revenue = Carbon price * (NERC * CSEQCROPLVL)

Carbon Credit Revenue = (Carbon price * NERC)* CSEQCROPLVL

Carbon Credit Revenue = Effective carbon price * Crop level

This equation endogenizes the carbon sequestering crop activity into the CRAM model and is similar to any crop activity identified in the objective function.

To endogenize the demand for the crop sector-based GHG emission reductions, additional data sets, parameters, and scalars were defined and added to the model.

The newly defined sets are:

1. CSEQPRACT - This set identifies the various soil management practices that can generate GHG reductions. The management strategies considered are Moderate Tillage (MDTL), No-Till (NOTL), and Perennial cropping activities (PERREN)
2. CSEQREG(R) – The carbon sequestration regions considered in the study, which includes all the provinces of Canada. This is a subset of the set of markets denoted R.
3. CSEQCROP(CPROD) – This set consists of carbon sequestering activities and it includes: wheat, durum, barley, oats, flax, canola, lentils, field peas, soybeans, corn grains, hay and alfalfa. All the other crops except hay and alfalfa, have different tillage activities associated with them. This set is a subset of cropping activities CPROD.
4. MDTLCROP(CSEQCROP) – Contains moderate tillage carbon sequestering cropping activities.
5. NOTLCROP(CSEQCROP) – Contains no till carbon sequestering cropping activities

6. PERENCROP (CSEQCROP) – Consists of perennial crops. Hay and alfalfa are included in this set.
7. NERC(CSEQREG,Q,*) – This set is defined over three dimensions. It defines the Net Emission Reduction coefficient for the regions according to the carbon sequestering practice expressed in Mg CO_2/ha/yr.

The NERC for all CRAM regions was calculated by McConkey *et al* (2007), and the coefficients are included in Appendix A.

The different parameters specified in the model are:

1. ECARBONPRICEMDTL (CSEQREG, Q,*) defines the effective carbon price for moderate tillage activities by region. This is a product of carbon price and the carbon coefficients for moderate tillage (Carbon price * NERCMDTL).
2. ECARBONPRICENOTL (CSEQREG, Q,*) defines the effective carbon price for the no-till activities by region.
3. ECARBONPRICEPERREN (CSEQREG, Q,*) specifies the effective carbon price for perennial crop activities by region.
4. CSEQCROPLVL (CSEQREG,Q,CSEQCROP) defines the carbon sequestration crop production level by region and crop.
5. NERL (CSEQREG,Q,CSEQCROP) defines the carbon sequestration crop production level by crop and region.
6. CARBONCREDITREV (CSEQREG,Q,CSEQCROP) defines the carbon credit revenue generated by carbon sequestering crops regionally.

The carbon price is the only scalar entering the model. While new sets, parameters, and scalars were defined, additional equations were needed to take into consideration the demand for crop sector-based GHG reductions. There are two sets of additional equations. The first is the effective carbon price equations, which calculate carbon prices regionally by multiplying the NERC of moderate, no-till, and perennial crops by the carbon price. The other set of equations specify the aggregate demand shift caused by additional revenue generation possibilities associated with the specified crop activities. This equation is specified as a sum of carbon sequestering crop revenues, summed for the various crops and regions. The new demand shifts will occur only for positive net reductions, i.e. gases emitted are not accounted for. CRAM solves for the baseline solution, which is a PMP calibration. In the baseline scenario, due to the absence of a carbon market, carbon prices are set to zero. Scenario simulation is carried out by substituting the zero carbon price with non-zero carbon prices simulating a carbon market.

3.4.2 Simulation scenarios

Simulations are done for six different carbon prices, each reflecting a change in the composition of the agriculture sector due to an exogenous price change of carbon.

The scenarios investigated are

1	Very low price of carbon	-	Set at \$5/t of CO_2e
2	Low price of carbon	-	Set at \$10/t of CO_2e
3	Medium price of carbon	-	Set at \$15/t of CO_2e
4	High price of carbon	-	Set at \$30/t of CO_2e
5	Very high price of carbon	-	Set at \$50/t of CO_2e
6	Very very high price of carbon	-	Set at \$100/t of CO_2e

Once the carbon prices are entered, the model is solved for the optimal solution and the various parameters and variables affected by carbon prices are calculated. All six scenarios are programmed as a report file in GAMS. The report file includes the parameters of interest, such as crop production activities, livestock activities, crop carbon sequestration levels, carbon revenues, and land use changes. For making tabulation and interpretation of the scenario results easier, changes in the scenarios were compared to the baseline for variables of interest and are also programmed in the report file.

3.4.3 Transaction cost analysis

One of the objectives of the present study is to study the efficiency of carbon markets in the presence of transaction costs. Similar to the earlier literature cited, transaction costs include costs other than project costs, borne by the project proponent. To include transaction costs in CRAM, the transaction cost estimates were subtracted from the exogenous carbon prices. Transaction cost estimates were taken from a study conducted by Marabek Resource Consultants (2004), which estimated the ex-ante transaction costs associated with a national offset scheme under various implementation scenarios. The study included transaction cost estimates of different projects by sector, but for the purpose of the current study, only transaction costs associated with agriculture projects are considered. Transaction cost estimates were based on the size of the project, scope, and design options: such as pooling and permanence.

For the present study, transaction costs of a medium-term project with a pooling option and replacement credits were considered. For a large project with pooling, the transaction cost estimate is \$0.24 per tonne of CO_2, and for a small project without pooling, it was \$5.84 per tonne of CO_2. These prices were subtracted from the carbon scenario prices, and a similar analysis as the market scenarios was carried out. The transaction costs were subtracted from the scenario prices because the project proponent, i.e the agricultural producer, must bear these costs.

Chapter 4

Simulation Results

The primary objective of this study is to estimate the potential of the Canadian agricultural sector, specifically crops to supply carbon credits in the form of carbon sequestration to a domestic carbon market. The second objective is to investigate the impact transaction costs would have on this supply of credits. A simulation analysis was undertaken to analyze these two objectives using the CRAM model and the results are presented in the following order. First, a general introduction to crop acreage changes in carbon sequestering crops and other crops is analyzed. This details the cropping pattern changes from the baseline. The second section details the acreage changes of carbon sequestering crops/technology and the adoption rates of tillage practices regionally and provincially. Third, changes in carbon sequestration levels and carbon revenues from changes in crop acreages and changing carbon prices were estimated. Finally the carbon sequestration levels are examined with respect to transaction costs, and how transaction costs affect the carbon market.

Two scenarios were investigated with respect to the inclusion of a carbon market. The first scenario includes all carbon sequestering crop activities; i.e. moderate tillage, no- till, and perennial crop activities. With this scenario, the resulting sequestration levels, carbon revenues, and adoption rate of tillage practice were investigated. The second scenario estimated the effect of tillage activities, i.e. moderate and no-till, with the exclusion of perennial activities. The need for the second scenario was due to the high carbon coefficient values attached to the perennial activities. Since the model is fundamentally an optimization model, the model tries to maximize returns from the highest carbon sequestering crop/ activity. As a result, crop areas were directed to hay and alfalfa. But large shifts towards these crops would face hurdles because of the negative impact on food production. So the second scenario estimates the potential if only tillage activities could provide carbon revenue. The inclusion of the second scenario permits one to compare the potentials and differences among the two scenarios. The scenario that includes all tillage and perennial activities is called "Policy All" and the scenario where tillage activities are only accounted for is referred to as "Policy Till".

4.1 Provincial acreages, production and prices of crops

Crop acreage changes compared to the baseline as a result of the carbon market are reported in the tables in Appendix C1 and C2. The major crop areas in Canada are found in the provinces of Saskatchewan, Alberta, Manitoba, Ontario, British Columbia and Quebec, while the other provinces have less than one percent of the total crop area respectively. Among the major crop producing provinces, Saskatchewan, Alberta, and Manitoba (the Prairie Provinces) collectively account for 84 percent of the total crop lands in Canada. The distribution of individual crop acreages followed a uniform pattern in these provinces, while some distinguishing patterns are also noted in other provinces. Among the crops grown nationally, unimproved pasture and pasture had major land areas, while other crops that had significant acreages were alfalfa, wheat, hay, canola, barley, and oats. Although the distribution of hay and alfalfa are uniform across provinces, in smaller crop producing provinces such as New Brunswick, Newfoundland, Nova Scotia, Prince Edward Island, and the province of Quebec, the acreages of these two crops are relatively higher. In the major crop producing regions, feed barley and malt barley had higher acreages when compared to other crops. Soybean is predominantly grown in Ontario and Quebec. Corn is grown intensively in the provinces of Ontario and Quebec, relative to the other provinces. Lentils, field peas, and oats acreages are higher in Saskatchewan. Also irrigated crop area is highest in Alberta, while in Saskatchewan there were notable irrigated crop acreages for some crops. Among provinces, unimproved pasture occupied a major share of acres in Alberta, Saskatchewan, British Columbia, and Manitoba. Other than this, the distribution of crops in the Prairie Provinces did not have large deviations.

When a carbon price for tillage and other activities is included in the model, there is a positive shift in crop acres towards crops under no-till and moderate till, and a decrease in the intensive till crop area. The shift in crop area varies with the magnitude of the carbon price, while the direction remains the same. The general trend in crop area revealed that at a low carbon price of \$5/t of CO_2e there was a relatively minor shift of less than one percent to no-till activities in most provinces, while a decrease in intensive till activities is also noticed. But even at low prices of carbon, hay and alfalfa acreages increased by more than 3 percent in the non-prairie provinces, while the Prairie Provinces registered an increase of 5 percent. When the carbon price increased to \$15/t of CO_2e, and higher, there is a substantial change in tillage activities, but there is also a prominent increase in hay and alfalfa acreage. At relatively high carbon prices of more than \$50/ t of CO_2 there is an increase in the area of hay and alfalfa of more than 50 percent from the baseline.

Experts have suggested that the most likely price for carbon would be \$15/t of CO_2e. At this price there is an increase in the area of hay and alfalfa compared to the baseline in all provinces except Newfoundland, where acreages of all crops, including alfalfa, decreased while only hay increased. Regarding other crops, there is a decrease in the acreage of food crops such as: cereals, and corn under intensive tillage while the same food crops under no-till cultivation increased. An important deviation with no-till crop activities is in Quebec, where feed barley under no-till decreased even with higher carbon prices. Also the area under irrigated crops in most provinces decreased. The size of this decrease was determined by the price of carbon.

Nationally, at a carbon price of \$15/t of CO_2e; hay, alfalfa and the crops under no-till regimes increased, while at higher carbon prices, area under moderate till regimes also increased. The area under irrigated crops, food crops, and oil seeds decreased less than proportionately with higher carbon prices. Since crop production is directly related to the acreages, crop production patterns due to the inclusion of a carbon market follows the same pattern, i.e. due to the area decrease in food crops there will be a decline in food crop production and an increase in hay and alfalfa. There is a shift from food crops to area under no-till food crops, but the decrease in the food crop activities doesn't balance the increase in the no-till food crop activities, rather the area shift is towards hay and alfalfa, thereby implying that there may be an increase in food prices as a result of the carbon market.

Since the acreage shift is more towards hay and alfalfa in the Policy All scenario, implementation of the policy might be difficult because of food production concerns. In the Policy Till scenario, the acreages of hay and alfalfa decreased; even at a very low price of carbon. This is contrary to the Policy All scenario where the highest acreage increase was observed in these crops. With respect to other crops the acreage shift was towards no-till crop activities and there is a large reduction in the intensive till crop activities. Carbon price increases determined the magnitude of the acreage shifts. Crops under moderate till regimes exhibited mixed responses, where some crops responded positively and some negatively. Also area under irrigated crops was reduced as a result of a carbon price. One point worth noting is that the highest acreage increase is with crops in the no-till regimes; such as oats, field peas, flax, canola, wheat, and lentils, while the highest decrease was in the same crops under the moderate till regime. This implies that there is no crop shifts taking place as a result of the Policy Till scenario, instead only practice shifts occured. Though the acreages of hay and alfalfa decreased under carbon prices, the irrigated area under both the crops increased from the baseline, although not at a rapid rate.

In the small crop producing provinces and British Columbia, the minimum adoption rate of conservation tillage resulted in crop acreages remained the same for all levels of carbon prices. The provincial acreage response had the same pattern as the national pattern with some deviations in Ontario and Quebec, where moderate till crops acreages also increased.

Given the general trend in the acreage response of the cropping sector, the focus in the next section shifts to carbon sequestering crops, their sequestration levels, adoption rate of tillage practices, and revenues accumulated as a result of the sequestration practices discussed.

4.2 Regional distribution of carbon sequestering crops/technology

4.2.1. Policy All

The regional impact of the carbon sequestering crops/technology and their respective acreage changes, with respect to a carbon credit price from \$5/t of CO_2e to \$100/t of CO_2e, are given in Appendix D to Appendix H. With this scenario all provinces, including the small crop producing provinces, have a role to play in the carbon market, although their relative contribution is small. The small crop producing provinces (Nova Scotia, New Brunswick, Newfoundland, Prince Edward Island, and British Columbia) have fewer acres under food crops and more area under forage and other perennial crops.

The perennial crop activities tend to include these provinces in the carbon market. Since crop production acreages are larger in the Prairie Provinces, Ontario, and Quebec compared to the small crop producing provinces the discussion mainly centers on the Prairie Provinces, Ontario, and Quebec, and their cropping area changes. These five major crop producing provinces are discussed briefly while the small crop producing provinces are grouped as "Other Provinces" and are discussed as one region.

Alberta

Alberta has 7 CRAM crop regions (Appendix D1 to D4). Regionally, hay and alfalfa acreages in the baseline were in the range of 1.6 to 2.4 per cent. When carbon was priced at $5 /t of CO_2e, there was an increase from 2 to 6 per cent from the baseline. A decline in moderate and no-till crop acreages were also found in the regions. The most responsive regions to a carbon credit price were regions 1, 5, 6, and 7, and the least responsive region was region 2. Region 3 and 4 were moderately responsive. Region 2 showed a small increase in alfalfa production while there was a decrease in canola and wheat areas, and an increase in the other crop areas. This was a distinguishing feature of this region. As the carbon credit price increased, the magnitude of the changes was larger, but the general pattern remained the same. At relatively high carbon prices, the acreages of hay and alfalfa increased by 56 and 14 percent compared to the baseline, while acreages of moderate till crop activities declined between 14 and 50 per cent with respect to the baseline. The most price responsive and non responsive regions remained the same even at a high carbon credit price.

Saskatchewan

Saskatchewan has 9 CRAM crop regions (Appendix E1 to E4) and the general trend was an increase in the area of hay, alfalfa, and no-till crops. There was a decrease in the crop area of moderate tillage. In all nine regions, uniform crop pattern changes were observed without any major deviations. Food crop areas were almost equal in all the regions in the province when compared to acreages of hay and alfalfa. A distinguishing pattern was seen in Region 3 where alfalfa acreage increased more than hay at a low price of carbon, and the change from the baseline increased to 97 percent at a high carbon price.

Manitoba

The general cropping pattern changes also apply to the six CRAM crop regions (Appendix F1 to F4) in Manitoba. All crops in the other provinces had a decrease in the moderate till crop activities, however regions 1 and 4 exhibited a different pattern. In these regions moderate till crop activities increased with the exception of canola, wheat, lentils, and field beans. All the other regions in the province did not show any notable deviation in the acreages of carbon sequestering crops. Also in Region 4, there is a relatively higher increase in hay and alfalfa when compared to the other regions, and a minor decrease in the acreage of some moderate till crops.

Ontario and Quebec

The 10 crop regions in Ontario (Appendix G1 to G4) and 11 CRAM crop regions of Quebec (Appendix H1 to H4) exhibited the same pattern of decreased acreages of both moderate till and no-till activities, and an increase in the acreages of hay and alfalfa. This was similar to other regions, however they exhibited some distinguishing features. The outlier in the general trend among all the provinces was region 1 in Ontario. In this region, corn acreage under both tillage regimes, increased from the baseline level. Starting with a carbon credit price of \$10/t of CO_2e to \$100/t of CO_2e, there is a decrease in the acreage of hay and alfalfa with this area shifting to corn and feed barley, which are more profitable than the perennials under the carbon credit pricing scheme. In region 2 of Ontario, there is a uniform increase in all crops without any decrease in the crops planted.

In Quebec, with a very low carbon credit price all food crops showed a decrease in acreage with the exception of no-till area under corn in regions 9 and 2. The area under no-till in soybeans increased in regions 2, 8, 9, 10, and 11 with a carbon credit price increase greater than \$50/t of CO_2e. This may be due to the predominance of soybean in Quebec compared to other provinces. Among the regions in Quebec, region 9 was the most carbon credit price responsive region in crop acreage changes other than hay and alfalfa.

Other provinces

In the other provinces there was relatively very small area under tillage practices and only perennial crops can sequester carbon. There are 8 CRAM crop regions in British Columbia and one crop region for New Brunswick, Prince Edward Island, Nova Scotia, and Newfoundland respectively. With the exception of region 6 in British Columbia, all the other regions were responsive to a carbon credit price of $5/t of CO_2e. The magnitude of the changes increased as the carbon credit price increased with region 6 having declining acreages even with a very high carbon credit price.

4.2.2. Policy Till

Changes in carbon sequestering crop acreages, and the corresponding sequestration level changes were analyzed with respect to only tillage activities, such as moderate till and no-till, and the results are discussed in this section. In this analysis, the crop acreage changes were only studied for the Prairie Provinces, Ontario, and Quebec. Small crop producing provinces were not reported due to the negligible acreages under different tillage activities in these provinces. The general trend in this scenario was that at a relatively low carbon credit price the area under crops under both tillage regimes had an increase ranging from 0.01 to 3 per cent with some crops under moderate till showing a decline in acreage. But as the carbon credit price increases, the magnitude of the changes varies according to the price of a carbon credit. As the carbon credit price increases, acreages under moderate till decrease while acreages under no-till increase to a greater extent. No-till area increases as much as 30 percent above the baseline. Regarding crops, the highest increase in the crop areas were in crops such as: wheat, flax, oat, and barley in the largest crop producing provinces. The regional changes for the 5 large crop producing provinces are reported below when only tillage was accounted for.

Alberta

Compared to other provincial patterns, in Alberta almost all crop regions showed an increase in the acreages of crops under moderate and no-till activities. Only canola area under moderate till decreased in 3 crop regions when the carbon price was $15/t of CO_2e. The incremental increase in carbon credit price doesn't change the patterns of crop acreages observed at low carbon credit prices, although some moderate decrease was observed in regions 1, 3, and 4 for moderate till crops.

Saskatchewan

Crop regions 6, 7, 8, and 9 in Saskatchewan exhibited decreasing and increasing pattern of moderate and no-till crops. Other crop regions had a uniform increase in all crop activities. Increasing the carbon credit price caused the pattern to change, crop region 3 and 4 also exhibited the increase and decrease pattern of no-till and moderate till crops with carbon credit prices above \$30/t of CO_2e.

Manitoba

In Manitoba, crop regions 1, 2, and 4 showed an increase in moderate and no-till crops for a carbon credit price change, while crop regions 3, 5, and 6 showed an increase in no-till crops and a decline in the moderate till activities, at a carbon credit price of \$5/t of CO_2e. The same pattern continued in crop acreages when carbon credit prices increased, but the magnitude was higher for moderate till crops with a decreasing trend, and positive for no-till crop areas. Decreases in crop acreages under moderate till were less than one percent for most crops under a high carbon credit price of \$30/t of CO_2e. The decrease reached as high as 4.5 percent under moderate till regime in crop region 3.

Ontario and Quebec

In the case of Quebec, all of the crop areas under both tillage activities showed an increase from the baseline as a result of the carbon credit price. There was no decrease in the crop acreages, and at a high carbon credit price there was a relative shift of 50 percent from the baseline for some crops. But when viewed in terms of the absolute crop acreages, the acreage shifts were relatively minor.

Ontario crop regions 2, 3, 4, and 6 showed increased crop areas under both tillage regimes, while the other regions showed distinct decreasing and increasing patterns. This pattern applied uniformly to carbon credit price increases at each level.

The results of the two scenarios, Policy All and Policy Till, indicated that rather than implementing a single policy nationally, provincial implementation of a selected policy would be effective in achieving the Kyoto target. In the Prairie Provinces all of the sequestration techniques can be undertaken to provide carbon credits. Since major food crops are grown mostly in these provinces, the importance given to tillage techniques rather than perennial crops would be a good policy option as food production would not be reduced. On the other hand, in British Columbia, Ontario and Quebec; perennial crops have high crop acreages and the acreage response to these crops with respect to a carbon credit price is higher. So implementing perennial crops as a sequestration technology in these provinces would provide a good response rate for a carbon market. The response of tillage from the "other provinces" seems to be minimal from the results. Taking regional differences into account, a portfolio approach could be a viable option depending on the crop acreage profile of the region.

The crop acreage response for the carbon sequestering crops gives a profile of what would be the cropping pattern changes and crop practice changes with respect to a carbon market. The following section discusses the adoption rate of tillage practices in the provinces. This can provide a better understanding of the regional differences in the tillage practices.

4.3Adoption Rate of Tillage Practice by province

The adoption rate of tillage practices, moderate till plus no-till, as a result of the introduction of the carbon market is given in Appendix I. The adoption rate was calculated as the increase or decrease of total area under tillage from the baseline with different carbon credit prices. Since in the other provinces the crop areas under tillage are minimal, only the Prairie Provinces, Ontario and Quebec are discussed in this section. Both policy scenarios; Policy All and Policy Till, were tabulated and the results are discussed.

Alberta

Among the cropland in Alberta, crop regions 1, 2, 4, and 7 are major crop areas. The adoption rate for the province as a whole in the baseline was 46.73 %. The highest adoption rate of tillage (63.67 %) was found in crop region 4, which accounted for more than 20 percent of the cropland. Crop regions 2 and 3 also had more area under tillage than the provincial average. Regarding other regions, the adoption rate of tillage was approximately 36 per cent above the baseline. The impact of the carbon credit price on the tillage adoption rate was positive, and the increase seemed to be one percent at a very low price of carbon to about four percent at a very high carbon price.

Saskatchewan

Saskatchewan had the highest crop area nationally, and provincially the adoption rate of tillage practices was approximately 50 percent, which is the highest among all the provinces. Among the nine crop regions, regions 1, 2, 6, 8, and 9 had higher adoption rates of tillage practices than the provincial average. The lowest adoption rate of tillage practices was in the fourth crop region,which had 27.49 per cent of the crop area under tillage. This was half of the provincial average. The increase in adoption rate as a result of the carbon market was in the range of 0.3 to 0.5 percent at a low carbon price, ranging to one percent at a medium price, to a high of five percent at a very high carbon price. Except for the third crop region in Saskatchewan, almost all the other regions adopted similar tillage practices and were equally responsive.

Manitoba

Manitoba had a provincial adoption rate of 40 percent in the baseline. Crop regions 1 and 2 had a high adoption rate of 50 percent. All other regions had adoption rates ranging from 25 to 30 percent. Crop region 1 accounted for 33 percent of the cropland in Manitoba, and the adoption rate was approximately 56 percent in this region alone. The adoption response showed its highest change of eight percent above the baseline at very high carbon credit prices from a change of more than one percent at a medium carbon credit price. In Manitoba, crop regions 1 and 2 were more responsive to a carbon credit price than the other regions.

Ontario

Among the crop regions in Ontario, regions 1, 2, and 3 had a baseline tillage adoption rate of 58, 45 and 48 percent, respectively. These were higher than the provincial average of 43 percent. The changes in the tillage adoption rate, with respect to a carbon market, ranged from an increase of less than one percent at a medium carbon credit price to less than two percent at a very high carbon credit price. Crop regions 1 and 3 were more responsive and the adoption rate increased to more than five percent above the baseline.

Quebec

Quebec is the province that has the lowest tillage adoption rate of 21.33 percent among all the major crop producing regions. Crop regions 5, 10, and 11 had adoption rates above the provincial average. The response to a carbon credit price seems to be very small, at a rate of less than 2 percent increase at a very high carbon credit price of \$100/t of CO_2e. This applied uniformly to all the regions in the province that had above average provincial adoption rates.

The adoption rates of tillage regimes reveals that the Prairie Provinces have the largest potential for sequestration from tillage practices, and the provinces of Ontario and Quebec can only play a minor role in carbon sequestration under tillage regimes. When perennial crops and tillage practices are accounted for, there is a slight decrease in the adoption rates of tillage as crop areas shift to hay and alfalfa, thereby decreasing the area under tillage. Even in the Policy All scenario, adoption rates of tillage was higher in the provinces that have above average adoption rates.

4.4 Provincial and Regional Carbon sequestration levels

The acreage analysis of carbon sequestering crops revealed that the Prairie Provinces were a major contributor in area and adoption rates of carbon sequestering crops/practices. Since carbon sequestration levels forms the economic basis of this study, sequestration levels from both policy scenarios are illustrated graphically in Fig. 4.4.1 to Fig.4.4.68. Also, the sequestration estimates for tillage and perennial crops are given in Appendix G. Carbon was measured uniformly as Mg of CO_2/ha/yr. Two methods of carbon accounting were used in this study. With the first method, carbon was estimated as an aggregate where carbon from all sequestration activities was accounted for. The second method took into account only carbon associated with a practice change from the baseline. The second analysis was used to estimate the carbon the agriculture sector can provide under the Kyoto Protocol guidelines, which states that carbon accumulating from a practice change is accountable towards the Kyoto target. The sequestration levels for both policy scenarios are discussed under the same provincial subheadings. Aggregate carbon sequestration levels are presented in Figures 4.4.1 to 4.4.60, and carbon sequestration levels after a practice change is included in Appendix J.

Alberta

In Alberta (Fig.4.4.1 to Fig.4.4.12), when only tillage was considered, at a carbon credit price of \$5/t of CO_2e, the province could sequester 1.21 Mt of CO_2 including the baseline. But when perennial crops are also included in the analysis, the province could sequester more than five times this amount of carbon, approximately 6.2 Mt of CO_2. This gives the potential of carbon sequestration from the crop sector. When only tillage is accounted for the contribution of no-till to carbon sequestration levels was approximately 60 to 70 percent of the total in the province. When perennial crops are included in the analysis, the contribution from perennial crops were higher and the range was from 34 percent in crop region 2 to a high of 95 percent in crop region 6. This further supports the argument that crop region 2 was the least responsive region to a carbon market under the Policy All scenario. Crop regions 5, 6, and 7 had the highest sequestration levels due to the growing of perennial crops. Among the regions in Alberta, crop regions 4, 5, 6, and 7 contributed more than 80 percent to the total sequestration. At a relatively moderate price of carbon at

Fig.4.1.1

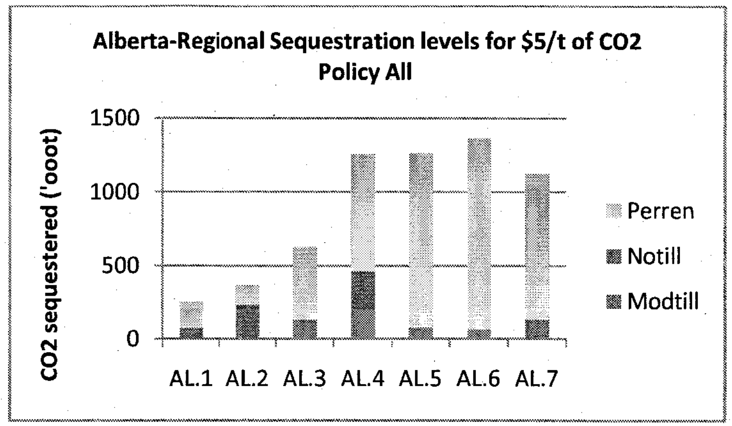


Fig.4.1.2

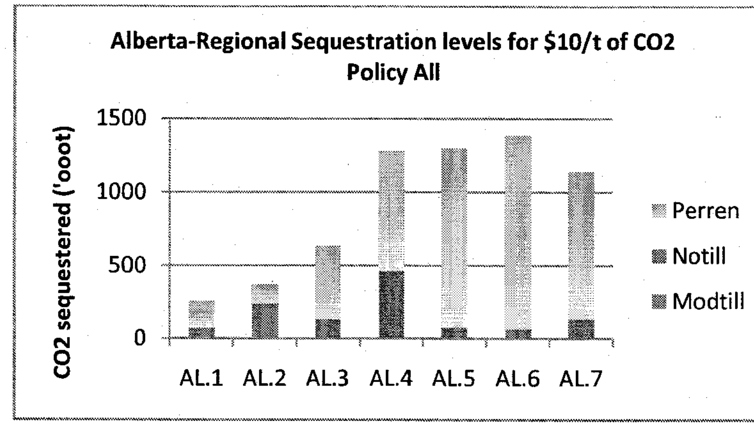


Fig.4.1.3

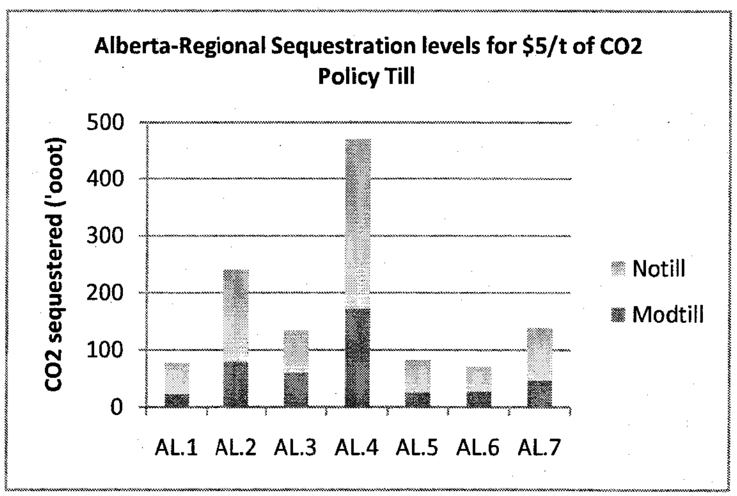
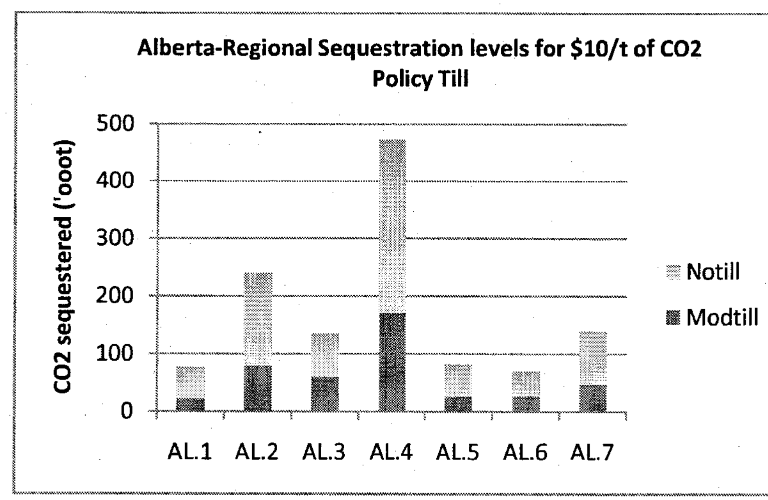


Fig.4.1.4



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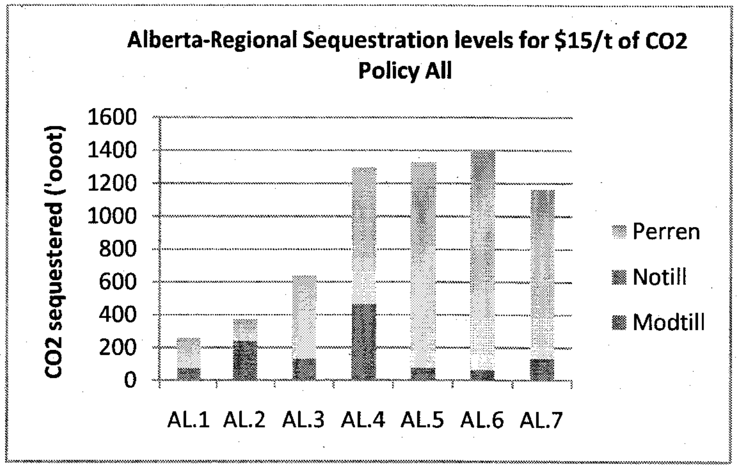

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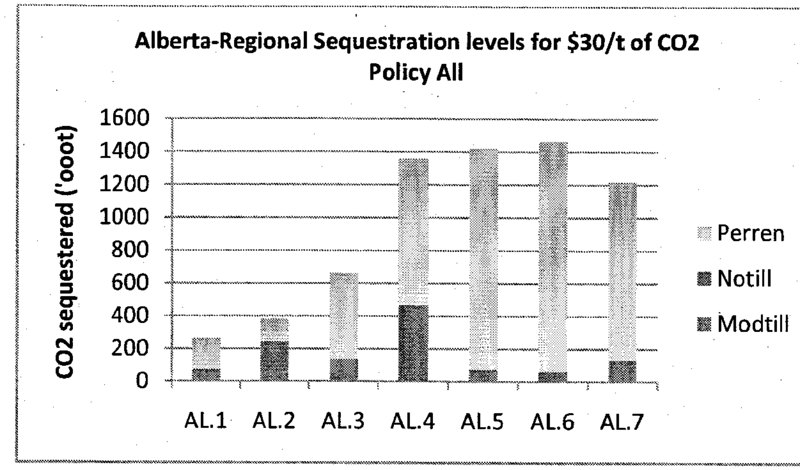


Fig.4.1.7

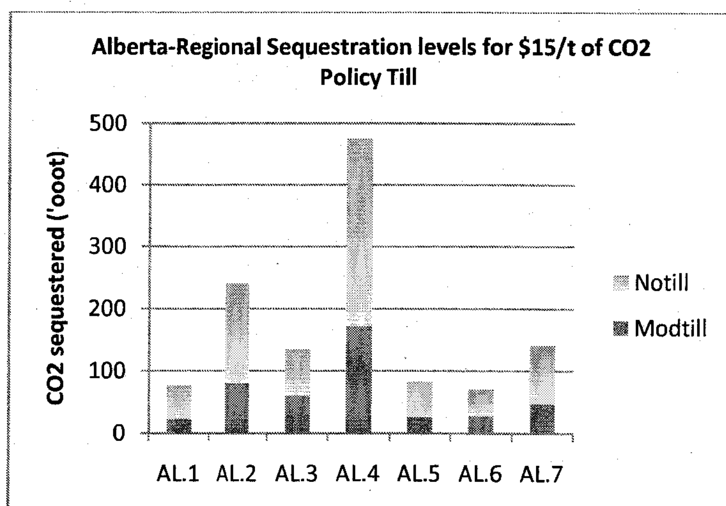


Fig.4.1.8

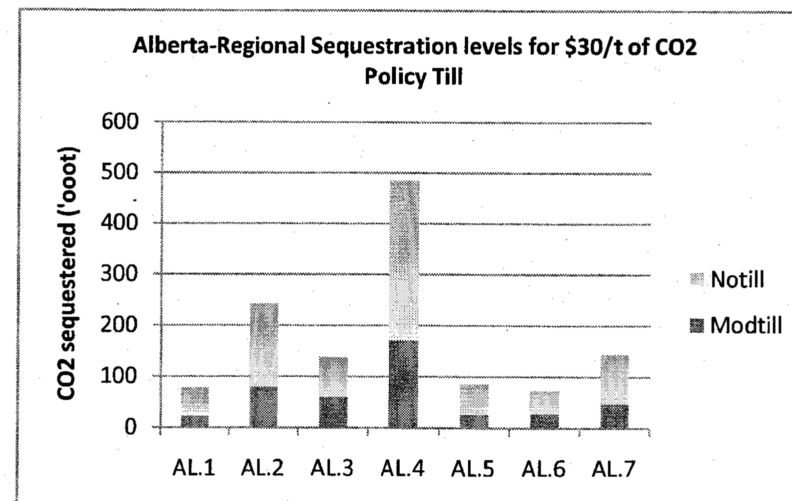


Fig.4.1.8

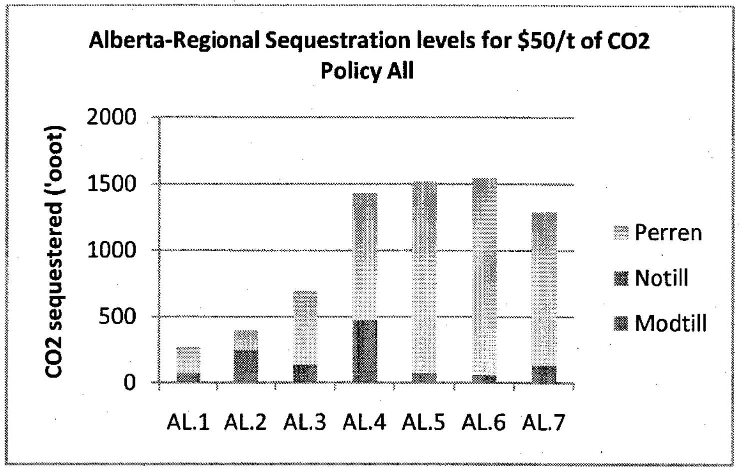


Fig.4.1.9

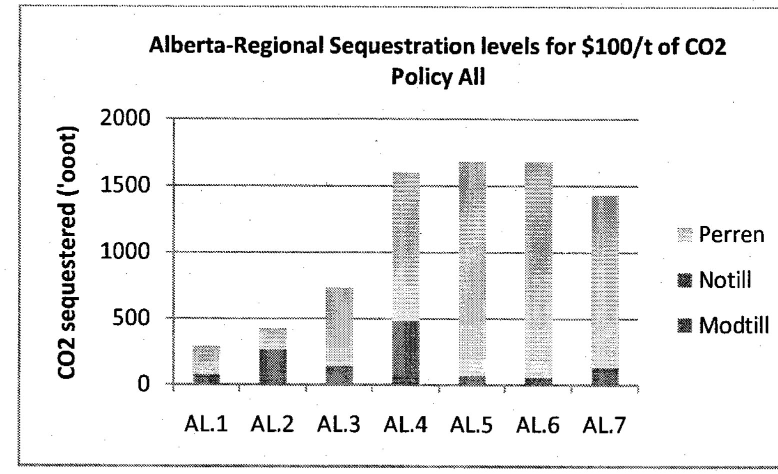


Fig.4.1.10

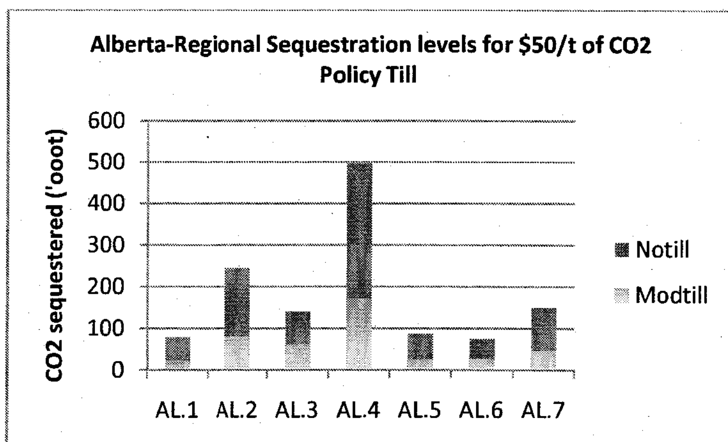
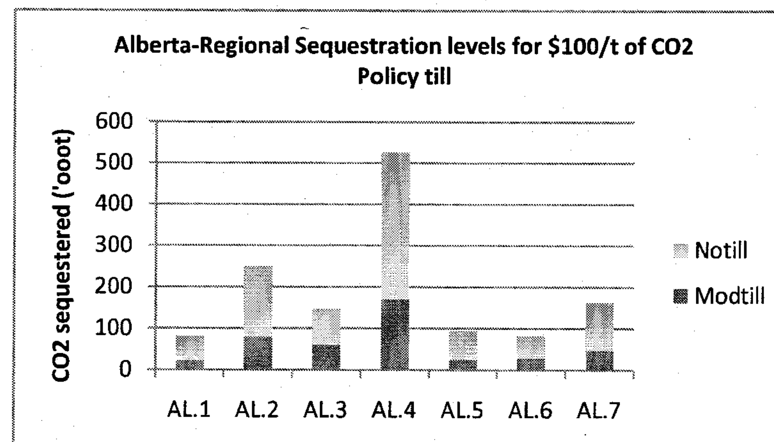


Fig.4.1.12



\$15/t of CO_2e, Alberta would sequester 6.4 Mt of CO_2, including the baseline and this increases to 7.8 Mt of CO_2 at a relatively high carbon credit price of \$100 /t of CO_2e.

When the carbon accounting includes only the change from the baseline, at a price of \$5/ t of CO_2, the province would sequester 0.007 Mt of CO_2 under Policy Till scenario and 0.148 Mt of CO_2 in the Policy All scenario. This dramatic decrease in the sequestration levels was because of the adoption rate of tillage in the baseline was approximately 50 percent under tillage. Under both of the policy scenarios, moderate till doesn't contribute to the sequestration and only no-till contributed to the sequestration levels in the Policy Till scenario. There is a shift towards perennial crops in the Policy All scenario where the contribution from perennial crops was 90 percent and the rest was coming from the no-till practice. The only deviation was with respect to crop region 2, where the share of no-till crops was approximately 22 percent in the baseline, which increases to 48 percent at a relatively high price of carbon. When practice changes were accounted for, crop region 2 contributes more from tillage than the other regions. This explains why crop region 2 was the least responsive with the perennial crops, as it accounted for its sequestration equally from tillage. Finally, at a carbon price of \$15/ t of CO_2e, Alberta would sequester between 0.35 Mt of CO_2e above the baseline and 1.7 Mt of CO_2 at a very high carbon price of \$100/ t of CO_2 under the Policy All scenario.

Saskatchewan

Saskatchewan, the major crop producing province, revealed interesting patterns with respect to sequestration. The distinct feature of Saskatchewan (Fig.4.4.13 to Fig.4.4.24) was the composition of sequestration levels with both policies. When only tillage is considered, the total carbon sequestered is approximately 3.1 Mt of CO_2e, including the baseline, at a medium price of carbon, while in the Policy All scenario it was estimated to be 6.3 Mt of CO_2e, roughly twice the amount in the Policy Till scenario. The carbon sequestration levels observed in this province as a result of the policy shift from Policy Till to Policy All reveals the relative importance of food crops in the province in addition to tillage. Also, the contribution was evenly distributed among all crop regions in the province unlike other provinces where one or two crop regions contributed a major share of the sequestration. The only exception was crop region 2, which contributed 2 percent

Fig.4.1.13

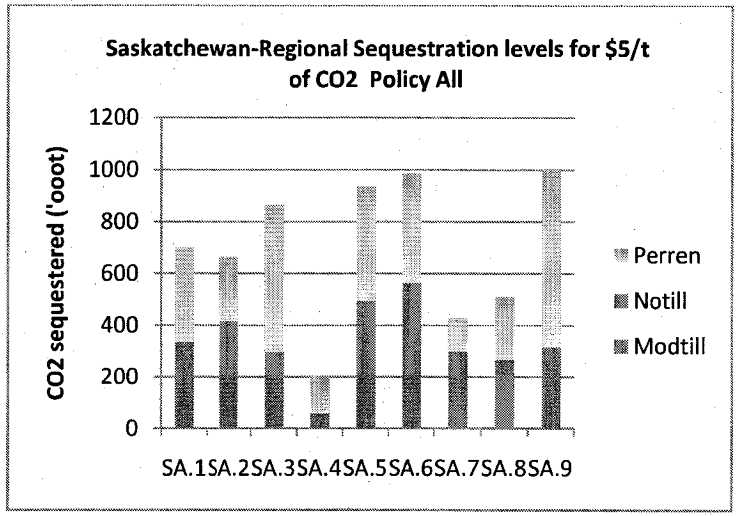


Fig.4.1.14

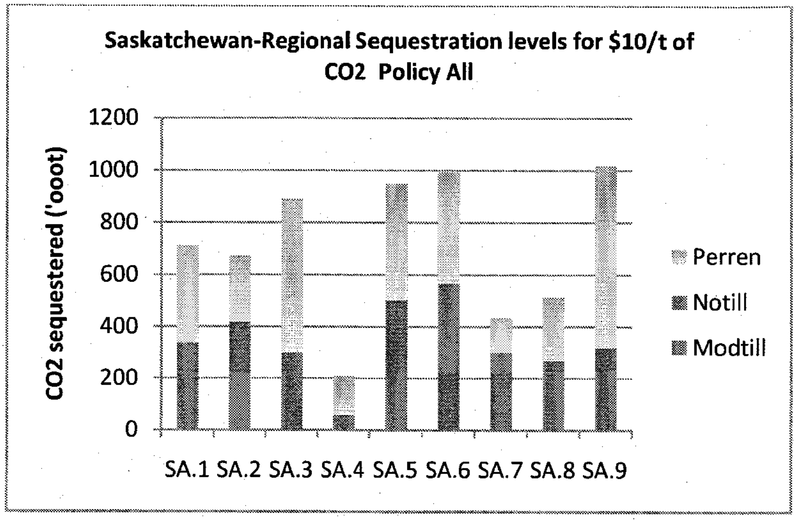


Fig.4.1.15

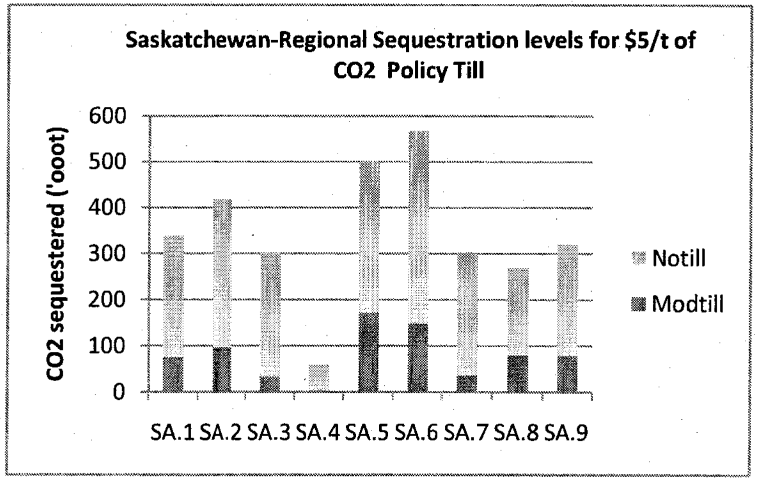


Fig.4.1.16

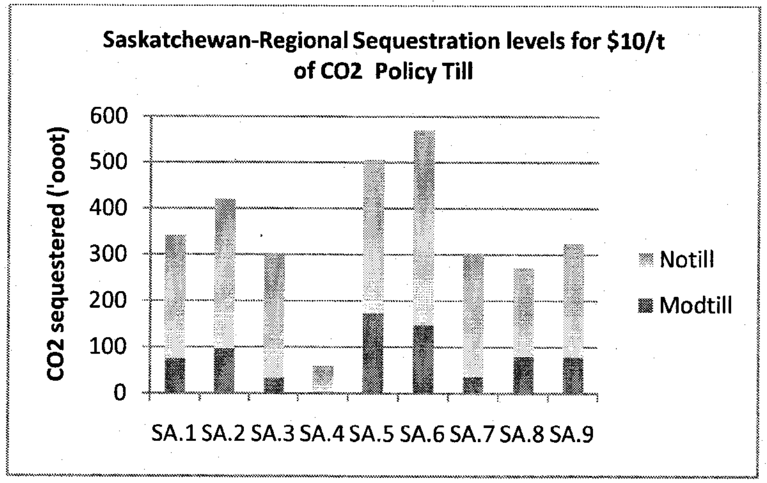
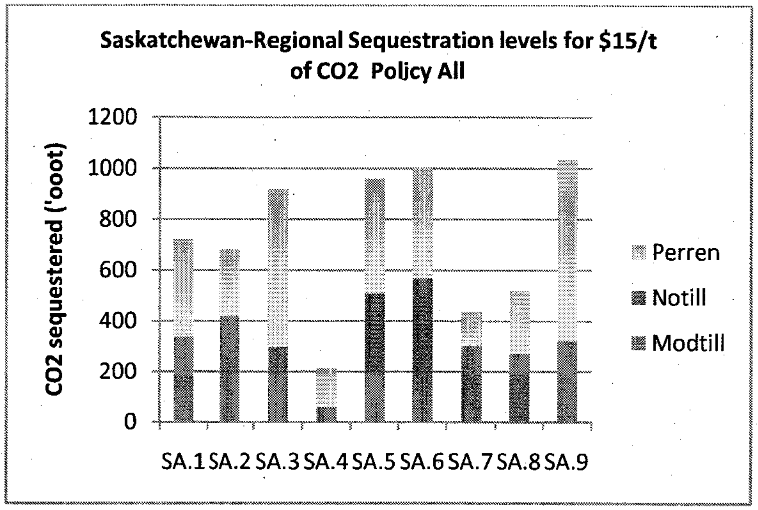


Fig.4.1.17



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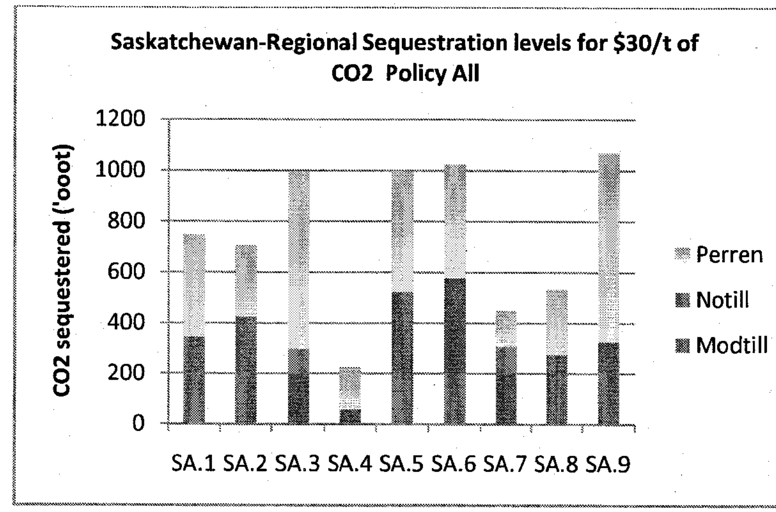


Fig.4.1.19

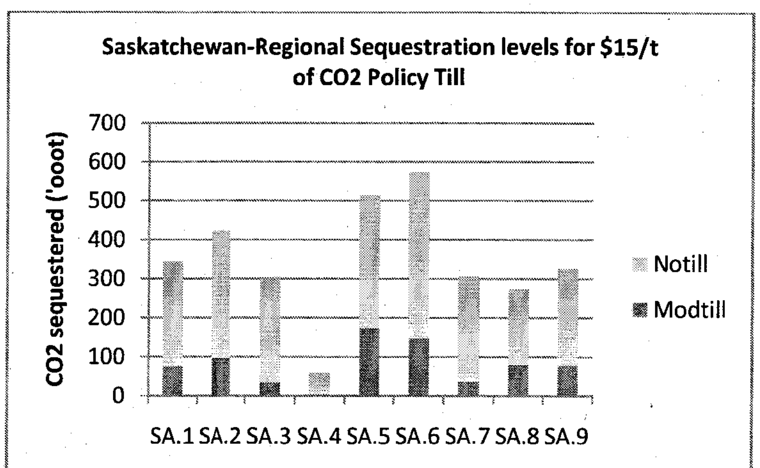


Fig.4.1.20

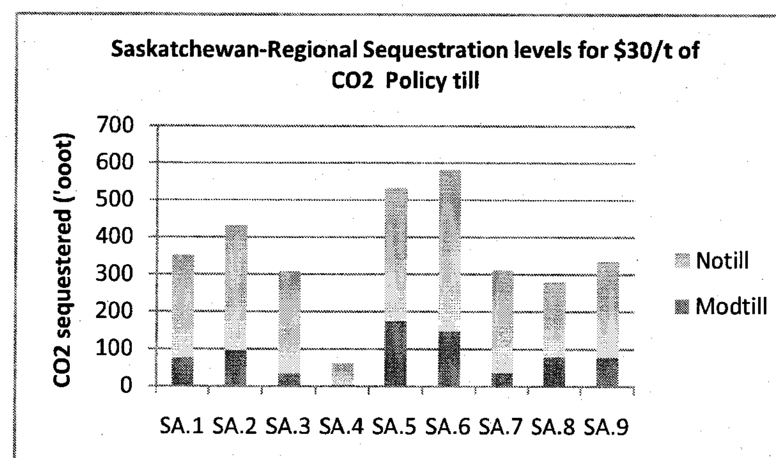


Fig.4.1.21

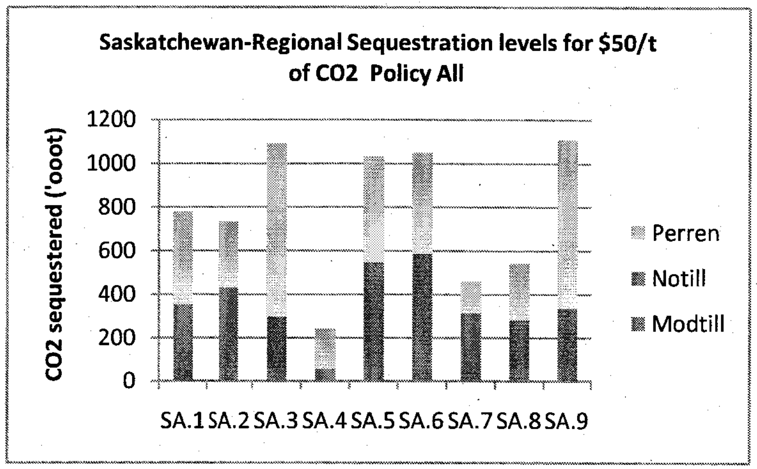


Fig.4.1.22

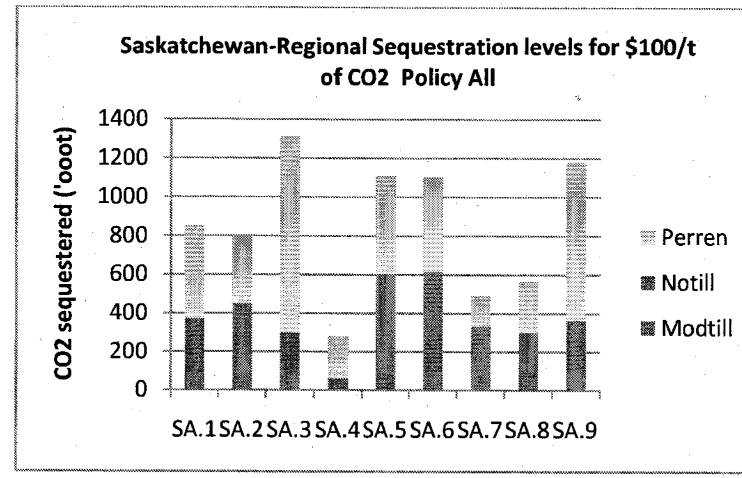


Fig.4.1.23

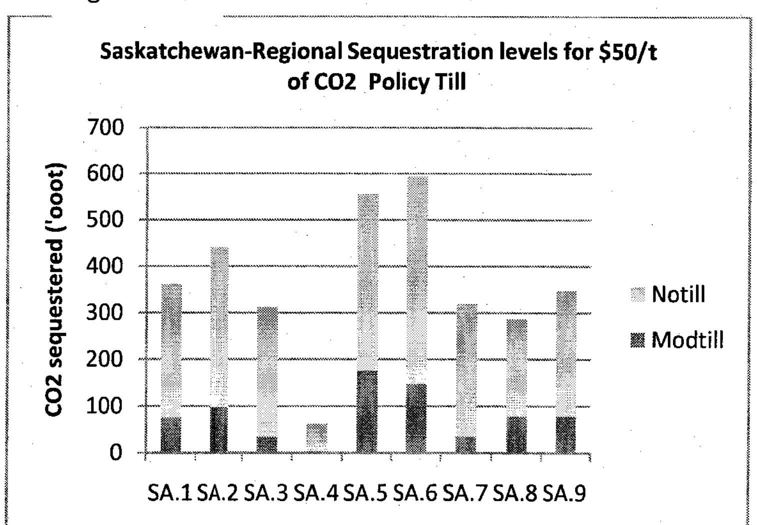
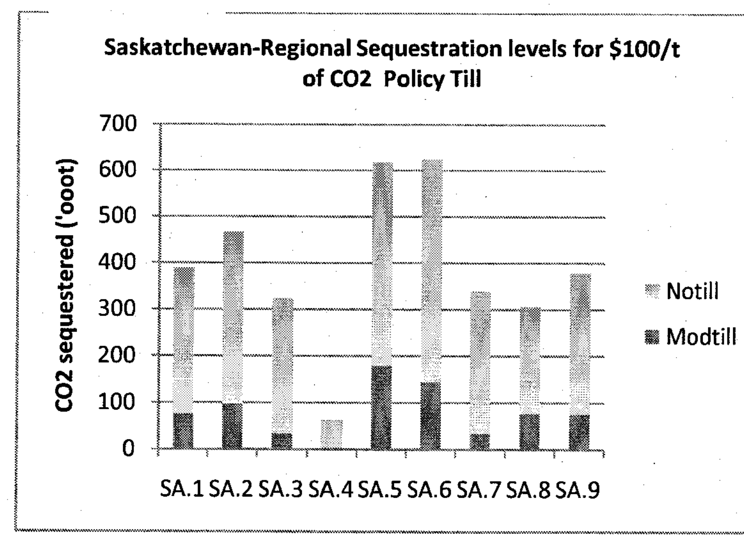


Fig.4.1.24



to the provincial carbon sequestration levels. Under the Policy Till scenario, sequestration from no tillage crops contributed 73 to 88 percent of the total carbon sequestration while in region 4 it went to as high as 91 percent. At a relatively high price of carbon \$100/ t of CO_2e, the total carbon sequestered was 3.5 Mt of CO_2e including the baseline, under the Policy Till scenario. The distribution of carbon under the Policy All scenario was 50 percent from perennial, 37.5 percent from no-till crops, and 11.5 percent from moderate till crops at a carbon price of \$5/ t of CO_2e. In regions 1, 3, 4, and 9 the contribution from perennial crops as a result of the carbon price, while in crop regions 2, 3, and 7, the contribution from no-till crops were relatively higher. This points to the diversity in carbon sequestration levels among sequestration practices that were a distinguishing feature of Saskatchewan compared to the other provinces.

The patterns differ when carbon changes accruing after a practice change was taken into consideration i.e. carbon changes above the baseline. In the Policy Till scenario, crop region 5 attributed more to the provincial sequestration compared to other regions. In this scenario, the province exhibited the same pattern as other provinces, with no-till contributing a major share towards sequestration. The lowest share was from crop region 4 in the province, while all other crop regions contributed equally. Only crop region 2 had contributions from moderate tillage towards the provincial sequestration levels and the same pattern followed with the carbon price increments. Under the Policy All scenario, regions 5, 6, 7, and 8 were responsive to tillage even when perennial crops were considered, and this is reflected in the sequestration levels. As the price increases, contributions from perennial crops decreased and the no-till contribution towards sequestration increased. Provincially, at a medium price of \$15/ t of CO_2e, Policy All and Policy Till sequestered 0.33 Mt of CO_2e and 0.07 Mt of CO_2e respectively above the baseline.

Manitoba

In response to a carbon market, the carbon sequestration levels (Fig.4.4.25 to Fig.4.4.36) ranged from 0.5 Mt of CO_2 with the Policy Till scenario, and 2 Mt of CO_2 with the Policy All scenario, when carbon is priced at \$5/ t of CO_2 and including the baseline. Regionally, 80 and 55 percent of the total CO_2 sequestered under the Policy Till and Policy All

Fig.4.1.25

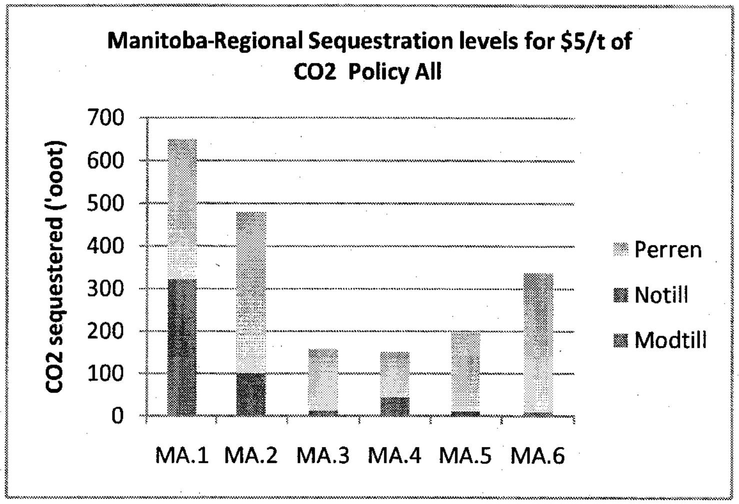


Fig.4.1.26

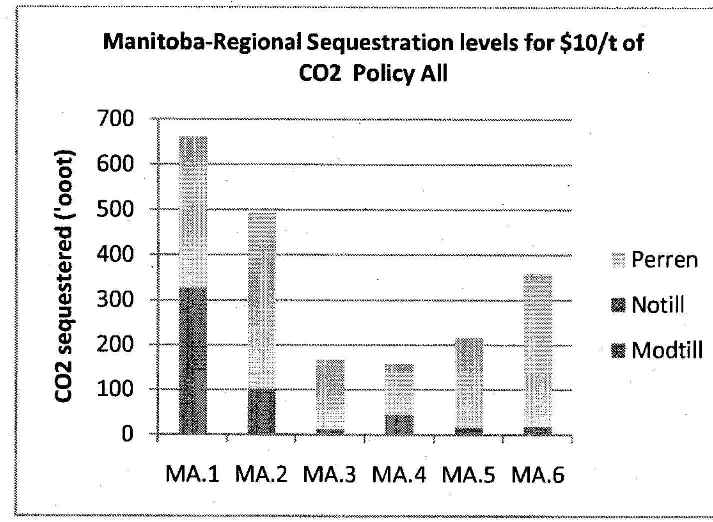


Fig.4.1. 27

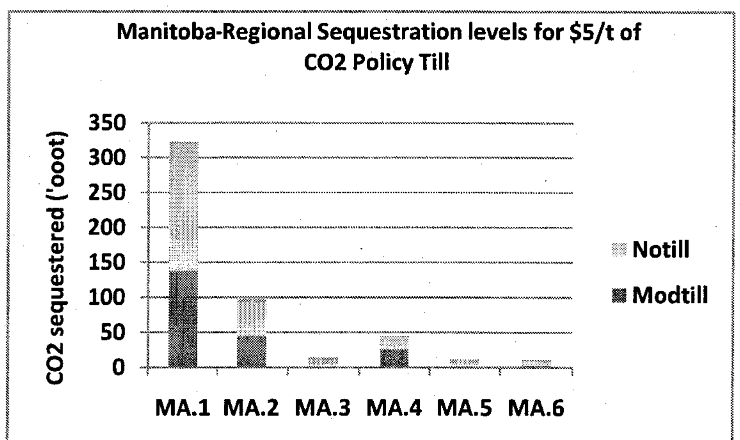
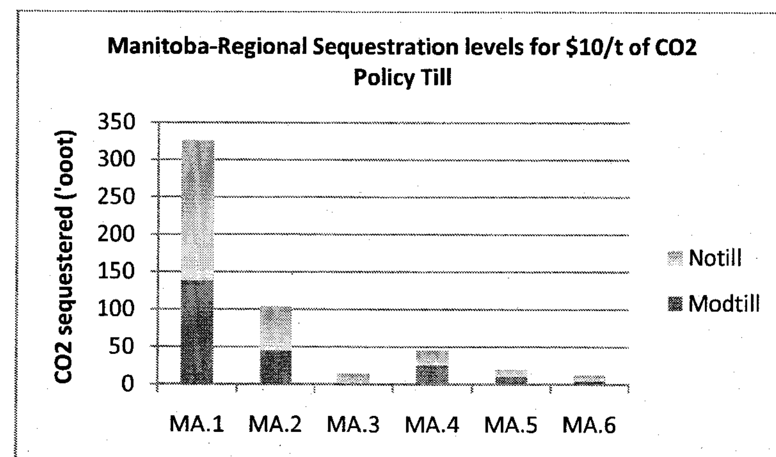


Fig.4.1.28



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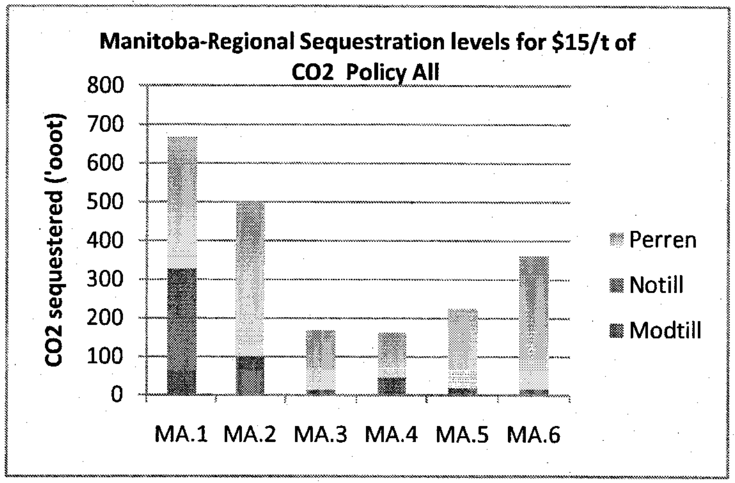


Fig.4.1.30

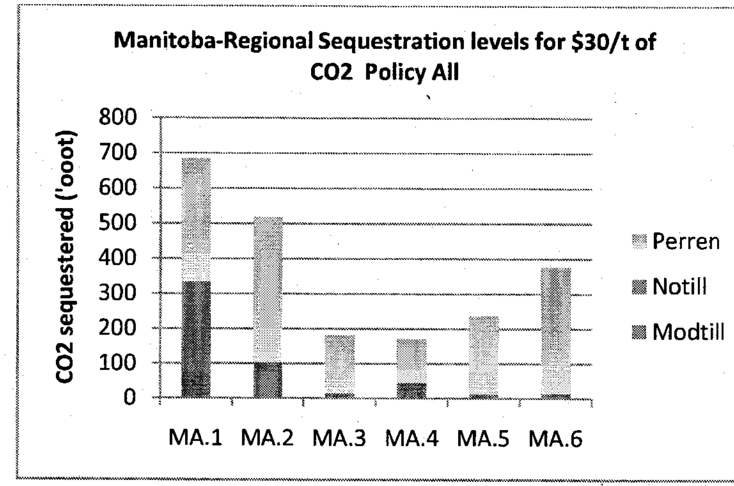


Fig.4.1.31

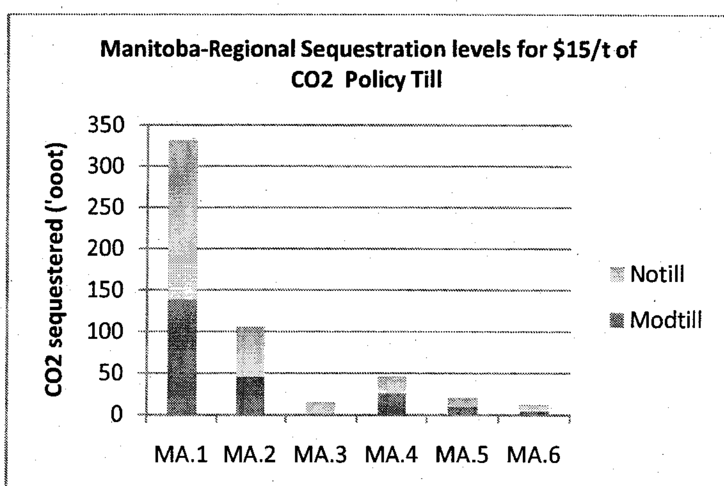


Fig.4.1.32

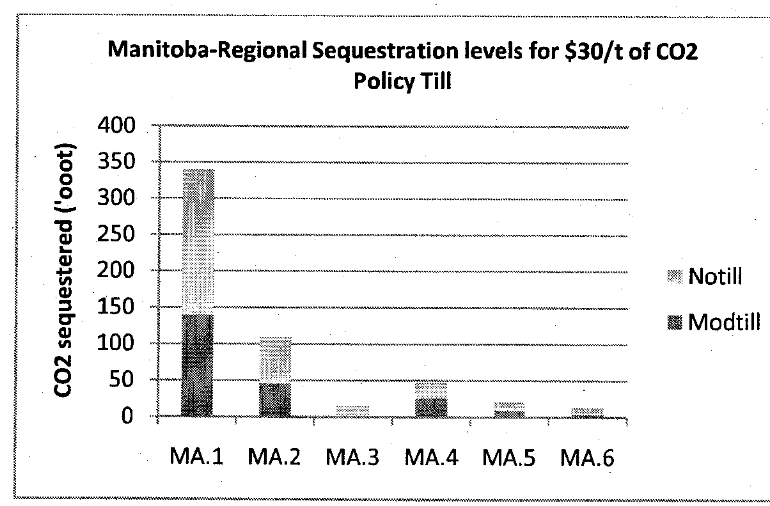


Fig.4.1.33

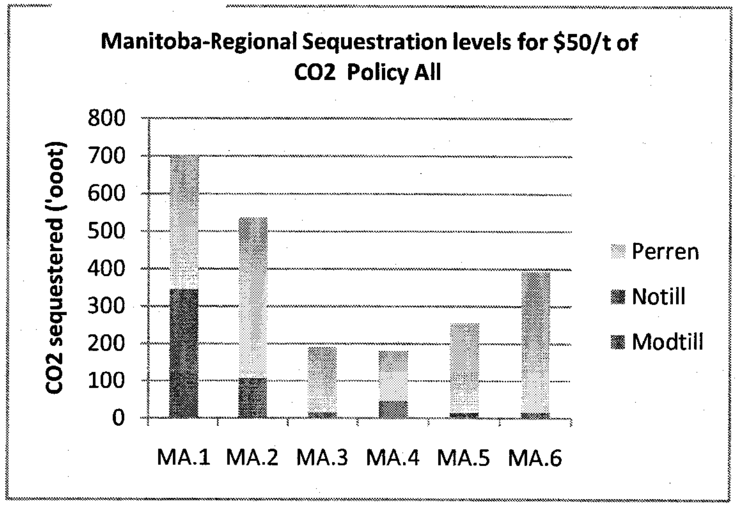


Fig.4.1.34

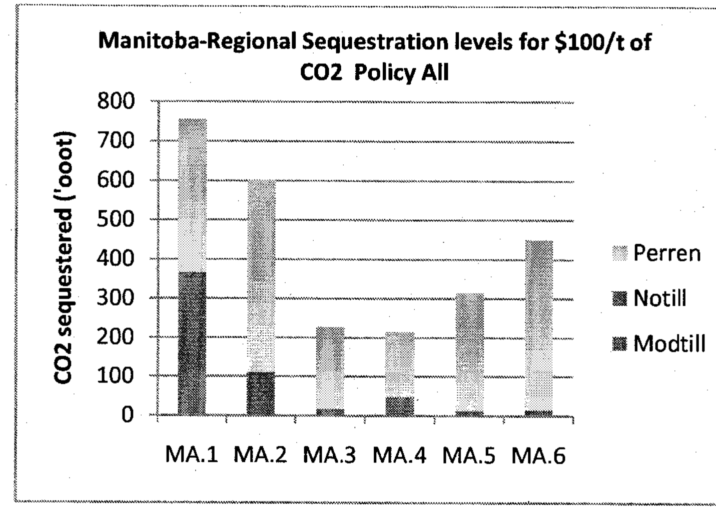


Fig.4.1.35

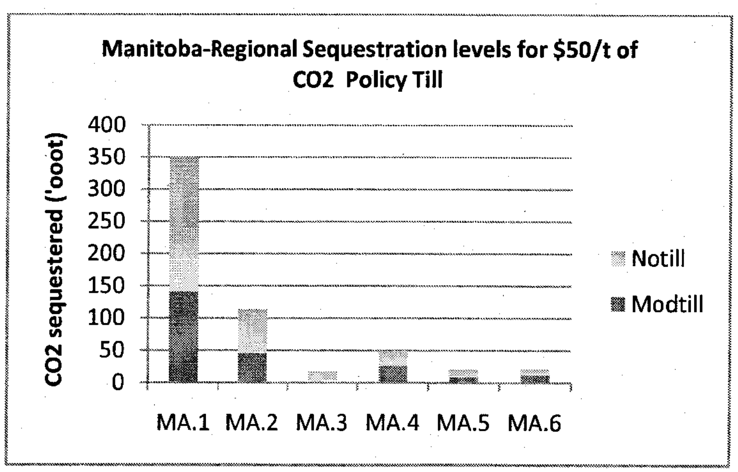
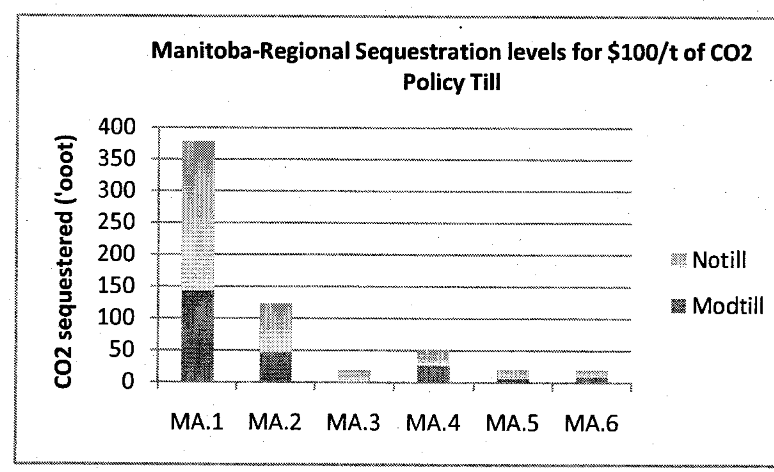


Fig.4.1.36



scenarios came from crop regions 1 and 2. In crop region 3, the carbon coefficients were negligible so carbon sequestration from moderate till was zero. Also, in crop region 4, the share of carbon sequestration from moderate till was higher than no-till in the Policy Till scenario. The same pattern of having more carbon from moderate till when compared to no-till was also observed when the policy scenario shifts to Policy All. In crop regions 3, 5, and 6 under the Policy All scenario, more than 90 percent of the carbon comes from perennial crops. The crop regions that contribute the most to the carbon sequestration provincially, such as crop region 1, had half of the total sequestration coming from perennial crops while the other 50 percent was shared in a slightly skewed pattern towards no-till when compared to moderate tillage. At a medium price, carbon sequestration levels were 2.1 Mt of CO_2 to and 2.5 Mt of CO_2 under Policy Till and Policy All scenarios respectively including the baseline amounts.

Considering carbon accruing only from a practice change, at a carbon price of $5/ t of CO_2e, the amount of carbon sequestered was 0.014 Mt of CO_2 in Policy Till and 0.04 Mt of CO_2e under the Policy All scenario. Different patterns of total carbon sequestration levels occur at low carbon prices. Under a low carbon price, with the Policy Till scenario, crop regions 5 and 6 contributed a major share of the carbon sequestration, but as carbon price increases the pattern changed. At a relatively high price of carbon, crop regions 1 and 2 provided the highest carbon sequestration. Another distinguishing feature was observed in crop regions 5 and 6 where contributions to sequestration from moderate till was much higher than with no-till crops at low prices. At high prices, the proportion of carbon coming from no-till and moderate till was approximately 60:40 in most regions. In the case of the Policy All scenario, the contribution to sequestration from all the crop regions was equal at all carbon price levels. The contribution from perennial crops was higher, in the range of 90 percent, with the exception of region 1. At higher carbon price levels, the share from no-till in the region equaled the share from the perennial crops. Another pattern observed was when the carbon price increased, the contribution from perennial crops decreased and tillage increased. Accounting for these crop region differences and movement from the baseline, the amount of carbon sequestered was estimated to be 0.023 Mt of CO_2 and 0.109 Mt of CO_2 respectively from Policy Till and Policy All scenarios, at a medium carbon price of $15/ t of CO_2e.

Ontario

In Ontario (Fig.4.4.37 to Fig.4.4.48), due to the zero value of the carbon coefficients for moderate till in crop regions 5, 7, 8, and 10, moderate till contribution was zero to the provincial sequestration levels even under the Policy Till scenario. With a carbon price of \$5/t of CO_2e and including the baseline the province would sequester 0.315 Mt of CO_2e, and 3.325 Mt of CO_2e if perennial crops were included in the policy in addition to tillage. At a carbon price of \$5/ t of CO_2e under Policy Till, crop regions 1 and 2 contributed 60 percent of the carbon, while crop regions 7, 8, and 10 contributed less to the provincial carbon sequestration. Under the Policy All scenario, with the exception of crop regions 1, 2, and 3; all the other regions had more than 90 percent of the carbon sequestration coming from perennial crops. By contrast, crop region 1 contributed 23 percent of its carbon from perennial crops while moderate and no-till contributed 61 and 15 percent respectively at a carbon price of \$5/t of CO_2e. As carbon price increases, from very low to very high, there was a decrease in the sequestration levels from perennial crops and an increase from tillage crops in most regions. The total potential of carbon at a price of \$15/ t of CO_2e including the baseline was 3.387 Mt of CO_2, while at a very high price it was 3.903 Mt of CO_2e under the Policy All scenario.

Carbon changes due to practice change were minimal in Ontario. At a medium price of \$15/t of CO_2e, Policy Till and Policy All sequestered 0.003 Mt of CO_2 and 0.112 Mt of CO_2e respectively above the baseline. Crop regions 1, 2, and 3 contributed 85 percent of the carbon sequestered under the tillage regime. One distinguishing pattern noted in Ontario was that moderate till contributed 3 to 10 percent of the provincial sequestration varying between regions. But carbon changes were relatively small in real terms, ignoring the percentages. Under the Policy All scenario, with the exception of crop region 1, all other areas contributed to carbon sequestration only from perennial crops. Under the Policy All scenario major shares of the sequestration came from regions 5, 8, 9, and 10, while other regions contributed equally towards the provincial sequestration across price levels.

Fig.4.1.37

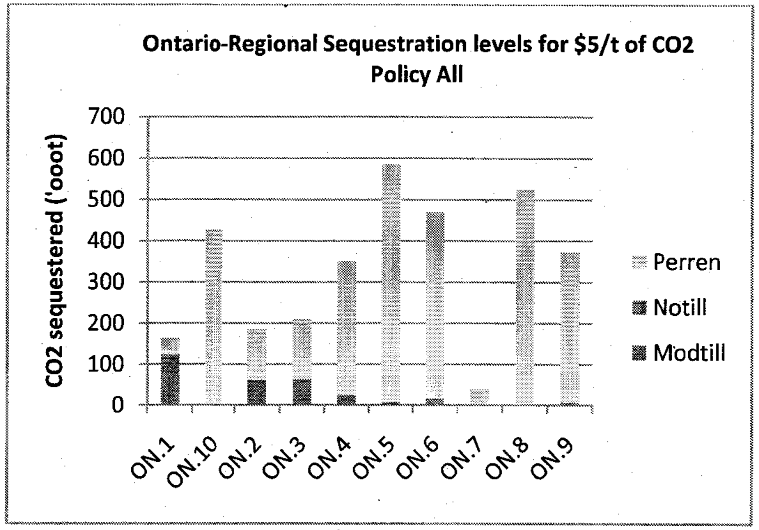


Fig.4.1.38

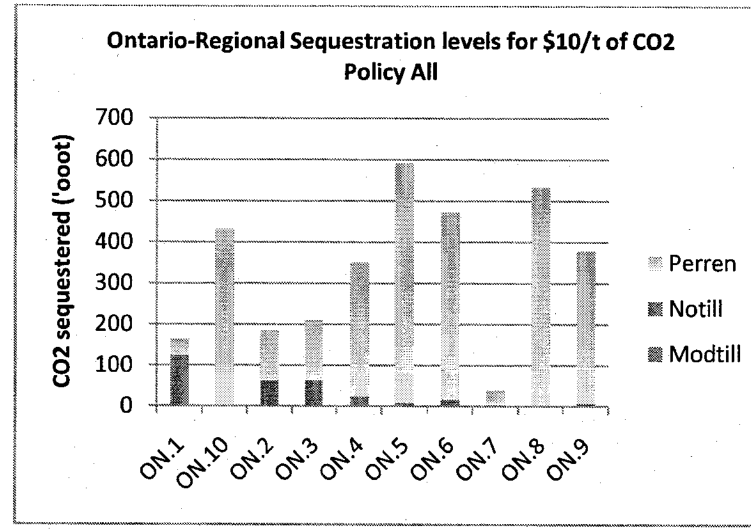


Fig.4.1.39

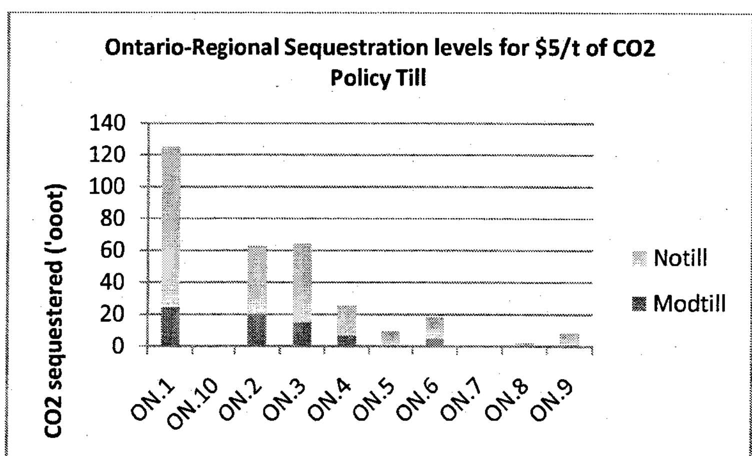


Fig.4.1.40

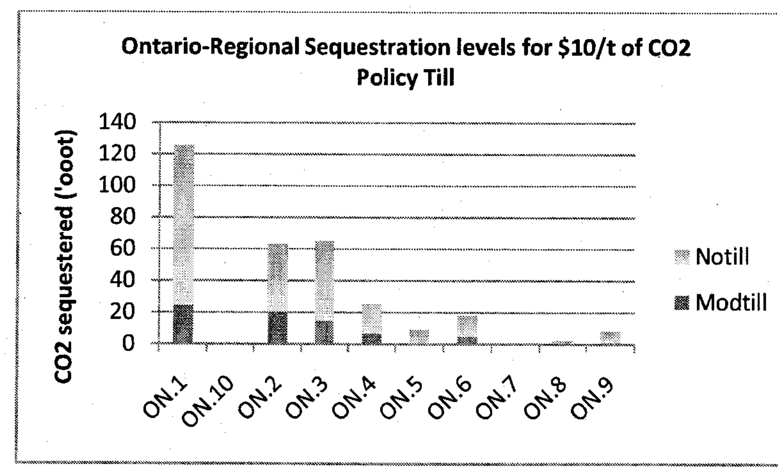


Fig.4.1.41

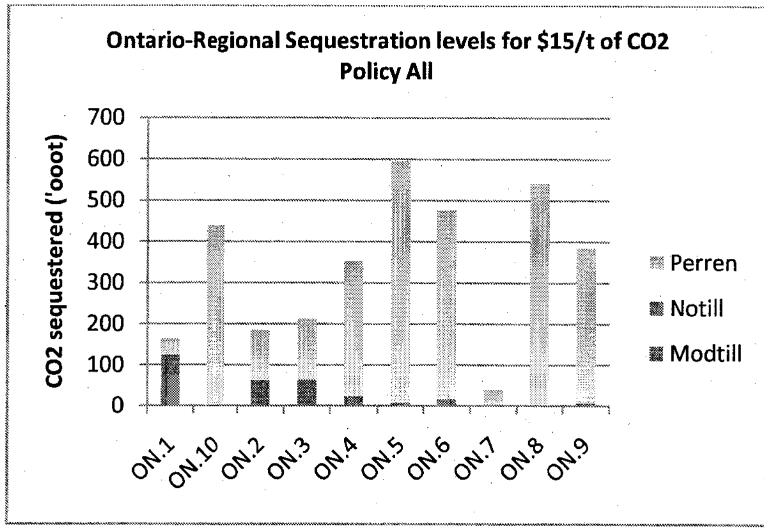


Fig.4.1.42

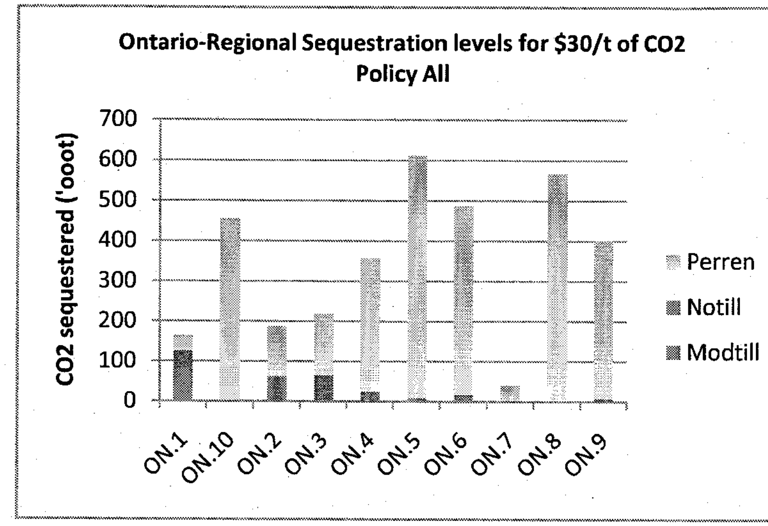


Fig.4.1.43

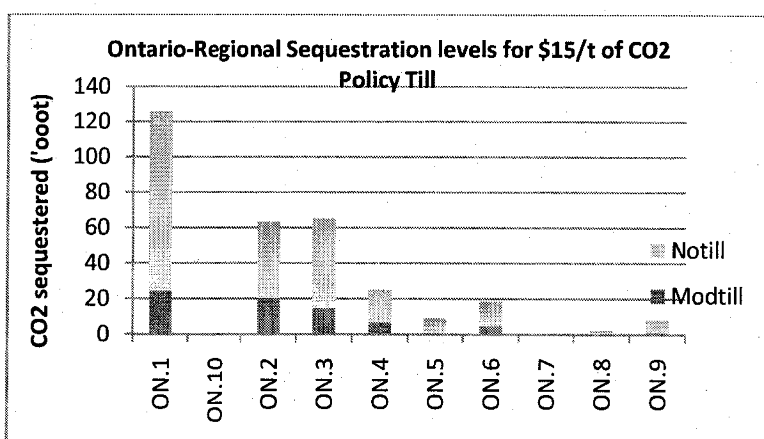


Fig.4.1.44

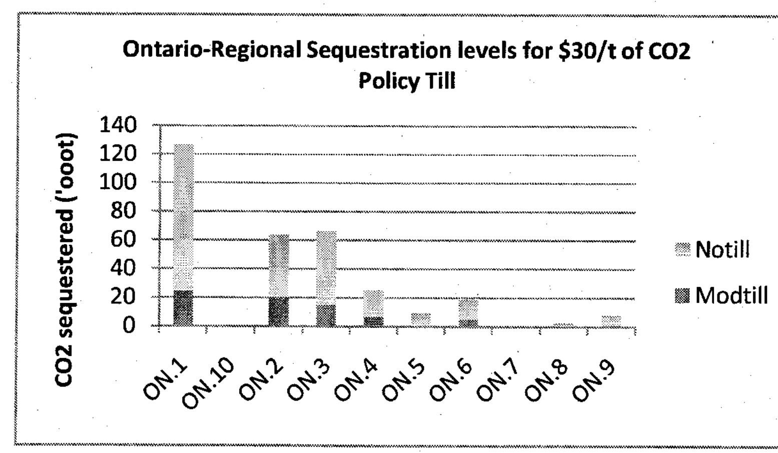


Fig.4.1.45

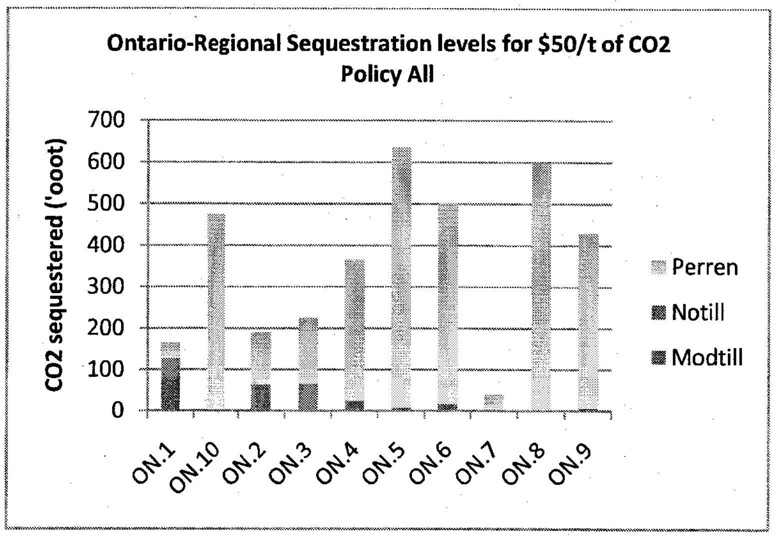


Fig.4.1.46

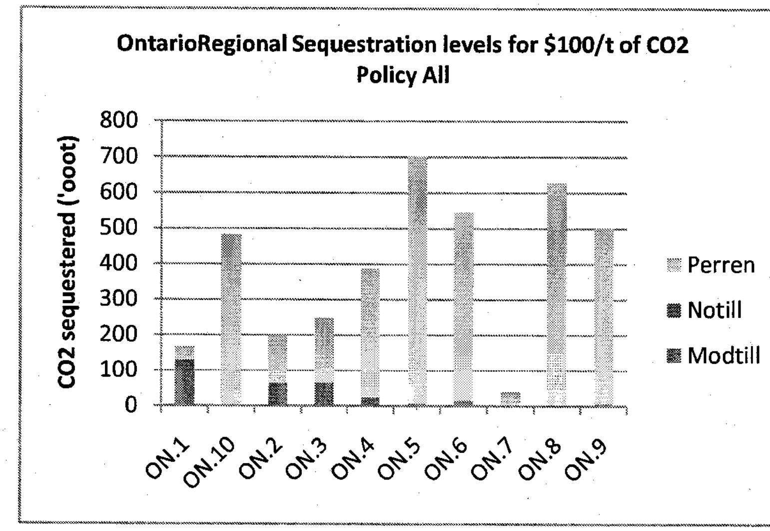


Fig.4.1.47

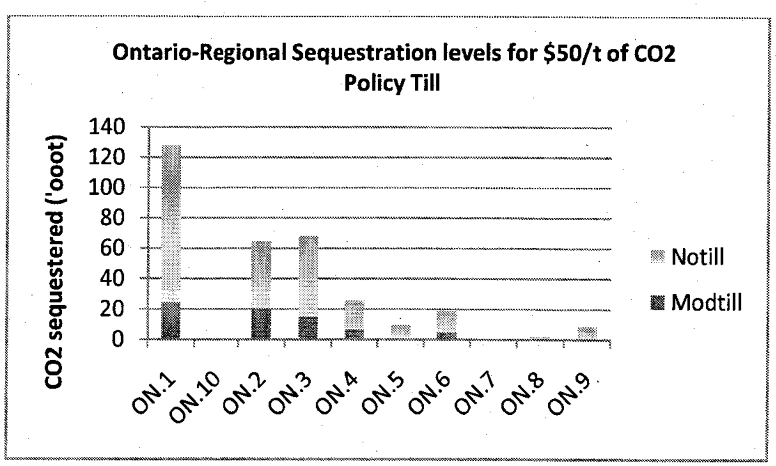
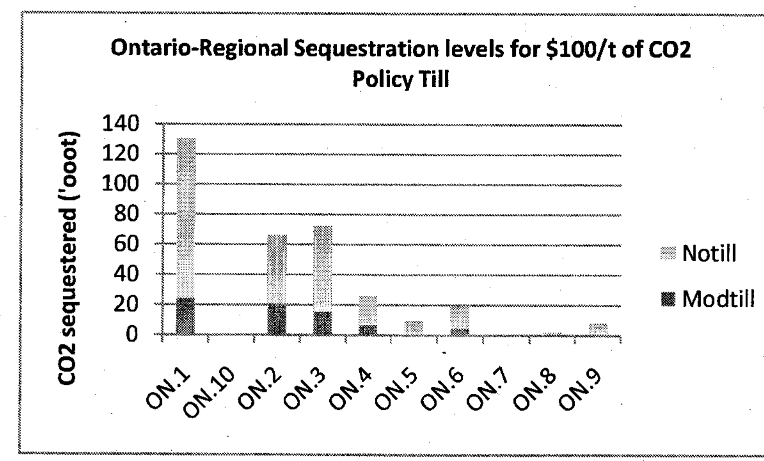


Fig.4.1.48



Quebec

In Quebec the crop acreages under tillage and the adoption rate of tillage practices were very small. This same trend was seen in the sequestration levels of the regions (Fig.4.4.49 to Fig.4.4.60). With at a carbon price of \$15/ t of CO_2e only 0.042 Mt of CO_2e was sequestered under the Policy Till scenario, including the baseline which was the lowest among for a major crop growing province. Unlike other provinces, sequestration from moderate till crops was higher than from no-till crops. The carbon coefficients were higher for moderate till crops than no-till crops, and this influenced the results in the model. Crop regions 9, 10, and 11 contributed more towards the carbon sequestration levels providing 65 percent of the provincial carbon sequestration. With the exception of crop regions 8 and 9, contributions from moderate till were higher than no-till towards carbon sequestration levels. Under the Policy All scenario, all of the crop regions had more than 94 percent of the carbon sequestration from perennial crops. This suggests that Quebec contribution towards the national GHG emission reduction goal will be very small from sequestration when only tillage is counted. The inclusion of perennial crops as a mitigation strategy is important in Quebec. The results were consistent with a study done by Morand and Thomassin (2006) for Quebec.

Under practice changes, Quebec was the lowest carbon reducing province, among the major crop provinces. At a medium price of \$15/ t of CO_2e, Quebec would sequester 0.122 Mt of CO_2e when only tillage is considered as a mitigation strategy including the baseline. Under the tillage regime, crop regions 9, 10, and 11 contributed 60 percent of the provincial sequestration levels. The distinction was seen when only carbon changes were accounted for, where no-till has a higher contribution than moderate till, with the exception of crop region 3. At higher carbon prices, crop regions 5, 6, and 7 had higher contributions from moderate till than no-till, but collectively they equate to only 6 percent of the provincial sequestration total. Under the Policy All scenario, tillage contributions were nil even at very high prices of carbon. In total, Quebec would sequester 0.122 Mt of CO_2e under the Policy All scenario, at a carbon price of \$15/ t of CO_2e above the baseline.

Fig.4.1.49

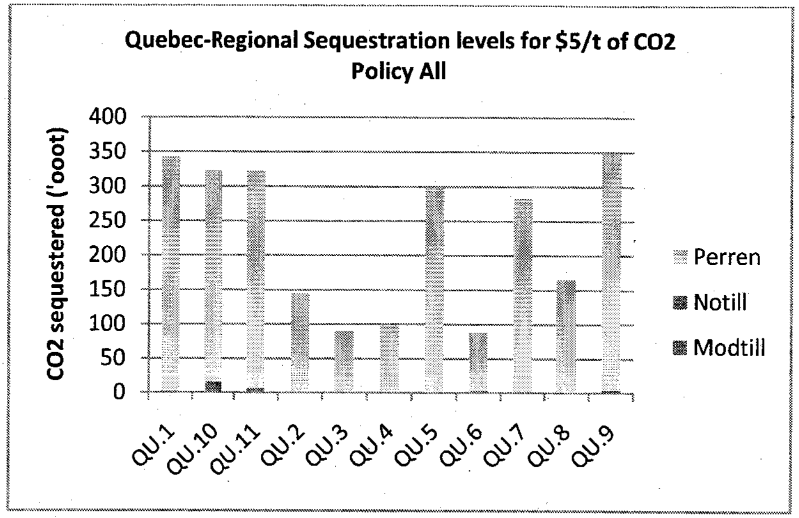


Fig.4.1.50

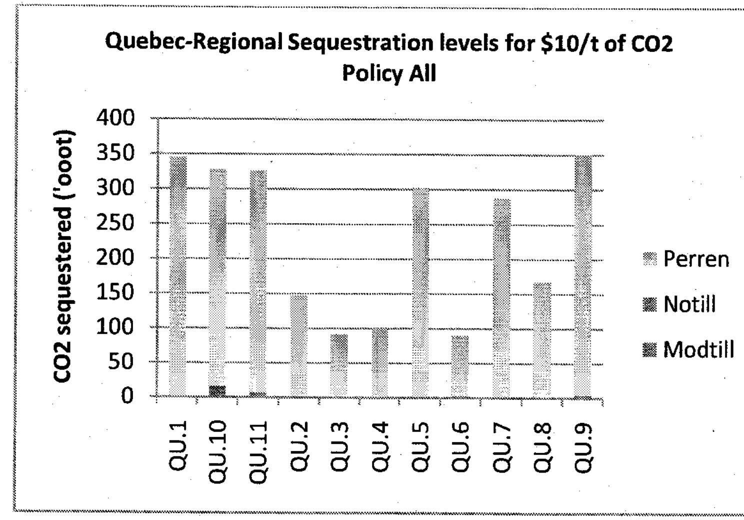


Fig.4.1.51

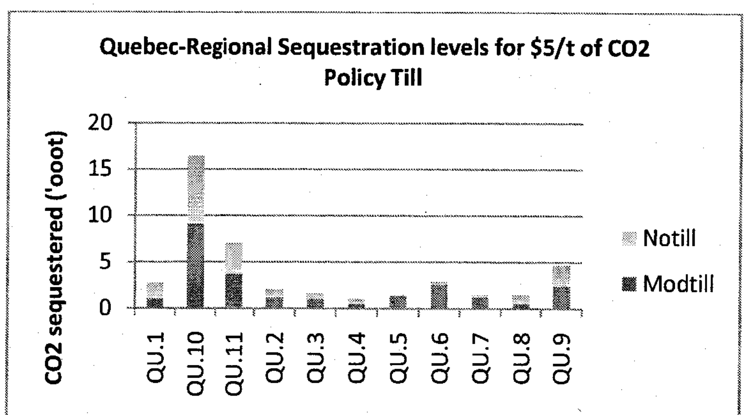


Fig.4.1.52

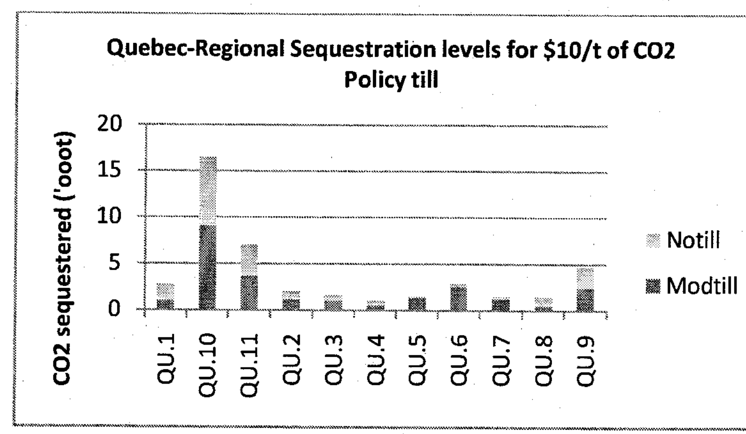


Fig.4.1.53

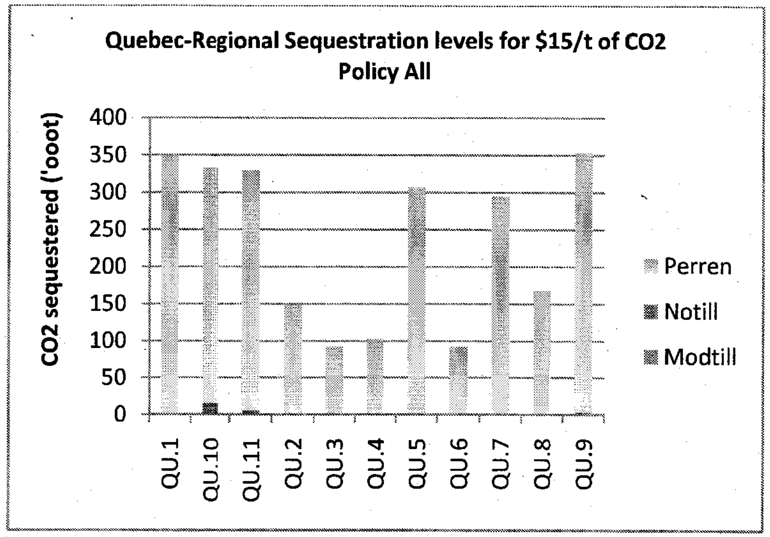


Fig.4.1.54

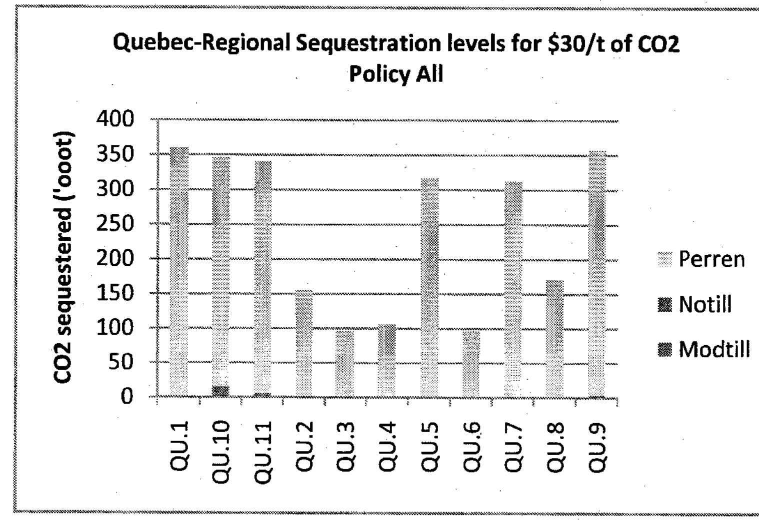


Fig.4.1.55

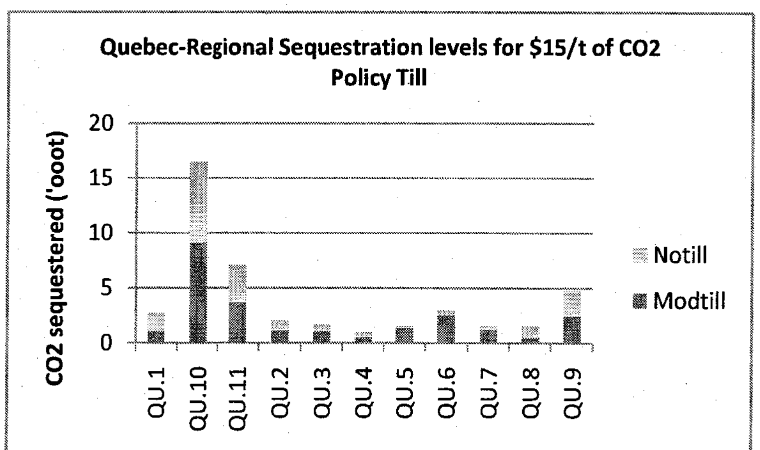


Fig.4.1.56

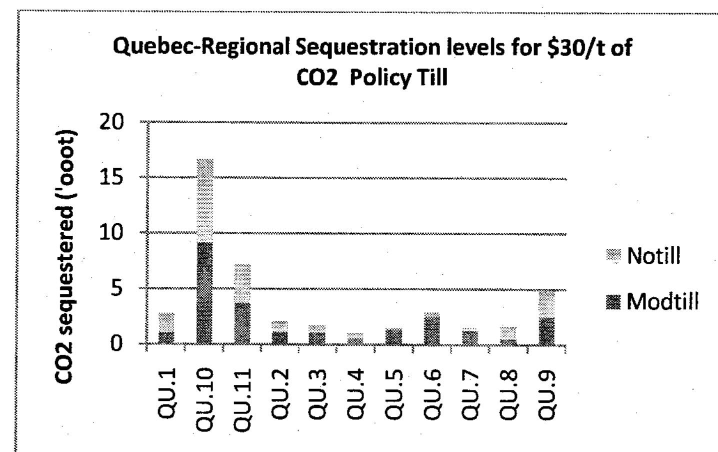


Fig.4.1.57

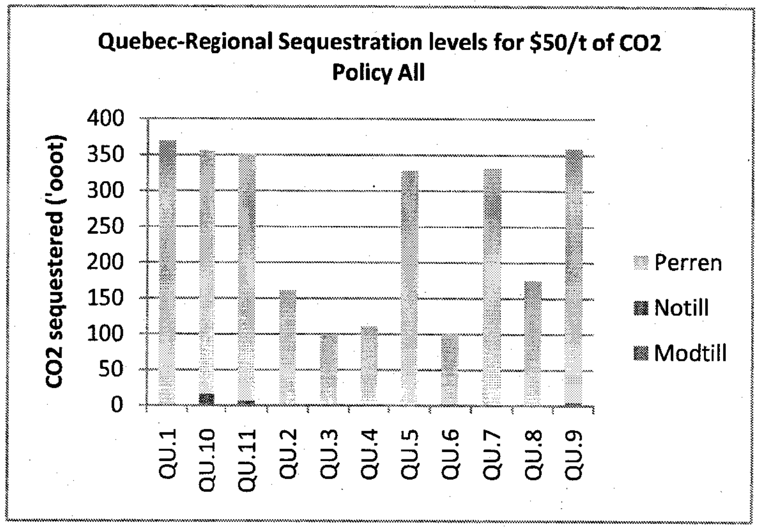


Fig.4.1.58

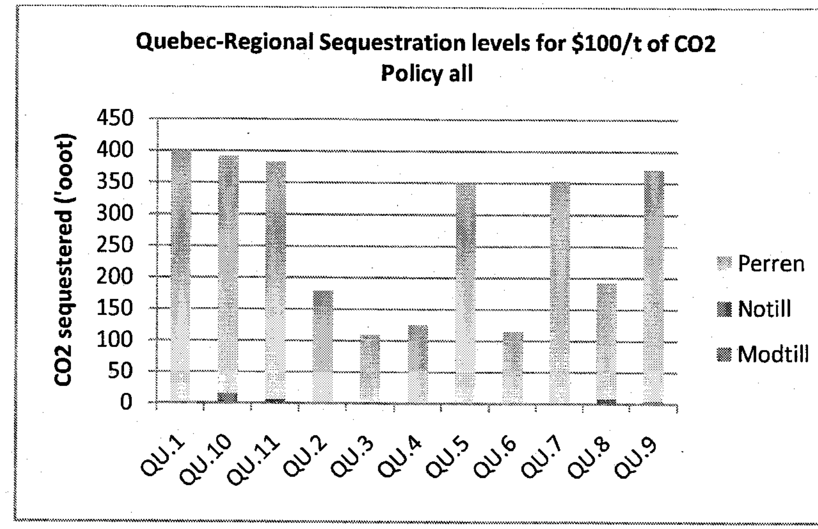


Fig.4.1.59

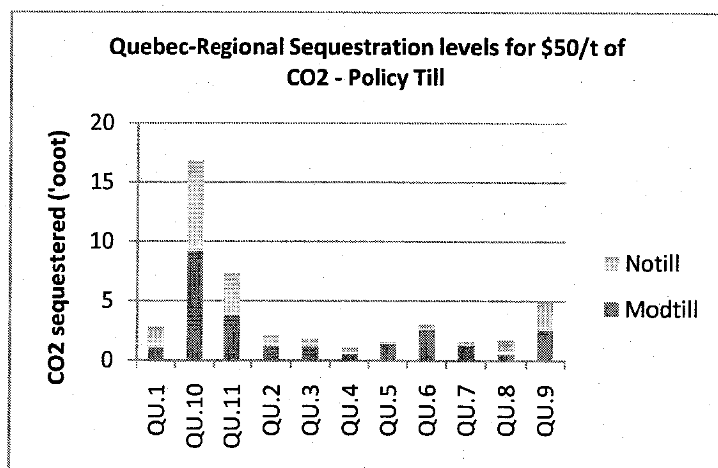
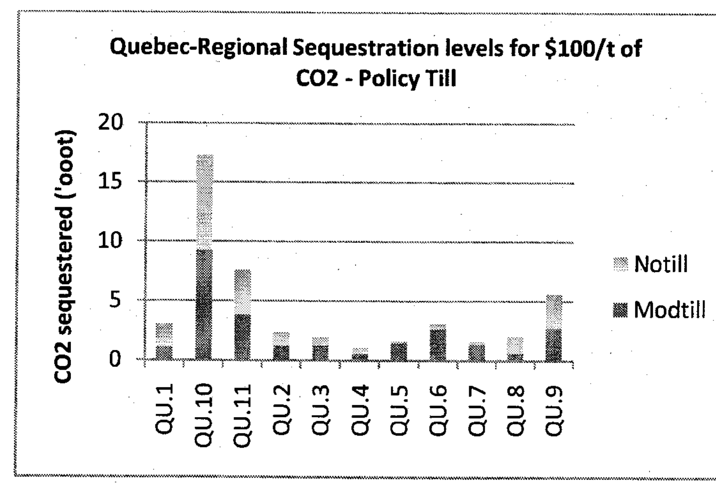


Fig.4.1.60



Other provinces

Since tillage was not accounted for in these provinces, only the Policy All scenario was considered in the analysis. In British Columbia (Fig.4.4.66), the provincial total carbon sequestration was approximately 0.7 Mt of CO_2e at a low carbon price, while it reached a high of 0.84 Mt of CO_2e at a high carbon price. Among the regions in British Columbia Region 8 contributed more than 50 percent of the provincial sequestration. The other provinces (Fig.4.4.67) had relatively minor sequestration levels, with Newfoundland being the lowest among all the provinces. When estimating changes from the baseline, the other provinces including British Columbia can sequester 0.06 Mt of CO_2e when carbon was priced at $15/t of CO_2e.

National levels

Nationally, the crop sector would sequester 5.2 Mt of CO_2e and 22.27 Mt of CO_2e (Fig.4.4.68) respectively from Policy Till and Policy All scenarios at a carbon price of $15/t of CO_2e including the baseline. When only tillage is considered, the Prairie Provinces of Alberta, Saskatchewan, and Manitoba contributed 23, 60, and 10 percent to the national sequestration total. Quebec and Ontario collectively contributed seven percent to the national total. As the price of carbon increased, there was a relatively smaller increase in the sequestration levels in Alberta, Ontario and Quebec. When perennial crops and tillage are considered, the simulation results indicated that sequestration levels ranged from 22.27 Mt of CO_2e to 26.48 Mt of CO_2e including the baseline for medium and high prices of carbon. In this scenario the Prairie Provinces contributed 59 percent of the total national sequestration, while Ontario and Quebec contributed 11 and 15 percent.

The amount of carbon sequestration decreases when only changes from current practices are accounted for i.e. changes from the baseline. Nationally, at a medium carbon price of $15/ t of CO_2e, approximately 1.08 Mt of CO_2e can be sequestered under Policy All scenario with sequestration reaching 1.98 Mt of CO_2 at a carbon price of $30/ t of CO_2e. The Prairie Provinces still provide the major portion of the carbon sequestration. However an important deviation was noted, Alberta had higher sequestration levels than

Fig.4.1.61

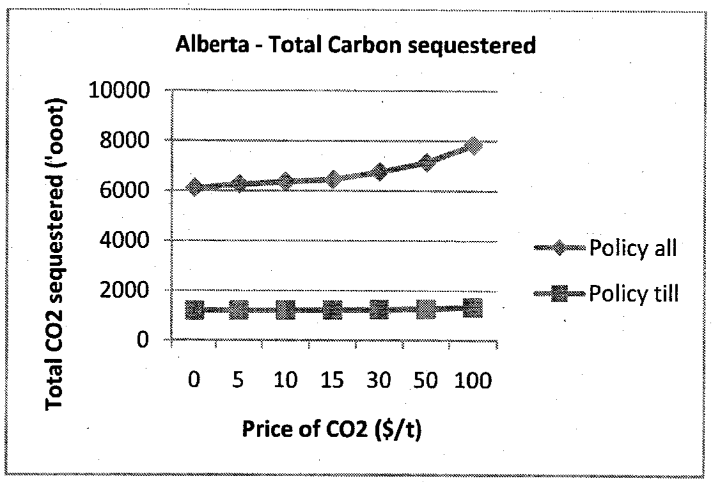


Fig.4.1.62

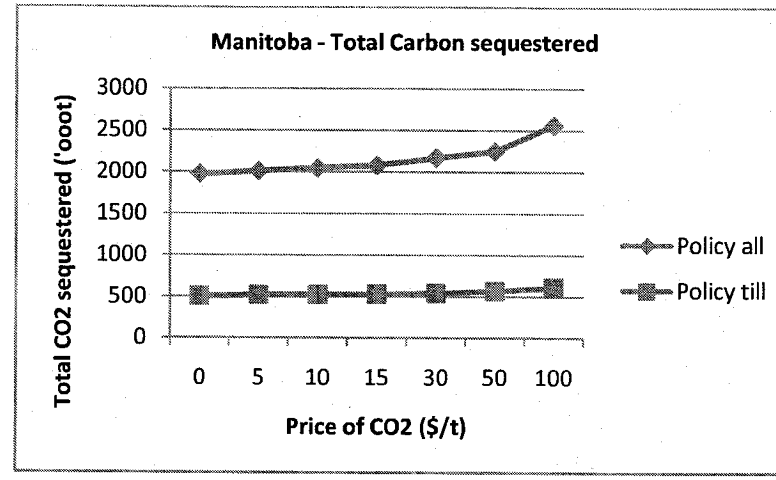


Fig.4.1.63

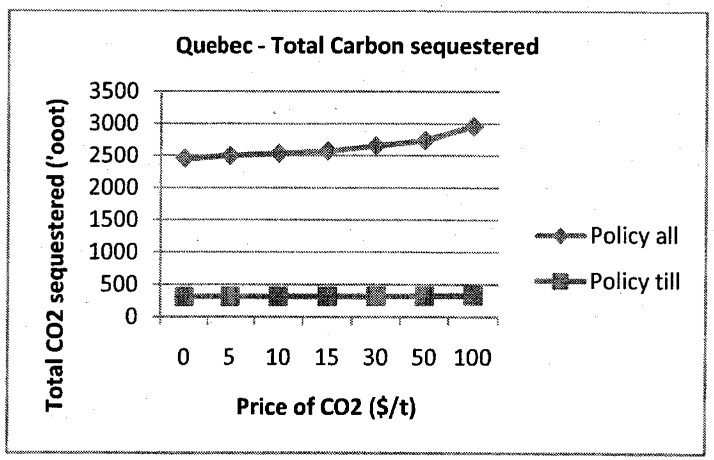


Fig.4.1.64

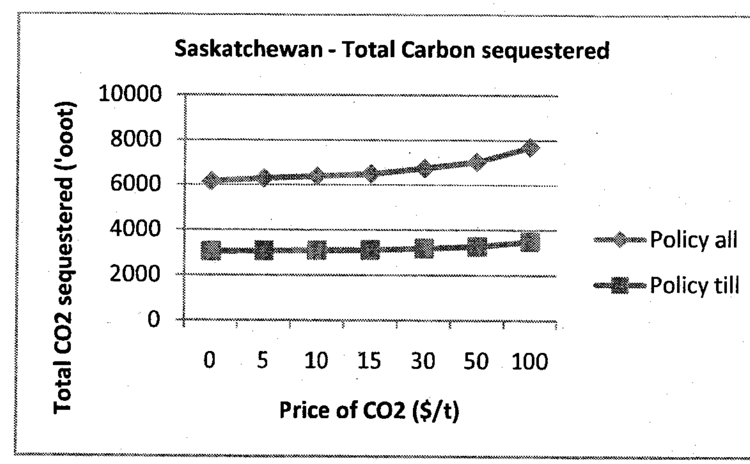


Fig.4.1.65

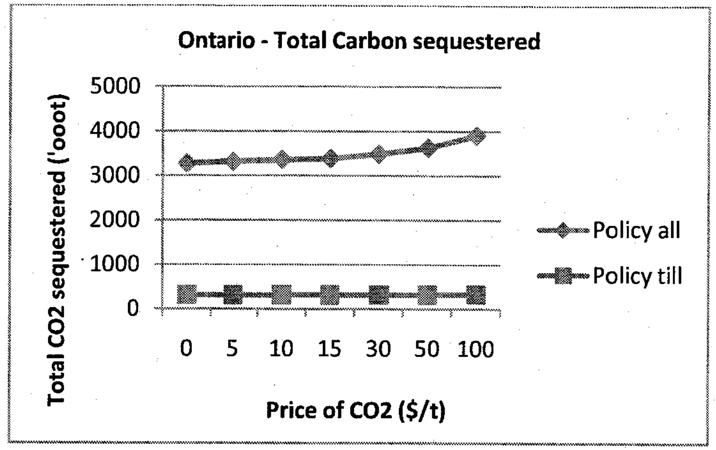


Fig.4.1.66

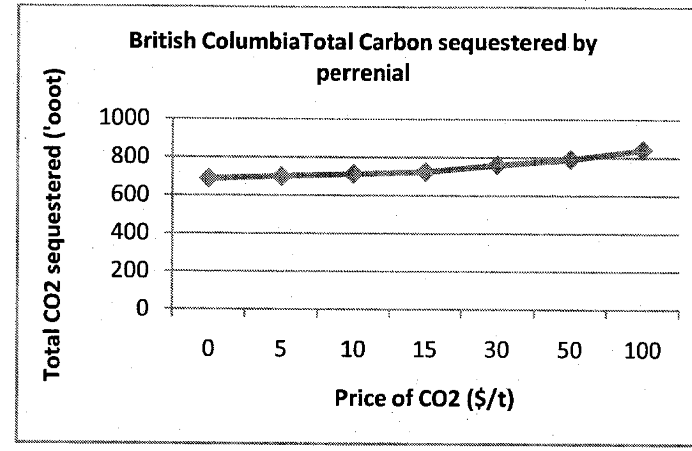


Fig.4.1.67

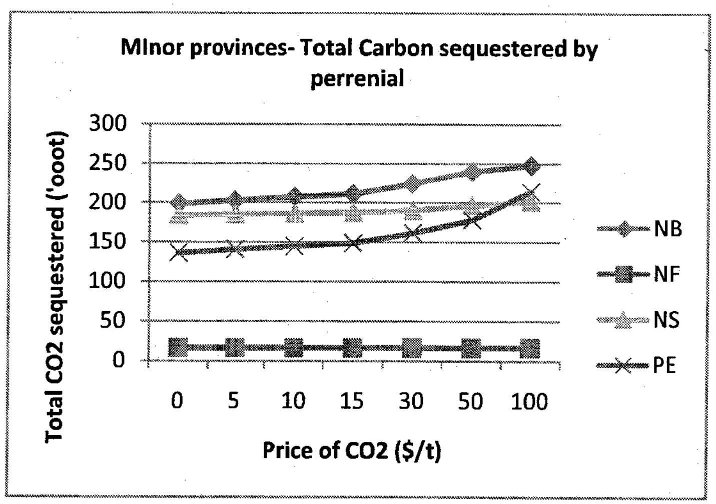
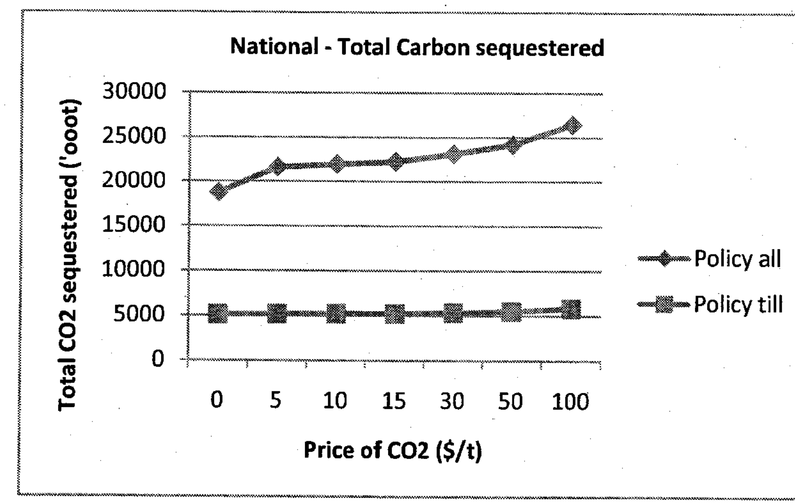


Fig.4.1.68



Saskatchewan and this trend was maintained for all carbon price increments. Quebec contributes more than Ontario at low price levels but gradually, as the carbon price increases, the reverse occurs.

With the Policy Till sceantrio, approximately 97 percent of the sequestration comes from the Prairie Provinces, with Saskatchewan contributing more than 50 percent to the national total at low carbon prices. Ontario and Quebec shares were 2.14 and 0.5 percent respectively and these increased marginally to 2.79 and 0.64 percent at very high carbon prices. Another interesting pattern was that at low carbon prices, Alberta's share was less than Manitoba, but increments in carbon price gradually shifted this so that Alberta contributed more to the national totals than Manitoba. The decrease in Manitoba's share was equaled by the increase in Saskatchewan's share by 12 percent. Nationally, at a medium carbon price of $15/ t of CO_2e, 0.116 Mt of CO_2e can be sequestered annually under the tillage regime, when measuring the change from the baseline.

The results indicate that if only tillage was adopted as a carbon mitigating strategy the potential levels of sequestration would be small when compared to the policy where perennial crops were included. In both scenarios, the potential from the Prairie Provinces were greater than the other provinces.

4.5 Carbon credit revenues

The carbon sequestration levels gave the sequestration potential regionally, provincially and nationally in terms of biophysical units. Carbon revenues from carbon sequestration give the sequestration estimates in monetary terms. The revenue obtained by the various sequestration techniques under Policy Till and Policy All scenario are given in Appendix K. Carbon revenues were calculated in the model by multiplying the carbon sequestration levels by the corresponding carbon prices. Carbon revenues exhibit the same trend provincially, regionally, and nationally. The percent distributions and the general deviation patterns observed in the regions with respect to carbon sequestration levels also applied to the carbon revenues. Under the Policy All scenario, the carbon revenues from a medium price of $15/t of CO_2e were $97, $97, $31, $51, and $39 millions for the provinces of Alberta, Saskatchewan, Manitoba, Ontario, and Quebec respectively, totaling \$333 million nationally, when the baseline is included. Under the Policy Till scenario the total revenue netted was \$78 million nationally, including the baseline. The design of the Domestic Emission Trading (DET) market may only accept carbon sequestration that is above the baseline. If this is the case, the carbon credit revenue nationally would be \$ 16 million for the Policy All scenario. This amount decreased to \$1.7 million for the Policy Till scenario nationally.

4.6 Transaction cost Analysis

The study also focused on the impact of transaction costs on the carbon sequestration levels. Two transaction cost prices were taken from the study conducted by Marbek Resource Consultants (2004). Low and high transaction cost estimates of \$ 0.24/ t of CO_2e and \$ 5.84/ t of CO_2e were calculated by inflating Marbek's cost estimates using the Consumer Price Index. The simulation was done by subtracting the transaction cost estimates from the carbon prices under each scenario. The discussion is limited only to the carbon sequestration levels. The results are depicted graphically in Figure 4.6.1 to Figure 4.6.12, and tabulated provincially in Appendix L. The two scenarios, Policy Till and Policy All, are discussed with respect to two transaction cost prices. The discussion below is limited to the results of the carbon sequestration above the baseline.

4.6.1 Policy till

Before discussing the impact of transaction costs on the results, it was assumed that if there were high transaction costs of \$5.84/ t of CO_2e, then producers would not participate in the carbon market when the return to a carbon credit was low, i.e. \$5/ t of CO_2e. So carbon sequestered at a price of \$5/ t of CO_2 was omitted in the tables and graphs. This implies that in the presence of high transaction costs and a very low carbon price of \$5/ t of CO_2e, the incentive to sequester would be nil. The notable points on the graphs are at low to medium carbon prices with transaction costs, there was a large difference in the sequestration levels from the baseline without transaction costs. But as the carbon price increases, the relative difference was less and the two graphs tend to converge implying that at high carbon prices the role of transaction costs would be minimal.

Fig 6.1.1

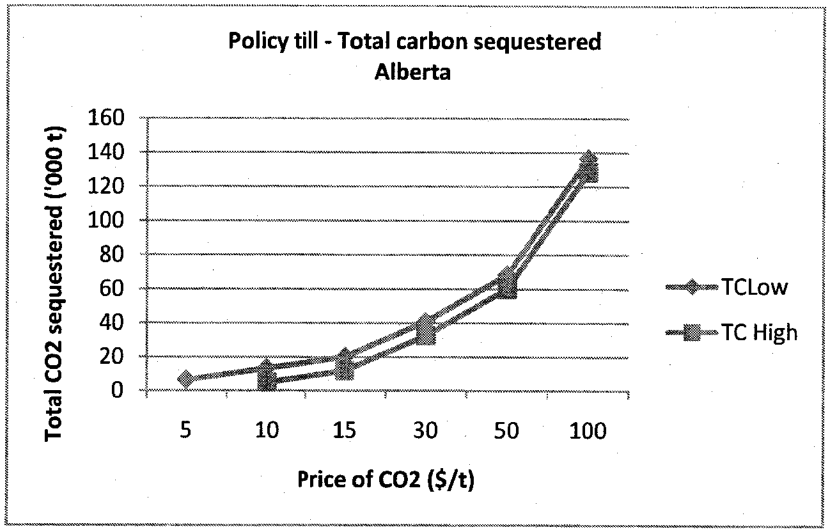


Fig 6.1.2

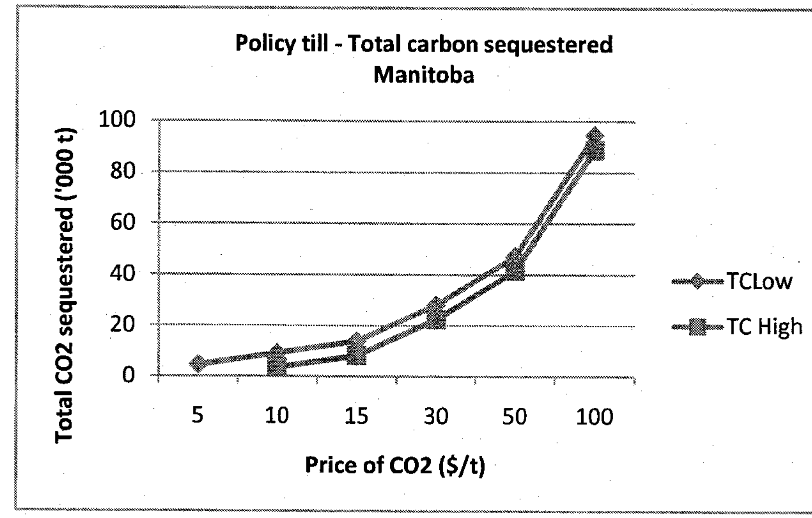


Fig 6.1.3

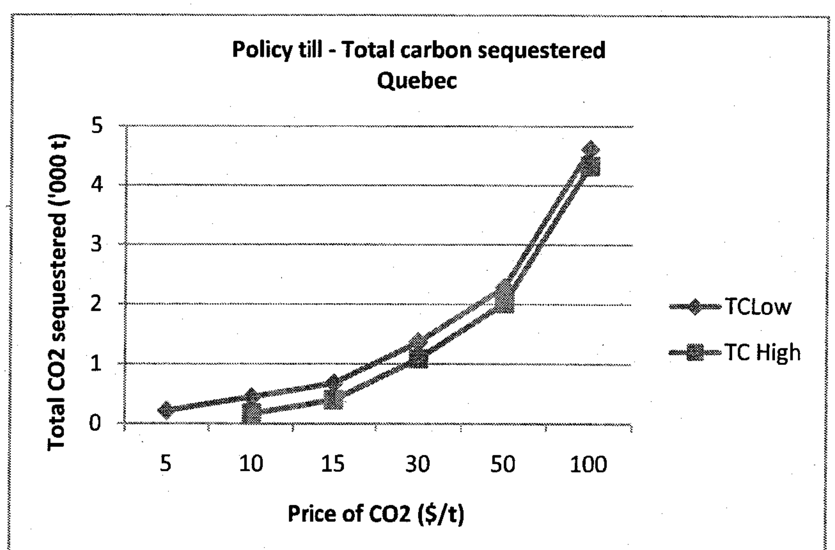


Fig 6.1.4

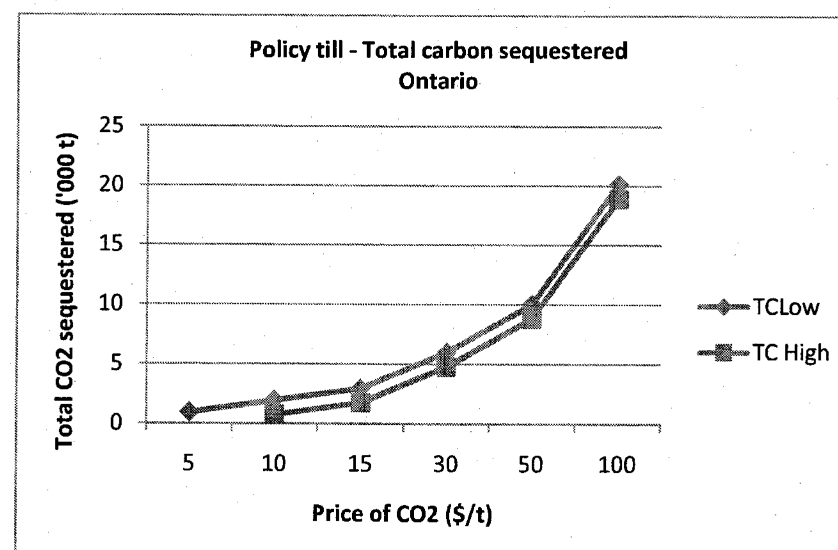


Fig 6.1.4

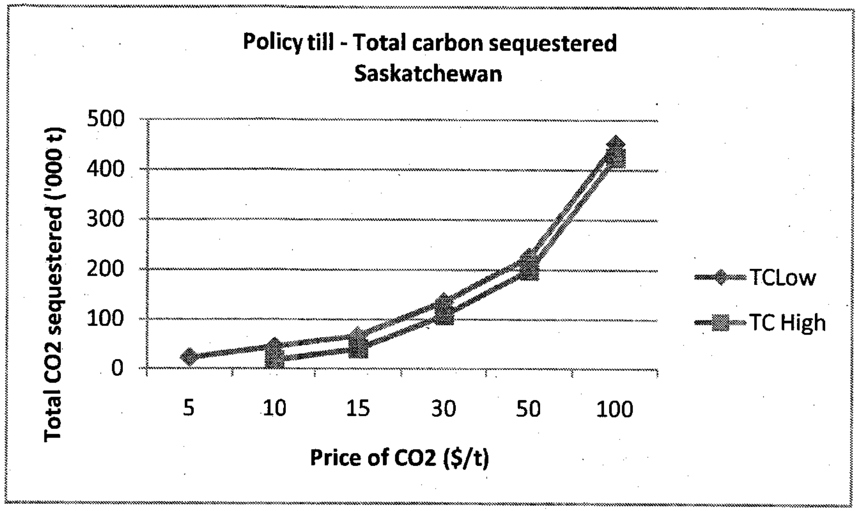


Fig 6.1.5

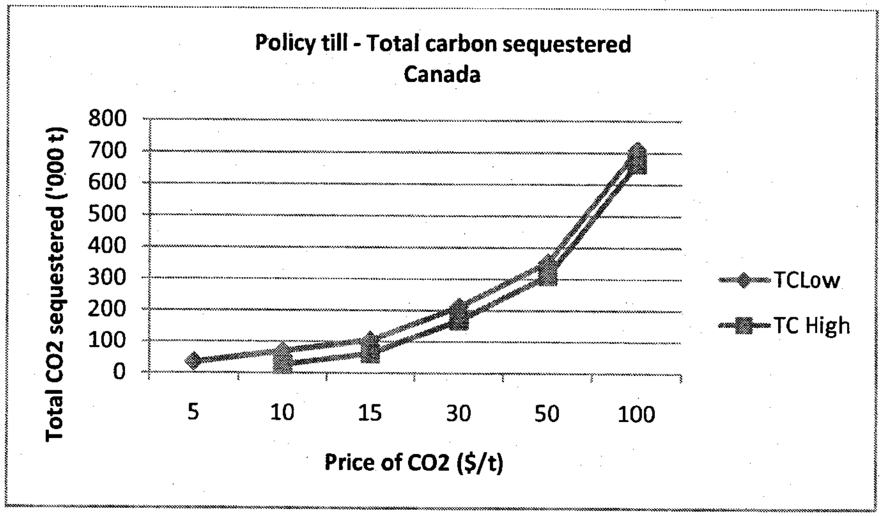


Fig 6.1.6

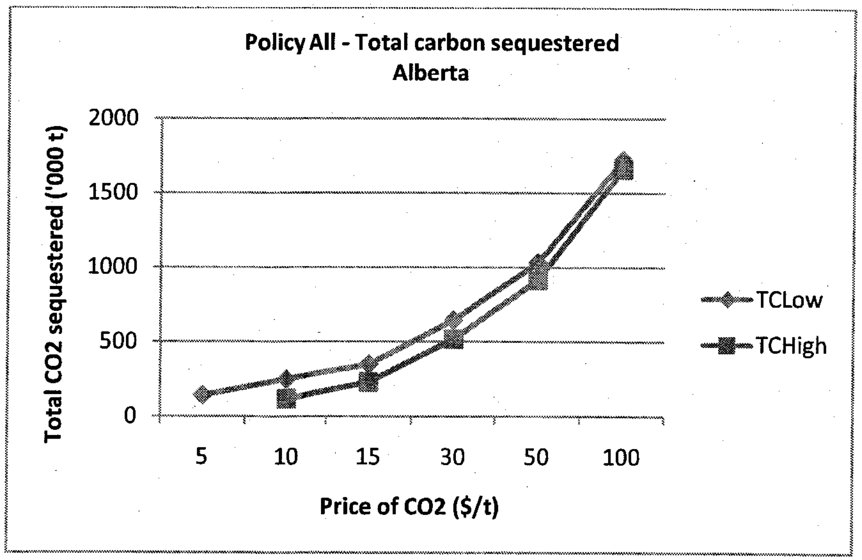


Fig 6.1.7

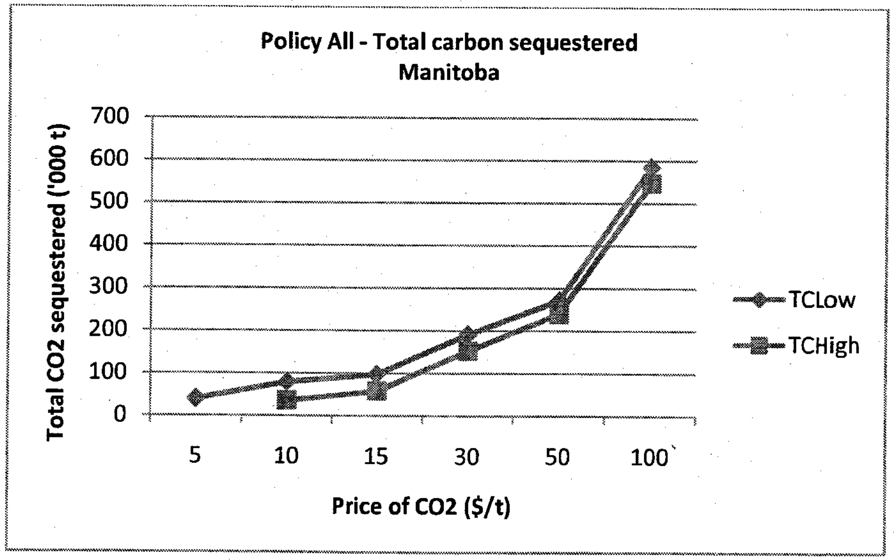


Fig 6.1.9

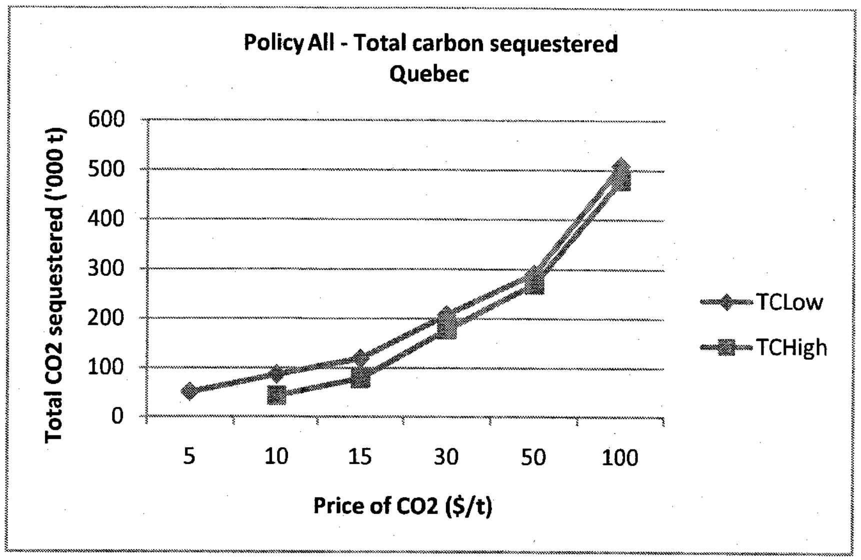


Fig 6.1.10

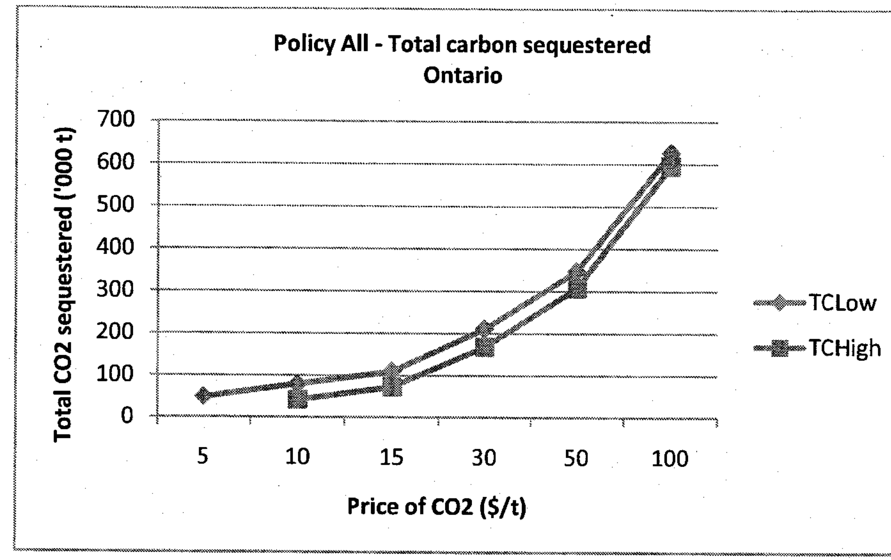


Fig 6.1.11

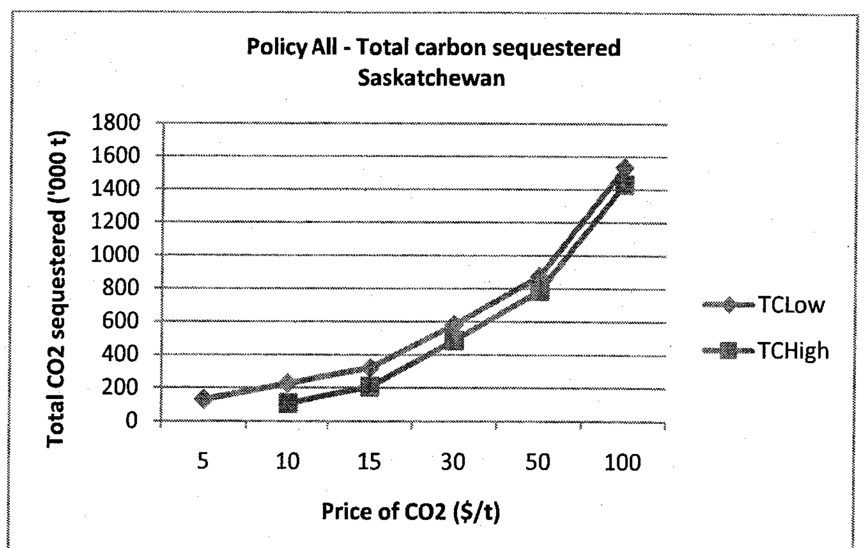
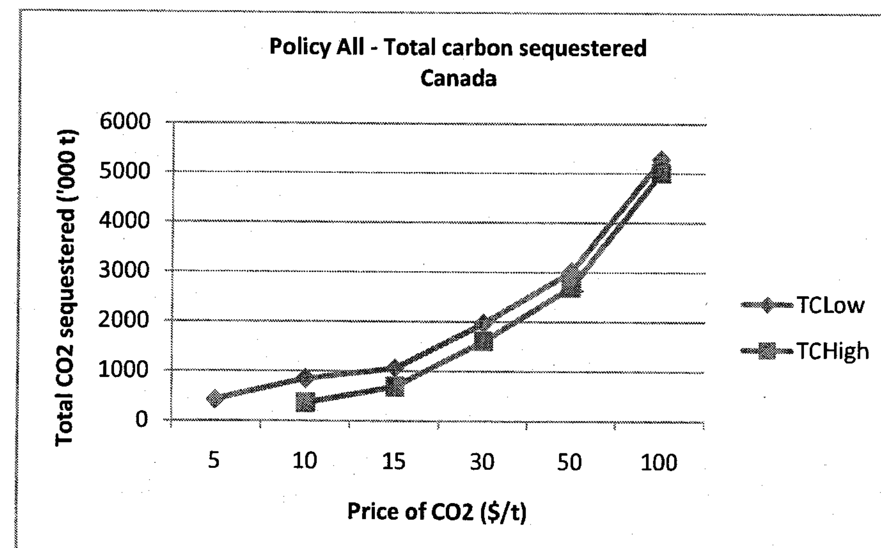


Fig 6.1.12



At a carbon price of $5/t of CO_2, the total carbon sequestered nationally was approximately 0.046 Mt of CO_2 without transaction costs. When transaction costs are taken into account, a decrease of 0.012 Mt of CO_2 was estimated with low transaction costs. The sequestration level was nil for a low carbon price with high transaction costs. At carbon prices of $15/ t of CO_2e, the carbon sequestration levels, as a result of low and high transaction costs, decreased but at a decreasing rate. Compared to the baseline of 0.115 Mt of CO_2e without transaction costs, it is estimated that 0.011 Mt of CO_2e and 0.055 Mt of CO_2e, at low and high transaction costs respectively, were lost from the baseline. At higher carbon prices, the decline was relatively smaller when compared to the baseline where no transaction costs were accounted for. So the graphs tend to adjoin at high carbon prices. Among the provinces, Manitoba had the highest decrease in sequestration levels, followed by Saskatchewan and Alberta for both transaction cost scenarios. The results indicate that for carbon credit price changes between $5- $30/ t of CO_2e, transaction costs would reduce the effectiveness of tillage mitigation options, although at higher carbon price levels, their role tends to diminish.

4.6.2 Policy All

The same pattern and trends were observed in the Policy All scenario (Fig.4.6.7 to Fig.4.6.12) with respect to transaction costs as in the previous scenario, but with higher sequestration numbers. At low carbon prices, the transaction costs affected the sequestration levels negatively, and at high carbon prices the role of transaction costs was diminished. At a carbon price of $15/ t of CO_2e, Canada could sequester 1.086 Mt of CO_2 in the absence of transaction costs. Low transaction costs of 0.24/ t of CO_2e reduced this sequestration levels to 1.060 Mt of CO_2e while high transaction costs reduce the sequestration levels to 0.688 Mt of CO_2e. At low transaction costs, the decline in the sequestration levels was three percent from the baseline for low carbon prices and 0.5 percent at a high carbon price of $100/ t of CO_2e. The decline was approximately 50 percent for a carbon price of $10/ t of CO_2e under high transaction costs, but the sequestration levels from the baseline decreases by only five percent at a high carbon price of $100/ t of CO_2e. At high prices of carbon, the role of transaction costs diminish, causing the two graphs to approach convergence in the figures 4.6.1 to 4.6.12.

4.7 Discussion

Regional crop acreages for the two policies, Policy All and Policy Till, revealed interesting patterns with respect to policy. The main conclusion from the acreage analysis was the uniform implementation of the Policy All or Policy Till would have a positive impact in terms of carbon gains. The reason behind this is supported by acreage shifts. When Policy All was considered, then all provinces responded to the carbon market with some regional variations even at low prices of carbon. If Policy All was implemented, then food production may be affected because of acreage shifts towards hay and alfalfa in the Prairies. In the Policy Till scenario, except for the Prairie Provinces, the acreage shifts of the carbon sequestering crops for a medium price of carbon was very minimal. This indicated that the ability of Ontario, Quebec, British Columbia and other provinces to respond to a carbon market under tillage regime would be minimal. In this regard there were two possible ways of involving all of the provinces in an efficient market: (1) implement Policy All uniformly in all provinces and (2) implement Policy Till in the Prairies and Policy All in the other provinces. The first policy raises food production questions and the second raises equity questions. If the second policy is implemented, revenues from Policy All will be higher than Policy Till raising equity issues which will act as a roadblock in the implementation of the policy. The kind of policy to be implemented is a question that has to be discussed further. Kurkalova, Kling and Zhao (2006) studied the adoption rate of conservation tillage, and the policy issue they identified was how to pay for carbon credits, as some producers had adopted tillage practices even without an incentive. Paying all producers uniformly might result in income transfers, while paying new adopters may penalize the producers who had adopted conservation tillage practices earlier. This thesis raises a similar question, although from a different perspective.

Environment Canada (2006) estimates states that for 2004-05, the total GHG emissions for Canada were approximately 747 Mt CO_2e. Agriculture emissions contributed 57 Mt, which is 8 percent of the national total. Agricultural soils contributed 23 Mt of CO_2e, while enteric fermentation and manure management emitted 25 Mt and 8.6 Mt of CO_2e respectively. Under the Kyoto Protocol, Canada has committed to decrease its carbon emissions to 6 percent below its 1990 emission levels, which is 32.7 percent below the 2004-05 emission levels. During the first commitment period, 2008-2012, Canada's annual reduction can be estimated to be 244.4 Mt per year, i.e. 32.7 percent of 747 Mt. When carbon is accounted including the baseline, under the Policy All scenario, 22.27 Mt of CO_2e could be sequestered and under the Policy Till scenario 5.2 Mt of CO_2e could be sequestered at a medium price of $15/t of CO_2e. Agricultural soil sequestration could account for approximately 9 percent of our annual commitment if the Policy All is adopted. This decreases to approximately 2 percent if Policy Till is adopted. As the carbon price increases above $15/t of CO_2e additional carbon would be sequestered. From an international commitment perspective, adopting Policy All would provide a significant contribution to Canada's commitment under the Kyoto Protocol.

It is expected that the DET system would only provide offset carbon credits to changes in practices above the baseline. When carbon accounting is calculated for carbon above the baseline i.e. changes in carbon after a practice change, under the Policy All and Policy Till scenario, 1.08 Mt of CO_2e and 0.11 Mt of CO_2e were sequestered respectively at a medium carbon price of $15/t of CO_2e. Under the proposed government plan, the proposed DET system was to reduce approximately 38 Mt of CO_2e per year from the Large Final Emitters (LFE's). In this case, if Policy All was adopted soil carbon sequestration could supply approximately 3 percent of the credit reductions to the DET system. If the agricultural sector is a low cost abater, this could provide offset credits to the market that would reduce the cost of the Large Final Emitters to satisfy their reductions. This reduces to less than 0.5 percent if Policy Till is adopted. If the carbon price increases above $15/t of CO_2e, then more offset carbon credits would be generated for the market.

The offset system developed carbon sequestration protocols that would allow a portion of the baseline carbon to be sold in the DET market. This would again influence the supply of carbon credits and the price of carbon in the DET system. Given that a carbon market is in place and if the carbon credit price is $15/ t of CO_2e, the role that transaction costs play will be critical in the functioning of a carbon offset system. In both scenarios, there was a 30 to 40 percent decrease in sequestered carbon from the original levels when transaction costs were high, both provincially and nationally. So, transaction costs would act as a major hindrance in the functioning of the carbon market as producers have to bear these costs. This may result in the non-adoption of carbon sequestering practices, resulting in reduced sequestration levels. As pointed out by Zeuli and Skees (2000), if proper institutions were in place to regulate the carbon market, transaction costs can be greatly reduced, thereby rectifying the major setback in the functioning of the carbon market.

Carbon sequestration credits from agriculture gives agricultural producers a revenue opportunity associated with a sequestration technique. The study indicates that carbon revenues were \$333 million and \$78 million annually at a medium price of \$15/t of CO_2e, for Policy All and Policy Till scenarios when carbon accounting was done including the baseline. When carbon was accounted above the baseline the revenues were \$16 million and \$1.7 million from Policy All and Policy Till at a medium price of \$15/t of CO_2e. Generally farm income in the Prairies is low, and increased revenue from carbon sequestration credits will boost farm income in the Prairie provinces, in addition to acting as an incentive for the producers to adopt sequestration techniques.

Chapter 5

Conclusion

Global warming is one of the major problems facing the world in the 21st century. Some countries realizing the problem, consciously entered into the Kyoto Protocol to reduce GHG emissions. Canada, a major signatory of the Kyoto Protocol, has agreed to reduce its carbon emissions by six percent below its 1990 levels during the commitment period 2008-2012. As a first step towards the commitment to GHG reduction, the Canadian government proposed the development of a domestic emission trading system (DET) where Large Final Emitters (LFE's) would be regulated with the use of intensity targets. Included in the DET system was the offset system, which includes firms that were not regulated but could supply GHG reductions to the DET system. The agriculture sector could be a part of the offset system, and was expected to supply low cost carbon reductions to the DET market.

The purpose of this study was to estimate the potential carbon sequestration that would occur with different carbon credit prices. More specifically, the objectives of the study were to: (1) estimate the potential of the agricultural sector of Canada, specifically soils, to sequester carbon and their role in the offset system; (2) estimate the quantity of carbon credits, carbon revenues, and cropping pattern changes associated with a carbon market opportunity; and (3) estimate the impact that transaction costs would have on the supply of carbon credits to the domestic emission trading system. The study has estimated the national, provincial, and regional distribution of carbon sequestration levels and associated parameters, using the Canadian Regional Agricultural Model (CRAM). The carbon sequestration activities considered in the analysis were moderate till, no-till, and perennial crop activities. Different tillage regimes were considered in the analysis, in addition to hay and alfalfa, which were the perennial crop activities.

Two policy scenarios were analyzed for all of the parameters of interest. One was called Policy Till, where sequestration activities such as no-till and moderate till were considered. The other policy scenario considers perennial in addition to no-till and moderate till activities and was referred to as Policy All. The study identifies the sensitivity of regions and crops to policies, and identifies provinces and regions that can contribute to the emission reduction target for Canada.

The first analysis was done with respect to cropping pattern changes including crops other than carbon sequestering crops. The Policy All scenario resulted in increased areas of hay and alfalfa crops. The scenario also estimated a marginal increase, of less than 0.1 percent in no-till crops, while crop acreages under other crops decreased. At high carbon prices, e.g. \$100/t of CO_2e, acreages of hay and alfalfa increased dramatically, while there were notable increases in no-till crop acreages. At a medium carbon price, crop acreages under moderate till and no-till increased and other crop acreages including hay and alfalfa decreased. There was a general crop pattern shift towards hay and alfalfa, and moderate till activities in the Policy All scenario.

In the case of the Policy Till scenario, the shift tends towards food and oil seed crops while acreages under forage crops, hay, alfalfa and potato tend to decrease. Crops under moderate till regimes exhibited mixed response, where some crops responded positively and some negatively. Irrigated crops areas declined as a result of a carbon price. One point worth noting was that the highest acreage increase was with crops in the no-till regimes; such as oats, fieldpeas, flax, canola, wheat, and lentils, while the highest decrease was in the same crops under the moderate till regime. To conclude, crop shifts occur under the Policy All scenario, while practice shifts occur in the Policy Till scenario. The magnitude of the acreage changes differ provincially, according to the carbon prices.

The second part of the study focused on acreage changes of carbon sequestering crops under moderate till, no-till, and perennial activities. With both policies, the Prairie Provinces had the largest change in carbon sequestering crop area followed by Ontario and Quebec. The small crop producing provinces, and the provinces of British Columbia, Ontario, and Quebec were more responsive to the Policy All scenario compared to the Policy Till. This occurred because perennial crop acreages were larger in these provinces than the crop area while in the Prairie Provinces, the crop and perennial acreages were equally distributed. Tillage crop acreages in both policy scenarios increased to a notable extent when the price of carbon increased beyond \$15/t of CO_2e. In the Prairie Provinces, increases in crop area were noticed at lower carbon prices, although the results varied regionally. The results indicated that the response to a carbon price will differ provincially and regionally within a province. Tillage practices could be implemented in the Prairie Provinces as a mitigation strategy as acreage responses were high in these provinces compared to others. But tillage, as a sequestration practice, would be costly in the other provinces as very high prices of carbon, in the range of \$50-\$100/t of CO_2e, would be needed to induce producers to adopt the sequestering technologies. Provinces where tillage was a costly strategy in the mitigation of GHG can adopt perennial crop activities as a mitigation measure. This would result in producers in all regions being able to contribute GHG removals to a carbon market.

Tillage adoption rates were studied for the major crop producing provinces, the Prairie Provinces, Ontario and Quebec. The adoption rate of tillage practices, even in the absence of the carbon market, was approximately 40-45 percent in the Prairies, while Ontario and Quebec had low tillage adoption rates of 20-25 percent. Acreages under tillage had an adoption response rate of one percent for very low prices of carbon, to a high of five to six percent for a very high carbon price. Since the adoption rate of tillage was more than 40-45 percent in the Prairie baseline, the response of tillage adoption to a carbon price would be minimal. When perennial activities were considered along with tillage, there was a slight decrease in the adoption rates, even in the Prairies. The analysis points out that if agricultural soil carbon sequestration is accounted for, carbon accumulated from different practices than tillage would be a good strategy in the Prairies and to some extent in Ontario and Quebec. But if only carbon is accounted for with a practice change in tillage practice, the role of tillage would be small to contribute to the generation of offset credits.

The corresponding sequestration levels or credits accruing after a policy change forms an important part of the study and is summarized as follows. Nationally, at a medium price of \$15/t of CO_2e, when all carbon sequestered in the soils are considered, 22.27 Mt of CO_2 and 5.2 Mt of CO_2e can be sequestered under the Policy All and Policy Till scenarios respectively. When only carbon sequestered after a practice change was considered, the sequestration levels drop to 1.1 Mt of CO_2e and 0.1 Mt of CO_2e. Among the sequestration levels under the Policy All scenario, 59 percent of the total carbon sequestration was contributed by the Prairie Provinces, while Ontario and Quebec contributed 11 and 15 percent to soil carbon sequestration nationally. On the other hand, when only tillage was considered, 97 percent of the sequestration came from the Prairie Provinces with Saskatchewan contributing more than 50 percent to the national level. This analysis further stresses the importance of the Prairie Provinces for carbon sequestration when only tillage was considered as a mitigation option. Since the sequestration from tillage was limited, considering perennial crops in the portfolio of the mitigation strategy is important.

The final part of the study analyzed the effect of transaction costs on the results by considering a low and high transaction cost of \$0.24/ t of CO_2e and \$5.84/ t of CO_2e. The transaction cost impacts were analyzed for all carbon and carbon accounted for only after a practice change. Transaction costs played a significant role when carbon price was less than \$30/ t of CO_2, but at high carbon prices their role was diminished. At higher transaction costs, approximately 30 to 40 percent of the carbon sequestration was reduced when compared to the baseline, with zero transaction costs. Marbek Consultants (2004) indicated that low transaction costs occur for projects having a carbon sequestration capacity of 246 kt/year. High transaction costs occur for a project size less than 1.4 kt/year. Zeuli and Skees (2000) pointed out that buyers might require carbon in large quantities, while individual producers on average can sequester only small amounts of carbon compared to the requirements. Therefore, pooling and other design options of the offset system are major elements to be considered in the efficient functioning of the offset system. This problem could be effectively addressed if proper institutions are in place.

The major policy conclusions as a result of this study are:

1. When carbon accounting is done for sequestration, according to the Kyoto Protocol, perennial crop activities, in addition to tillage, will be a cost effective option to achieve the Kyoto target. The Prairies have a greater CO_2 reduction potential, even in the absence of perennial crops, as a carbon sequestering policy option. But the ability of the other provinces to supply carbon credits under tillage regimes will be minimal. The regional dimension of carbon sequestration must be taken into consideration when designing policy.

2. Transaction costs have a key role to play in the offset system, since a 30 to 40 percent reduction in carbon sequestration levels could occur due to transaction costs. The costs should be reduced or else reduction possibilities from the agricultural sector will be smaller than anticipated. Transaction costs could be greatly reduced if proper institutions are in place, creating the rules and regulations of the offset system. These would include developing clear rules concerning baselines, measurement, monitoring and quantification. Institutions that minimize transaction costs, such as developing standard project protocols, will improve the efficiency of the offset system.

5.1 Limitations of the study

The following limitations were identified.

1. The livestock sector was not included in the analysis. Since crop acreages shift towards hay and alfalfa under the Policy All scenario, livestock numbers might increase due to the additional forage production. This will lead to additional emissions.

2. Tillage activities could increase other emissions by use of fertilizers and chemicals. The inclusion of these elements in the analysis may decrease the carbon sequestration levels.

3. The carbon coefficients used in the study have some discrepancies in some regions of Ontario and Quebec. At present these are the only available carbon coefficients. A crosscheck of the coefficients obtained using a different analyses would help in the validation of the programming exercise undertaken

4. With respect to transaction costs, a uniform cost analysis was undertaken for all the sequestration activities. In reality, different sequestration techniques may involve different transaction costs and this may vary provincially and regionally.

5.2 Future Research Options

Only the crop sector was considered in the analysis, so the sequestration levels may be overstated or understated. An inventory approach considering the crop sector, livestock sector, fertilizer and chemical applications associated with sequestration techniques would provide a more complete inventory of GHG emission reduction opportunities with respect to the agricultural sector. These could be modeled using CRAM to provide estimates of the potential supply of carbon credits.

Another area of research is to consider co-benefits and their inclusion in the carbon market. Co-benefits associated with the sequestration techniques could be included in the CRAM objective function as a price for the benefits. This would give producers an increase in revenue due to the value of these environmental co-benefits. In this case, the adoption rates of the sequestration practices could increase.

On the mathematical modeling side, improvements can also be made to the CRAM model. The current version of the model is static, which has some limitations. For example, in the baseline, tillage activities accounted for in the model could be classified into intensive till, moderate till and no-till crop activities. When a carbon market is in effect, the current version of the model only allows changes from intensive till to moderate and no-till activities. Shifts from moderate to no-till activities couldn't be accounted for in the model. In this regard, a dynamic CRAM model will solve the problem.

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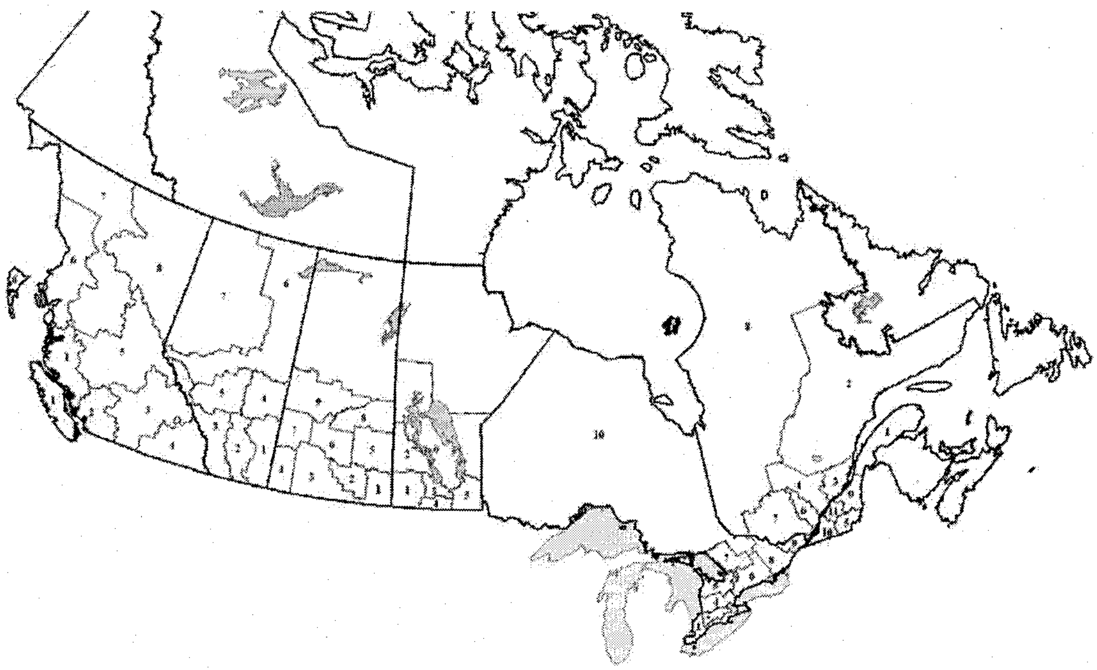
Appendix A

Map of Crop Production Regions in CRAM



Source: CRAM Documentation,2007. Agriculture and Agri-Food Canada. Pg.9

Appendix B

Carbon Co-efficients of various carbon sequestration strategies after a practice change for CRAM regions (t of CO_2e/ha/yr).

Region	PERREN	NOTL	MDTL	Region	PERREN	NOTL	MDTL
BC.1	2.42022	0.99009	0.29336	**ON.1**	1.54014	0.44004	0.18335
BC.2	2.49356	0.33003	0.29336	**ON.2**	2.60357	0.47671	0.29336
BC.3	0.91675	0.29336	0.11001	**ON.3**	2.82359	0.80674	0.44004
BC.4	1.90684	0.18335	0.07334	**ON.4**	2.45689	0.18335	0.07334
BC.5	1.61348	0.14668	0	**ON.5**	2.97027	0.22002	0
BC.7	2.27354	0	0.07334	**ON.6**	2.49356	0.25669	0.11001
BC.8	2.60357	0.47671	0.18335	**ON.7**	3.11695	0.14668	0
AL.1	1.32012	0.25669	0.11001	**ON.8**	3.37364	0.18335	0
AL.2	1.57681	0.3667	0.18335	**ON.9**	3.15362	0.22002	0.03667
AL.3	1.87017	0.44004	0.22002	**ON.10**	3.667	0.11001	0
AL.4	2.27354	0.51338	0.25669	**QU.1**	2.82359	0.3667	0.11001
AL.5	2.27354	0.51338	0.14668	**QU.2**	2.97027	0.69673	0.14668
AL.6	2.27354	0.51338	0.22002	**QU.3**	3.22696	0.58672	0.40337
AL.7	1.98018	0.51338	0.14668	**QU.4**	3.48365	0.29336	0.11001
SA.1	2.5669	0.55005	0.29336	**QU.5**	3.85035	0.07334	0.22002
SA.2	2.67691	0.51338	0.29336	**QU.6**	3.41031	0.25669	0.22002
SA.3	2.31021	0.29336	0.07334	**QU.7**	3.63033	0.11001	0.22002
SA.4	2.01685	0.33003	0.03667	**QU.8**	2.53023	0.95342	0.25669
SA.5	1.87017	0.62339	0.29336	**QU.9**	2.42022	0.62339	0.29336
SA.6	2.27354	0.47671	0.25669	**QU.10**	3.26363	0.3667	0.11001
SA.7	2.01685	0.44004	0.11001	**QU.11**	3.37364	0.47671	0.14668
SA.8	1.65015	0.44004	0.14668	**NB.1**	2.53023	0.18335	0.14668
SA.9	1.87017	0.47671	0.14668	**NS.1**	2.45689	0.51338	0.07334
MA.1	1.50347	0.58672	0.29336	**PE.1**	2.34688	0.22002	0.33003
MA.2	1.79683	0.58672	0.22002	**NF.1**	2.53023	0.11001	0.3667
MA.3	1.68682	0.51338	0				
MA.4	1.79683	0.47671	0.14668				
MA.5	1.90684	0.55005	0.03667				
MA.6	1.57681	0.51338	0.03667				

Canada- Provincial crop acreages ('000 ha) for carbon price changes Policy All

	BASE	$5	DIFF	%DIFF
WHEAT	46.8	46.17	-0.63	-1.35
BARFD	128.23	124.3	-3.92	-3.06
OATS	32.21	29.72	-2.48	-7.71
CANOLA	23.48	23.48	-9.16E-04	-3.90E-03
SOYBEANS	2.81	2.76	-0.05	-1.76
CORNG	2.78	2.72	-0.06	-2.01
CORNS	233.72	231.46	-2.26	-0.97
CEREALS	845.01	826.77	-18.24	-2.16
OTHER	1489.39	1479.58	-9.81	-0.66
HAY	2682.4	2782.09	99.69	3.72
PAST	4804.51	4804.51		
UILPAST	14492.42	14528.97	36.56	0.25
ALFALFA	4348.1	4442.42	94.31	2.17
POTAT	121.65	121.27	-0.38	-0.31
WHEATI	3223.79	3188.55	-35.23	-1.09
WHEATM	2713.4	2699	-14.4	-0.53
WHEATN	2635.42	2646.74	11.32	0.43
DURUMI	676.03	674.6	-1.43	-0.21
DURUMM	568.19	567.84	-0.35	-0.06
DURUMN	856.03	857.49	1.47	0.17
BARFDI	917.84	895.33	-22.51	-2.45
BARFDM	545.13	537.66	-7.48	-1.37
BARFDN	414.44	414.41	-0.02	-5.76E-03
BARMTI	1043.68	1028.78	-14.9	-1.43
BARMTM	957.83	952.38	-5.45	-0.57
BARMTN	926.19	931.16	4.96	0.54
OATSI	587.12	570.82	-16.31	-2.78
OATSM	448.18	441.88	-6.29	-1.4
OATSN	381.57	384.76	3.19	0.84
FLAXI	251.04	247.88	-3.16	-1.26
FLAXM	195.73	194.86	-0.87	-0.45
FLAXN	217.17	218.47	1.3	0.6
CANOLAI	1425.62	1411.4	-14.22	-1
CANOLAM	1225.95	1221.97	-3.98	-0.32
CANOLAN	1070.28	1077.85	7.57	0.71
LENTILSI	212.52	211.48	-1.04	-0.49
LENTILSM	183.75	183.35	-0.4	-0.22
LENTILSN	306.24	306.8	0.56	0.18
FLDPEASI	636.68	624.1	-12.58	-1.98
FLDPEASM	568.83	564.13	-4.7	-0.83
FLDPEASN	638.96	644.44	5.48	0.86
SOYI	556.43	553.92	-2.52	-0.45
SOYM	226.13	225.4	-0.73	-0.32
SOYN	271.77	271.45	-0.33	-0.12
CORNGI	749.22	742.17	-7.05	-0.94
CORNGM	261.36	259.93	-1.43	-0.55
CORNGN	235.52	235.87	0.35	0.15
HAYR	124.62	122.46	-2.16	-1.73
ALFALFAR	154.45	152.47	-1.97	-1.28
WHEATR	57.52	57.37	-0.15	-0.26
BARFDR	56.25	56.08	-0.17	-0.3
OATSR	5.66	5.6	-0.05	-0.94
FLAXR	1.57	1.57	-4.44E-03	-0.28
CANOLAR	18.88	18.81	-0.07	-0.39
LENTILSR	1.46	1.45	-9.42E-03	-0.65
FLDPEASR	3.2	3.18	-0.02	-0.71
OTHERR	149.62	149.32	-0.3	-0.2
POTATR	36.54	36.53	-0.02	-0.04

	BASE	$10	DIFF	%DIFF
WHEAT	46.8	45.63	-1.17	-2.5
BARFD	128.23	120.61	-7.62	-5.94
OATS	32.21	27.23	-4.97	-15.44
CANOLA	23.48	23.48	-2.84E-03	-0.01
SOYBEANS	2.81	2.71	-0.1	-3.57
CORNG	2.78	2.7	-0.08	-2.91
CORNS	233.72	227.56	-6.15	-2.63
CEREALS	845.01	799.05	-45.97	-5.44
OTHER	1489.39	1470.16	-19.23	-1.29
HAY	2682.4	2854.45	172.05	6.41
PAST	4804.51	4804.51		
UILPAST	14492.42	14638.88	146.47	1.01
ALFALFA	4348.1	4500.21	152.1	3.5
POTAT	121.65	120.93	-0.72	-0.59
WHEATI	3223.79	3160.24	-63.55	-1.97
WHEATM	2713.4	2690.56	-22.84	-0.84
WHEATN	2635.42	2662.25	26.83	1.02
DURUMI	676.03	673.3	-2.73	-0.4
DURUMM	568.19	567.64	-0.55	-0.1
DURUMN	856.03	859.11	3.08	0.36
BARFDI	917.84	881.15	-36.69	-4
BARFDM	545.13	533.68	-11.46	-2.1
BARFDN	414.44	416.63	2.19	0.53
BARMTI	1043.68	1017.63	-26.04	-2.5
BARMTM	957.83	950.09	-7.75	-0.81
BARMTN	926.19	938.41	12.22	1.32
OATSI	587.12	558.88	-28.25	-4.81
OATSM	448.18	439.01	-9.16	-2.04
OATSN	381.57	390.26	8.69	2.28
FLAXI	251.04	245.16	-5.88	-2.34
FLAXM	195.73	194.29	-1.44	-0.74
FLAXN	217.17	220	2.83	1.3
CANOLAI	1425.62	1398.91	-26.7	-1.87
CANOLAM	1225.95	1219.3	-6.65	-0.54
CANOLAN	1070.28	1086.16	15.88	1.48
LENTILSI	212.52	210.46	-2.07	-0.97
LENTILSM	183.75	183.01	-0.74	-0.4
LENTILSN	306.24	307.42	1.17	0.38
FLDPEASI	636.68	613.21	-23.46	-3.69
FLDPEASM	568.83	561	-7.82	-1.38
FLDPEASN	638.96	651.09	12.13	1.9
SOYI	556.43	552.24	-4.19	-0.75
SOYM	226.13	225	-1.14	-0.5
SOYN	271.77	271.46	-0.31	-0.11
CORNGI	749.22	738.14	-11.08	-1.48
CORNGM	261.36	259.43	-1.93	-0.74
CORNGN	235.52	236.81	1.29	0.55
HAYR	124.62	119.26	-5.36	-4.3
ALFALFAR	154.45	148.87	-5.58	-3.61
WHEATR	57.52	57.34	-0.19	-0.33
BARFDR	56.25	56.15	-0.1	-0.17
OATSR	5.66	5.59	-0.07	-1.18
FLAXR	1.57	1.57	-5.61E-03	-0.36
CANOLAR	18.88	18.77	-0.11	-0.57
LENTILSR	1.46	1.44	-0.02	-1.27
FLDPEASR	3.2	3.17	-0.03	-0.92
OTHERR	149.62	149.14	-0.48	-0.32
POTATR	36.54	36.52	-0.02	-0.06

	BASE	$15	DIFF	%DIFF
WHEAT	46.8	44.96	-1.84	-3.93
BARFD	128.23	117.28	-10.94	-8.53
OATS	32.21	24.81	-7.4	-22.97
CANOLA	23.48	23.48	-2.98E-03	-0.01
SOYBEANS	2.81	2.66	-0.15	-5.31
CORNG	2.78	2.68	-0.1	-3.75
CORNS	233.72	223.62	-10.09	-4.32
CEREALS	845.01	769.72	-75.3	-8.91
OTHER	1489.39	1459.69	-29.69	-1.99
HAY	2682.4	2923.56	241.16	8.99
PAST	4804.51	4804.51		
UILPAST	14492.42	14735.65	243.23	1.68
ALFALFA	4348.1	4555.45	207.35	4.77
POTAT	121.65	120.56	-1.09	-0.9
WHEATI	3223.79	3127.72	-96.06	-2.98
WHEATM	2713.4	2678.05	-35.35	-1.3
WHEATN	2635.42	2674.5	39.08	1.48
DURUMI	676.03	671.98	-4.05	-0.6
DURUMM	568.19	567.42	-0.77	-0.14
DURUMN	856.03	860.74	4.71	0.55
BARFDI	917.84	870.4	-47.44	-5.17
BARFDM	545.13	533.31	-11.83	-2.17
BARFDN	414.44	421.84	7.41	1.79
BARMTI	1043.68	1011.84	-31.84	-3.05
BARMTM	957.83	952.83	-5	-0.52
BARMTN	926.19	950.81	24.62	2.66
OATSI	587.12	548.37	-38.75	-6.6
OATSM	448.18	436.88	-11.3	-2.52
OATSN	381.57	396.2	14.62	3.83
FLAXI	251.04	242.07	-8.97	-3.57
FLAXM	195.73	193.48	-2.25	-1.15
FLAXN	217.17	221.39	4.21	1.94
CANOLAI	1425.62	1385.35	-40.27	-2.82
CANOLAM	1225.95	1215.73	-10.23	-0.83
CANOLAN	1070.28	1093.99	23.71	2.22
LENTILSI	212.52	209.36	-3.16	-1.49
LENTILSM	183.75	182.58	-1.17	-0.63
LENTILSN	306.24	307.91	1.67	0.54
FLDPEASI	636.68	600.55	-36.13	-5.67
FLDPEASM	568.83	556.2	-12.63	-2.22
FLDPEASN	638.96	655.86	16.9	2.64
SOYI	556.43	550.8	-5.63	-1.01
SOYM	226.13	224.67	-1.46	-0.65
SOYN	271.77	271.62	-0.16	-0.06
CORNGI	749.22	734.16	-15.06	-2.01
CORNGM	261.36	258.93	-2.43	-0.93
CORNGN	235.52	237.74	2.22	0.94
HAYR	124.62	115.83	-8.79	-7.05
ALFALFAR	154.45	144.99	-9.46	-6.12
WHEATR	57.52	57.25	-0.28	-0.48
BARFDR	56.25	56.74	0.49	0.87
OATSR	5.66	5.6	-0.06	-1
FLAXR	1.57	1.57	-7.24E-03	-0.46
CANOLAR	18.88	18.73	-0.15	-0.81
LENTILSR	1.46	1.43	-0.03	-1.96
FLDPEASR	3.2	3.16	-0.04	-1.35
OTHERR	149.62	148.93	-0.69	-0.46
POTATR	36.54	36.51	-0.03	-0.09

Canada- Provincial crop acreages ('000 ha) for carbon price changes Policy All

	BASE	$30	DIFF	%DIFF		BASE	$50	DIFF	%DIFF		BASE	$100	DIFF	%DIFF
WHEAT	46.8	43.08	-3.72	-7.96	WHEAT	46.8	39.57	-7.23	-15.45	WHEAT	46.8	35.64	-11.16	-23.85
BARFD	128.23	106.76	-21.46	-16.74	BARFD	128.23	91.47	-36.75	-28.66	BARFD	128.23	71.69	-56.54	-44.09
OATS	32.21	17.78	-14.42	-44.78	OATS	32.21	17.16	-15.05	-46.72	OATS	32.21	16.81	-15.4	-47.8
CANOLA	23.48	23.47	-6.82E-03	-0.03	CANOLA	23.48	23.47	-0.01	-0.05	CANOLA	23.48	23.46	-0.02	-0.1
SOYBEANS	2.81	2.52	-0.3	-10.52	SOYBEANS	2.81	2.32	-0.49	-17.52	SOYBEANS	2.81	1.7	-1.11	-39.37
CORNG	2.78	2.58	-0.2	-7.13	CORNG	2.78	2.38	-0.4	-14.25	CORNG	2.78	1.83	-0.95	-34.01
CORNS	233.72	212.09	-21.62	-9.25	CORNS	233.72	196.21	-37.51	-16.05	CORNS	233.72	161.51	-72.21	-30.9
CEREALS	845.01	682.67	-162.35	-19.21	CEREALS	845.01	586.94	-258.07	-30.54	CEREALS	845.01	441.84	-403.17	-47.71
OTHER	1489.39	1428.7	-60.68	-4.07	OTHER	1489.39	1392.9	-96.49	-6.48	OTHER	1489.39	1291.39	-198	-13.29
HAY	2682.4	3127.25	444.86	16.58	HAY	2682.4	3363.99	681.6	25.41	HAY	2682.4	3866.3	1183.91	44.14
PAST	4804.51	4804.51			PAST	4804.51	4804.51			PAST	4804.51	4804.51		
UILPAST	14492.42	15026.25	533.83	3.68	UILPAST	14492.42	15266.68	774.26	5.34	UILPAST	14492.42	15338.18	845.76	5.84
ALFALFA	4348.1	4717.65	369.54	8.5	ALFALFA	4348.1	4889.01	540.91	12.44	ALFALFA	4348.1	5275.98	927.88	21.34
POTAT	121.65	119.49	-2.16	-1.77	POTAT	121.65	118.01	-3.63	-2.99	POTAT	121.65	113.38	-8.26	-6.79
WHEATI	3223.79	3030.3	-193.49	-6	WHEATI	3223.79	2928.67	-295.11	-9.15	WHEATI	3223.79	2640.75	-583.04	-18.09
WHEATM	2713.4	2640.4	-73	-2.69	WHEATM	2713.4	2614.85	-98.55	-3.63	WHEATM	2713.4	2521.68	-191.71	-7.07
WHEATN	2635.42	2711.65	76.23	2.89	WHEATN	2635.42	2781.48	146.06	5.54	WHEATN	2635.42	2935.91	300.49	11.4
DURUMI	676.03	667.88	-8.15	-1.21	DURUMI	676.03	662.8	-13.23	-1.96	DURUMI	676.03	649.74	-26.29	-3.89
DURUMM	568.19	566.59	-1.6	-0.28	DURUMM	568.19	565.89	-2.29	-0.4	DURUMM	568.19	563.88	-4.31	-0.76
DURUMN	856.03	865.37	9.34	1.09	DURUMN	856.03	871.96	15.93	1.86	DURUMN	856.03	888.2	32.17	3.76
BARFDI	917.84	840.99	-76.85	-8.37	BARFDI	917.84	795.47	-122.37	-13.33	BARFDI	917.84	712.89	-204.94	-22.33
BARFDM	545.13	532.68	-12.45	-2.28	BARFDM	545.13	522.78	-22.35	-4.1	BARFDM	545.13	518.55	-26.58	-4.88
BARFDN	414.44	437.92	23.48	5.66	BARFDN	414.44	451.29	36.85	8.89	BARFDN	414.44	501.09	86.66	20.91
BARMTI	1043.68	994.81	-48.87	-4.68	BARMTI	1043.68	956.08	-87.6	-8.39	BARMTI	1043.68	884.04	-159.64	-15.3
BARMTM	957.83	961.31	3.47	0.36	BARMTM	957.83	958.52	0.69	0.07	BARMTM	957.83	973.91	16.08	1.68
BARMTN	926.19	988.57	62.37	6.73	BARMTN	926.19	1025.31	99.11	10.7	BARMTN	926.19	1140.05	213.85	23.09
OATSI	587.12	516.38	-70.74	-12.05	OATSI	587.12	477.3	-109.82	-18.71	OATSI	587.12	385.62	-201.5	-34.32
OATSM	448.18	430.25	-17.92	-4	OATSM	448.18	424.93	-23.24	-5.19	OATSM	448.18	409.34	-38.84	-8.67
OATSN	381.57	413.85	32.28	8.46	OATSN	381.57	440.76	59.19	15.51	OATSN	381.57	507.48	125.9	33
FLAXI	251.04	232.55	-18.5	-7.37	FLAXI	251.04	222.44	-28.6	-11.39	FLAXI	251.04	192.62	-58.43	-23.27
FLAXM	195.73	190.85	-4.88	-2.49	FLAXM	195.73	189.23	-6.5	-3.32	FLAXM	195.73	181.99	-13.74	-7.02
FLAXN	217.17	225.32	8.15	3.75	FLAXN	217.17	232.14	14.97	6.89	FLAXN	217.17	246.88	29.7	13.68
CANOLAI	1425.62	1344.27	-81.35	-5.71	CANOLAI	1425.62	1292.96	-132.66	-9.31	CANOLAI	1425.62	1160.02	-265.59	-18.63
CANOLAM	1225.95	1204.74	-21.21	-1.73	CANOLAM	1225.95	1192.91	-33.04	-2.7	CANOLAM	1225.95	1160.19	-65.77	-5.36
CANOLAN	1070.28	1117.26	46.98	4.39	CANOLAN	1070.28	1149.92	79.64	7.44	CANOLAN	1070.28	1230.35	160.07	14.96
LENTILSI	212.52	206.06	-6.47	-3.04	LENTILSI	212.52	202.12	-10.4	-4.9	LENTILSI	212.52	191.65	-20.88	-9.82
LENTILSM	183.75	181.32	-2.43	-1.32	LENTILSM	183.75	180.05	-3.7	-2.01	LENTILSM	183.75	176.31	-7.44	-4.05
LENTILSN	306.24	309.38	3.14	1.03	LENTILSN	306.24	312.06	5.82	1.9	LENTILSN	306.24	317.79	11.54	3.77
FLDPEASI	636.68	564.17	-72.51	-11.39	FLDPEASI	636.68	520.36	-116.32	-18.27	FLDPEASI	636.68	404.65	-232.03	-36.44
FLDPEASM	568.83	543.28	-25.55	-4.49	FLDPEASM	568.83	530.08	-38.74	-6.81	FLDPEASM	568.83	490.27	-78.56	-13.81
FLDPEASN	638.96	672.24	33.28	5.21	FLDPEASN	638.96	698.69	59.73	9.35	FLDPEASN	638.96	756.43	117.47	18.38
SOYI	556.43	546.46	-9.98	-1.79	SOYI	556.43	541.43	-15	-2.7	SOYI	556.43	526.93	-29.5	-5.3
SOYM	226.13	223.75	-2.38	-1.05	SOYM	226.13	222.86	-3.27	-1.45	SOYM	226.13	220.01	-6.12	-2.71
SOYN	271.77	272.16	0.38	0.14	SOYN	271.77	273.33	1.56	0.57	SOYN	271.77	275.77	4	1.47
CORNGI	749.22	721.34	-27.89	-3.72	CORNGI	749.22	704.48	-44.75	-5.97	CORNGI	749.22	658.84	-90.38	-12.06
CORNGM	261.36	256.91	-4.45	-1.7	CORNGM	261.36	253.84	-7.52	-2.88	CORNGM	261.36	244.75	-16.61	-6.36
CORNGN	235.52	239.62	4.1	1.74	CORNGN	235.52	240.85	5.33	2.26	CORNGN	235.52	242.97	7.44	3.16
HAYR	124.62	106.03	-18.59	-14.92	HAYR	124.62	93.45	-31.17	-25.01	HAYR	124.62	66.74	-57.88	-46.44
ALFALFAR	154.45	133.37	-21.08	-13.65	ALFALFAR	154.45	119.6	-34.85	-22.56	ALFALFAR	154.45	91.43	-63.01	-40.8
WHEATR	57.52	56.96	-0.57	-0.98	WHEATR	57.52	56.87	-0.66	-1.14	WHEATR	57.52	56.8	-0.72	-1.26
BARFDR	56.25	58.42	2.17	3.86	BARFDR	56.25	59.25	3	5.34	BARFDR	56.25	64.11	7.86	13.98
OATSR	5.66	5.63	-0.02	-0.4	OATSR	5.66	5.69	0.03	0.6	OATSR	5.66	5.86	0.2	3.52
FLAXR	1.57	1.56	-0.02	-1	FLAXR	1.57	1.55	-0.02	-1.49	FLAXR	1.57	1.54	-0.03	-2.01
CANOLAR	18.88	18.57	-0.31	-1.65	CANOLAR	18.88	18.39	-0.49	-2.61	CANOLAR	18.88	18.07	-0.81	-4.28
LENTILSR	1.46	1.4	-0.06	-4	LENTILSR	1.46	1.36	-0.09	-6.38	LENTILSR	1.46	1.27	-0.19	-12.76
FLDPEASR	3.2	3.11	-0.09	-2.82	FLDPEASR	3.2	3.06	-0.14	-4.36	FLDPEASR	3.2	2.96	-0.24	-7.54
OTHERR	149.62	148.28	-1.34	-0.9	OTHERR	149.62	147.46	-2.16	-1.45	OTHERR	149.62	145.36	-4.26	-2.85
POTATR	36.54	36.48	-0.06	-0.16	POTATR	36.54	36.46	-0.08	-0.21	POTATR	36.54	36.43	-0.11	-0.31

Canada- Provincial crop acreages ('000 ha) for carbon price changes Policy Till

Crop	Base	$5	Diff	% Change
WHEAT	46.8	46.8	-2.32E-03	-4.97E-03
BARFD	128.23	128.2	-0.03	-0.02
OATS	32.21	32.2	-6.25E-03	-0.02
CANOLA	23.48	23.48	5.75E-05	2.45E-04
SOYBEANS	2.81	2.81	-2.45E-03	-0.09
CORNG	2.78	2.78	-2.86E-04	-0.01
CORNS	233.72	233.77	0.05	0.02
CEREALS	845.01	845	-0.01	-1.42E-03
OTHER	1489.39	1486.13	-3.26	-0.22
HAY	2682.4	2679.73	-2.66	-0.1
PAST	4804.51	4804.51		
UILPAST	14492.42	14483.33	-9.09	-0.06
ALFALFA	4348.1	4346.53	-1.57	-0.04
POTAT	121.65	121.65	-3.73E-04	-3.07E-04
WHEATI	3223.79	3206.63	-17.16	-0.53
WHEATM	2713.4	2713.64	0.24	8.80E-03
WHEATN	2635.42	2658.78	23.36	0.89
DURUMI	676.03	674.8	-1.23	-0.18
DURUMM	568.19	567.99	-0.2	-0.03
DURUMN	856.03	857.68	1.66	0.19
BARFDI	917.84	913.52	-4.32	-0.47
BARFDM	545.13	544.99	-0.15	-0.03
BARFDN	414.44	419.17	4.73	1.14
BARMTI	1043.68	1036.09	-7.59	-0.73
BARMTM	957.83	957.66	-0.17	-0.02
BARMTN	926.19	935.04	8.85	0.96
OATSI	587.12	580.3	-6.82	-1.16
OATSM	448.18	448.57	0.39	0.09
OATSN	381.57	389.87	8.29	2.17
FLAXI	251.04	249.35	-1.69	-0.67
FLAXM	195.73	195.93	0.2	0.1
FLAXN	217.17	219.54	2.37	1.09
CANOLAI	1425.62	1416.57	-9.05	-0.63
CANOLAM	1225.95	1226.08	0.13	0.01
CANOLAN	1070.28	1080.72	10.44	0.98
LENTILSI	212.52	211.94	-0.58	-0.27
LENTILSM	183.75	183.76	0.01	6.81E-03
LENTILSN	306.24	307.49	1.25	0.41
FLDPEASI	636.68	629.72	-6.95	-1.09
FLDPEASM	568.83	568.55	-0.27	-0.05
FLDPEASN	638.96	649.16	10.19	1.6
SOYI	556.43	556.01	-0.43	-0.08
SOYM	226.13	226.19	0.06	0.03
SOYN	271.77	272.32	0.55	0.2
CORNGI	749.22	748.02	-1.2	-0.16
CORNGM	261.36	261.54	0.18	0.07
CORNGN	235.52	236.54	1.01	0.43
HAYR	124.62	124.75	0.13	0.11
ALFALFAR	154.45	154.73	0.28	0.18
WHEATR	57.52	57.39	-0.13	-0.23
BARFDR	56.25	55.98	-0.27	-0.47
OATSR	5.66	5.63	-0.03	-0.51
FLAXR	1.57	1.57	-3.70E-03	-0.24
CANOLAR	18.88	18.83	-0.05	-0.29
LENTILSR	1.46	1.45	-4.58E-03	-0.31
FLDPEASR	3.2	3.18	-0.02	-0.67
OTHERR	149.62	149.52	-0.1	-0.06
POTATR	36.54	36.53	-0.01	-0.04

Crop	Base	$10	Diff	% Change
WHEAT	46.8	46.79	-8.78E-03	-0.02
BARFD	128.23	128.19	-0.04	-0.03
OATS	32.21	32.2	-8.36E-03	-0.03
CANOLA	23.48	23.48	2.33E-03	9.92E-03
SOYBEANS	2.81	2.81	-2.39E-03	-0.08
CORNG	2.78	2.78	-3.01E-04	-0.01
CORNS	233.72	233.84	0.12	0.05
CEREALS	845.01	844.88	-0.14	-0.02
OTHER	1489.39	1481.44	-7.94	-0.53
HAY	2682.4	2676.48	-5.91	-0.22
PAST	4804.51	4804.51		
UILPAST	14492.42	14466.78	-25.63	-0.18
ALFALFA	4348.1	4343.88	-4.23	-0.1
POTAT	121.65	121.63	-0.01	-0.01
WHEATI	3223.79	3188.92	-34.87	-1.08
WHEATM	2713.4	2713.59	0.19	7.07E-03
WHEATN	2635.42	2681.54	46.12	1.75
DURUMI	676.03	673.53	-2.5	-0.37
DURUMM	568.19	567.76	-0.43	-0.08
DURUMN	856.03	859.29	3.26	0.38
BARFDI	917.84	909.64	-8.19	-0.89
BARFDM	545.13	545.16	0.03	5.12E-03
BARFDN	414.44	424.03	9.59	2.32
BARMTI	1043.68	1028.65	-15.02	-1.44
BARMTM	957.83	957.72	-0.12	-0.01
BARMTN	926.19	944.16	17.96	1.94
OATSI	587.12	573.36	-13.76	-2.34
OATSM	448.18	448.81	0.64	0.14
OATSN	381.57	397.98	16.4	4.3
FLAXI	251.04	247.52	-3.52	-1.4
FLAXM	195.73	196	0.28	0.14
FLAXN	217.17	221.8	4.62	2.13
CANOLAI	1425.62	1407.38	-18.23	-1.28
CANOLAM	1225.95	1225.97	0.01	1.06E-03
CANOLAN	1070.28	1090.93	20.65	1.93
LENTILSI	212.52	211.23	-1.3	-0.61
LENTILSM	183.75	183.67	-0.08	-0.05
LENTILSN	306.24	308.54	2.29	0.75
FLDPEASI	636.68	622.01	-14.66	-2.3
FLDPEASM	568.83	567.72	-1.11	-0.19
FLDPEASN	638.96	658.46	19.49	3.05
SOYI	556.43	555.56	-0.87	-0.16
SOYM	226.13	226.24	0.11	0.05
SOYN	271.77	272.86	1.09	0.4
CORNGI	749.22	746.91	-2.31	-0.31
CORNGM	261.36	261.75	0.39	0.15
CORNGN	235.52	237.58	2.06	0.87
HAYR	124.62	124.86	0.24	0.19
ALFALFAR	154.45	154.94	0.49	0.32
WHEATR	57.52	57.28	-0.24	-0.42
BARFDR	56.25	55.76	-0.48	-0.86
OATSR	5.66	5.6	-0.06	-1.03
FLAXR	1.57	1.57	-7.54E-03	-0.48
CANOLAR	18.88	18.77	-0.11	-0.57
LENTILSR	1.46	1.45	-0.01	-0.72
FLDPEASR	3.2	3.16	-0.04	-1.37
OTHERR	149.62	149.41	-0.21	-0.14
POTATR	36.54	36.52	-0.03	-0.07

Crop	Base	$15	Diff	% Change
WHEAT	46.8	46.78	-0.01	-0.03
BARFD	128.23	128.18	-0.05	-0.04
OATS	32.21	32.19	-0.01	-0.04
CANOLA	23.48	23.49	4.36E-03	0.02
SOYBEANS	2.81	2.81	-2.20E-03	-0.08
CORNG	2.78	2.78	-3.23E-04	-0.01
CORNS	233.72	233.89	0.17	0.07
CEREALS	845.01	844.75	-0.26	-0.03
OTHER	1489.39	1476.87	-12.52	-0.84
HAY	2682.4	2673.59	-8.81	-0.33
PAST	4804.51	4804.51		
UILPAST	14492.42	14453.74	-38.67	-0.27
ALFALFA	4348.1	4341.7	-6.41	-0.15
POTAT	121.65	121.62	-0.03	-0.02
WHEATI	3223.79	3171.09	-52.7	-1.63
WHEATM	2713.4	2713.61	0.21	7.79E-03
WHEATN	2635.42	2704.05	68.63	2.6
DURUMI	676.03	672.31	-3.72	-0.55
DURUMM	568.19	567.58	-0.61	-0.11
DURUMN	856.03	860.96	4.93	0.58
BARFDI	917.84	905.29	-12.54	-1.37
BARFDM	545.13	545.14	2.93E-03	5.38E-04
BARFDN	414.44	428.75	14.31	3.45
BARMTI	1043.68	1021.04	-22.64	-2.17
BARMTM	957.83	957.67	-0.16	-0.02
BARMTN	926.19	953.06	26.86	2.9
OATSI	587.12	566.29	-20.83	-3.55
OATSM	448.18	449.02	0.84	0.19
OATSN	381.57	405.96	24.39	6.39
FLAXI	251.04	245.68	-5.37	-2.14
FLAXM	195.73	196.07	0.35	0.18
FLAXN	217.17	224.01	6.84	3.15
CANOLAI	1425.62	1398.1	-27.52	-1.93
CANOLAM	1225.95	1225.86	-0.09	-7.37E-03
CANOLAN	1070.28	1101.18	30.9	2.89
LENTILSI	212.52	210.54	-1.99	-0.94
LENTILSM	183.75	183.6	-0.15	-0.08
LENTILSN	306.24	309.64	3.4	1.11
FLDPEASI	636.68	614.44	-22.24	-3.49
FLDPEASM	568.83	567.02	-1.8	-0.32
FLDPEASN	638.96	667.74	28.77	4.5
SOYI	556.43	555.13	-1.3	-0.23
SOYM	226.13	226.3	0.16	0.07
SOYN	271.77	273.41	1.63	0.6
CORNGI	749.22	745.76	-3.47	-0.46
CORNGM	261.36	261.94	0.58	0.22
CORNGN	235.52	238.6	3.08	1.31
HAYR	124.62	124.97	0.35	0.28
ALFALFAR	154.45	155.15	0.71	0.46
WHEATR	57.52	57.14	-0.38	-0.67
BARFDR	56.25	55.51	-0.74	-1.32
OATSR	5.66	5.56	-0.09	-1.64
FLAXR	1.57	1.56	-0.01	-0.74
CANOLAR	18.88	18.71	-0.17	-0.89
LENTILSR	1.46	1.44	-0.02	-1.12
FLDPEASR	3.2	3.14	-0.07	-2.04
OTHERR	149.62	149.3	-0.32	-0.21
POTATR	36.54	36.5	-0.04	-0.11

Canada- Provincial crop acreages ('000 ha) for carbon price changes Policy Till

	Crop	Base	$30 Diff	% Change		Crop	Base	$50 Diff	% Change		Crop	Base	$100 Diff	% Change
WHEAT	46.8	46.8	-2.65E-03	-5.65E-03	WHEAT	46.8	46.78	-0.02	-0.04	WHEAT	46.8	46.78	-0.02	-0.05
BARFD	128.23	128.17	-0.05	-0.04	BARFD	128.23	128.11	-0.12	-0.09	BARFD	128.23	127.94	-0.28	-0.22
OATS	32.21	32.19	-0.02	-0.06	OATS	32.21	32.16	-0.05	-0.16	OATS	32.21	32.08	-0.12	-0.39
CANOLA	23.48	23.48	4.40E-04	1.87E-03	CANOLA	23.48	23.48	3.80E-03	0.02	CANOLA	23.48	23.48	7.18E-04	3.06E-03
SOYBEANS	2.81	2.81	-2.25E-03	-0.08	SOYBEANS	2.81	2.81	-2.19E-03	-0.08	SOYBEANS	2.81	2.81	-2.05E-03	-0.07
CORNG	2.78	2.78	-2.11E-04	-7.57E-03	CORNG	2.78	2.78	-3.37E-04	-0.01	CORNG	2.78	2.78	-3.69E-04	-0.01
CORNS	233.72	234.08	0.36	0.15	CORNS	233.72	234.32	0.6	0.26	CORNS	233.72	234.93	1.22	0.52
CEREALS	845.01	844.51	-0.5	-0.06	CEREALS	845.01	844.24	-0.77	-0.09	CEREALS	845.01	843.39	-1.62	-0.19
OTHER	1489.39	1462.02	-27.36	-1.84	OTHER	1489.39	1442.06	-47.32	-3.18	OTHER	1489.39	1392.13	-97.26	-6.53
HAY	2682.4	2663.93	-18.47	-0.69	HAY	2682.4	2651.57	-30.83	-1.15	HAY	2682.4	2620.69	-61.7	-2.3
PAST	4804.51	4804.51			PAST	4804.51	4804.51			PAST	4804.51	4804.51		
UILPAST	14492.42	14408.75	-83.67	-0.58	UILPAST	14492.42	14352.62	-139.79	-0.96	UILPAST	14492.42	14205.87	-286.55	-1.98
ALFALFA	4348.1	4334.31	-13.79	-0.32	ALFALFA	4348.1	4324.51	-23.6	-0.54	ALFALFA	4348.1	4299.91	-48.2	-1.11
POTAT	121.65	121.57	-0.08	-0.07	POTAT	121.65	121.5	-0.15	-0.12	POTAT	121.65	121.33	-0.31	-0.26
WHEATI	3223.79	3118.08	-105.71	-3.28	WHEATI	3223.79	3046.97	-176.82	-5.48	WHEATI	3223.79	2870.35	-353.43	-10.96
WHEATM	2713.4	2713.23	-0.16	-6.04E-03	WHEATM	2713.4	2712.39	-1.01	-0.04	WHEATM	2713.4	2712.02	-1.38	-0.05
WHEATN	2635.42	2772.37	136.95	5.2	WHEATN	2635.42	2863.54	228.12	8.66	WHEATN	2635.42	3091.34	455.92	17.3
DURUMI	676.03	668.54	-7.49	-1.11	DURUMI	676.03	663.51	-12.52	-1.85	DURUMI	676.03	651.04	-24.99	-3.7
DURUMM	568.19	566.91	-1.28	-0.22	DURUMM	568.19	566.05	-2.14	-0.38	DURUMM	568.19	563.95	-4.24	-0.75
DURUMN	856.03	865.84	9.81	1.15	DURUMN	856.03	872.36	16.33	1.91	DURUMN	856.03	888.67	32.64	3.81
BARFDI	917.84	892.9	-24.93	-2.72	BARFDI	917.84	876.16	-41.68	-4.54	BARFDI	917.84	833.63	-84.2	-9.17
BARFDM	545.13	545.24	0.1	0.02	BARFDM	545.13	545.16	0.02	4.51E-03	BARFDM	545.13	544.41	-0.73	-0.13
BARFDN	414.44	443.03	28.59	6.9	BARFDN	414.44	462.01	47.57	11.48	BARFDN	414.44	509.05	94.61	22.83
BARMTI	1043.68	998.26	-45.42	-4.35	BARMTI	1043.68	967.88	-75.8	-7.26	BARMTI	1043.68	890.99	-152.69	-14.63
BARMTM	957.83	957.26	-0.57	-0.06	BARMTM	957.83	956.86	-0.97	-0.1	BARMTM	957.83	954.94	-2.89	-0.3
BARMTN	926.19	979.69	53.5	5.78	BARMTN	926.19	1015.22	89.02	9.61	BARMTN	926.19	1103.57	177.38	19.15
OATSI	587.12	544.99	-42.14	-7.18	OATSI	587.12	517.09	-70.03	-11.93	OATSI	587.12	446.88	-140.24	-23.89
OATSM	448.18	449.44	1.27	0.28	OATSM	448.18	450.41	2.24	0.5	OATSM	448.18	452.48	4.3	0.96
OATSN	381.57	430.1	48.53	12.72	OATSN	381.57	462.34	80.77	21.17	OATSN	381.57	542.64	161.07	42.21
FLAXI	251.04	240.22	-10.82	-4.31	FLAXI	251.04	232.79	-18.26	-7.27	FLAXI	251.04	214.4	-36.64	-14.6
FLAXM	195.73	196.37	0.64	0.33	FLAXM	195.73	196.58	0.85	0.43	FLAXM	195.73	197.35	1.63	0.83
FLAXN	217.17	230.76	13.59	6.26	FLAXN	217.17	239.55	22.37	10.3	FLAXN	217.17	261.8	44.63	20.55
CANOLAI	1425.62	1370.28	-55.34	-3.88	CANOLAI	1425.62	1333.05	-92.57	-6.49	CANOLAI	1425.62	1240.52	-185.1	-12.98
CANOLAM	1225.95	1225.57	-0.38	-0.03	CANOLAM	1225.95	1225.04	-0.91	-0.07	CANOLAM	1225.95	1224.11	-1.84	-0.15
CANOLAN	1070.28	1131.76	61.48	5.74	CANOLAN	1070.28	1172.59	102.31	9.56	CANOLAN	1070.28	1274.91	204.63	19.12
LENTILSI	212.52	208.39	-4.13	-1.94	LENTILSI	212.52	205.49	-7.03	-3.31	LENTILSI	212.52	198.31	-14.22	-6.69
LENTILSM	183.75	183.33	-0.42	-0.23	LENTILSM	183.75	182.93	-0.82	-0.45	LENTILSM	183.75	181.99	-1.76	-0.96
LENTILSN	306.24	312.85	6.6	2.16	LENTILSN	306.24	317.04	10.79	3.52	LENTILSN	306.24	327.61	21.37	6.98
FLDPEASI	636.68	591.62	-45.06	-7.08	FLDPEASI	636.68	561.38	-75.29	-11.83	FLDPEASI	636.68	485.96	-150.72	-23.67
FLDPEASM	568.83	564.61	-4.22	-0.74	FLDPEASM	568.83	561.8	-7.03	-1.24	FLDPEASM	568.83	554.79	-14.04	-2.47
FLDPEASN	638.96	695.96	57	8.92	FLDPEASN	638.96	733.72	94.76	14.83	FLDPEASN	638.96	828.23	189.27	29.62
SOYI	556.43	553.83	-2.6	-0.47	SOYI	556.43	551.98	-4.45	-0.8	SOYI	556.43	547.35	-9.09	-1.63
SOYM	226.13	226.47	0.33	0.15	SOYM	226.13	226.65	0.51	0.23	SOYM	226.13	227.07	0.94	0.41
SOYN	271.77	275.07	3.29	1.21	SOYN	271.77	277.2	5.43	2	SOYN	271.77	282.52	10.75	3.96
CORNGI	749.22	742.31	-6.91	-0.92	CORNGI	749.22	737.92	-11.3	-1.51	CORNGI	749.22	727.04	-22.18	-2.96
CORNGM	261.36	262.54	1.18	0.45	CORNGM	261.36	263.43	2.07	0.79	CORNGM	261.36	265.65	4.29	1.64
CORNGN	235.52	241.7	6.18	2.62	CORNGN	235.52	245.95	10.43	4.43	CORNGN	235.52	256.54	21.02	8.92
HAYR	124.62	125.35	0.73	0.58	HAYR	124.62	125.85	1.23	0.99	HAYR	124.62	127.03	2.41	1.93
ALFALFAR	154.45	155.84	1.39	0.9	ALFALFAR	154.45	156.75	2.3	1.49	ALFALFAR	154.45	158.95	4.5	2.91
WHEATR	57.52	56.76	-0.77	-1.33	WHEATR	57.52	56.26	-1.26	-2.2	WHEATR	57.52	55.02	-2.5	-4.35
BARFDR	56.25	54.84	-1.41	-2.51	BARFDR	56.25	53.75	-2.5	-4.44	BARFDR	56.25	51.02	-5.23	-9.31
OATSR	5.66	5.46	-0.19	-3.41	OATSR	5.66	5.33	-0.32	-5.69	OATSR	5.66	5.01	-0.65	-11.47
FLAXR	1.57	1.55	-0.02	-1.54	FLAXR	1.57	1.53	-0.04	-2.53	FLAXR	1.57	1.5	-0.08	-5
CANOLAR	18.88	18.54	-0.34	-1.8	CANOLAR	18.88	18.32	-0.56	-2.99	CANOLAR	18.88	17.75	-1.13	-6.01
LENTILSR	1.46	1.42	-0.03	-2.4	LENTILSR	1.46	1.4	-0.06	-4.1	LENTILSR	1.46	1.34	-0.12	-8.35
FLDPEASR	3.2	3.07	-0.13	-4.06	FLDPEASR	3.2	2.99	-0.21	-6.71	FLDPEASR	3.2	2.78	-0.42	-13.16
OTHERR	149.62	148.97	-0.65	-0.43	OTHERR	149.62	148.54	-1.08	-0.72	OTHERR	149.62	147.44	-2.18	-1.46
POTATR	36.54	36.46	-0.08	-0.23	POTATR	36.54	36.4	-0.14	-0.38	POTATR	36.54	36.26	-0.28	-0.76

Appendix D1

Regional distribution of carbon sequestering crops/technology ('000 ha) - Alberta -Policy all -$5

Region	Crops	BASE	$5	DIFF	PRCNTCHG
AL.1	HAY	27.6	28.306	0.706	2.558
AL.1	ALFALFA	101.788	104.169	2.381	2.339
AL.1	WHTHQSFI	84.647	84.627	-0.02	-0.024
AL.1	WHTHQSFI	81.587	81.785	0.198	0.242
AL.1	WHTHQSBI	13.687	13.617	-0.07	-0.513
AL.1	WHTHQSBI	13.193	13.178	-0.015	-0.117
AL.1	DURUMSFI	46.671	46.667	-0.004	-0.009
AL.1	DURUMSFI	44.985	45.037	0.053	0.117
AL.1	BARFDSBM	12.582	12.514	-0.068	-0.54
AL.1	BARFDSBN	12.128	12.124	-0.004	-0.031
AL.1	BARMTSBM	20.547	20.443	-0.104	-0.506
AL.1	BARMTSBN	19.804	19.799	-0.006	-0.029
AL.1	OATSSBM	13.973	13.783	-0.191	-1.365
AL.1	OATSSBN	13.468	13.429	-0.039	-0.29
AL.1	FLAXSBM	0.034	0.033	-9.54E-05	-0.285
AL.1	FLAXSBN	0.032	0.032	-1.82E-05	-0.056
AL.1	CANSBM	5.54	5.511	-0.029	-0.529
AL.1	CANSBN	5.34	5.333	-0.007	-0.126
AL.1	LENTSBM	1.144	1.139	-0.005	-0.48
AL.1	LENTSBN	1.103	1.102	-9.82E-04	-0.089
AL.1	FLDPSBM	15.792	15.596	-0.196	-1.241
AL.1	FLDPSBN	15.221	15.184	-0.037	-0.242

Region	Crops	BASE	$5	DIFF	PRCNTCHG
AL.2	ALFALFA	80.908	82.391	1.483	1.833
AL.2	WHTHQSFI	91.567	91.536	-0.031	-0.034
AL.2	WHTHQSFI	90.074	90.274	0.2	0.222
AL.2	WHTHQSBI	95.368	95.454	0.086	0.09
AL.2	WHTHQSBI	93.813	94.123	0.31	0.33
AL.2	DURUMSB	66.373	66.409	0.036	0.054
AL.2	DURUMSB	65.292	65.424	0.132	0.203
AL.2	BARFDSBM	7.197	7.217	0.019	0.269
AL.2	BARFDSBN	7.08	7.135	0.054	0.769
AL.2	BARMTSBM	112.436	112.67	0.234	0.208
AL.2	BARMTSBN	110.603	111.255	0.653	0.59
AL.2	FLAXSBM	1.389	1.391	0.001	0.101
AL.2	FLAXSBN	1.367	1.372	0.005	0.381
AL.2	CANSFM	34.997	34.975	-0.022	-0.063
AL.2	CANSFN	34.427	34.569	0.143	0.415
AL.2	LENTSBM	1.066	1.067	0.001	0.117
AL.2	LENTSBN	1.049	1.053	0.005	0.443
AL.2	FLDPSBM	29.325	29.429	0.104	0.355
AL.2	FLDPSBN	28.85	29.209	0.359	1.244

Region	Crops	BASE	$5	DIFF	PRCNTCHG
AL.3	HAY	89.548	92.748	3.2	3.573
AL.3	ALFALFA	167.063	170.313	3.25	1.946
AL.3	WHTHQSFI	0.59	0.591	2.18E-04	0.037
AL.3	WHTHQSFI	0.353	0.355	0.002	0.642
AL.3	WHTHQSBI	82.484	82.21	-0.274	-0.332
AL.3	WHTHQSBI	49.287	49.299	0.013	0.026
AL.3	DURUMSB	10.876	10.855	-0.021	-0.191
AL.3	DURUMSB	6.499	6.5	0.001	0.023
AL.3	BARFDSBM	40.389	40.122	-0.267	-0.661
AL.3	BARFDSBN	24.133	24.195	0.062	0.258
AL.3	BARMTSBM	111.838	111.12	-0.717	-0.641
AL.3	BARMTSBN	66.826	66.971	0.144	0.216
AL.3	OATSSBM	3.324	3.297	-0.027	-0.824
AL.3	OATSSBN	1.986	1.986	1.93E-04	0.01
AL.3	FLAXSBM	0.272	0.27	-0.003	-1.02
AL.3	FLAXSBN	0.163	0.163	1.71E-04	0.105
AL.3	CANSFM	20.28	20.299	0.019	0.095
AL.3	CANSFN	12.115	12.233	0.117	0.967
AL.3	LENTSBM	0.238	0.235	-0.002	-1.003
AL.3	LENTSBN	0.142	0.142	1.49E-04	0.105
AL.3	FLDPSBM	6.253	6.199	-0.055	-0.878
AL.3	FLDPSBN	3.737	3.742	0.005	0.138

Region	Crops	BASE	$5	DIFF	PRCNTCHG
AL.4	HAY	116.959	121.763	4.804	4.107
AL.4	ALFALFA	219.412	226.61	7.198	3.28
AL.4	WHTHQSBI	244.277	242.293	-1.984	-0.812
AL.4	WHTHQSBI	208.847	209.219	0.372	0.178
AL.4	DURUMSFI	2.715	2.714	-4.40E-04	-0.016
AL.4	DURUMSFI	2.321	2.328	0.007	0.322
AL.4	BARFDSBM	76.873	76.443	-0.429	-0.559
AL.4	BARFDSBN	65.723	65.928	0.205	0.312
AL.4	BARMTSBM	102.378	101.645	-0.732	-0.715
AL.4	BARMTSBN	87.529	87.833	0.304	0.347
AL.4	OATSSBM	51.574	50.882	-0.692	-1.342
AL.4	OATSSBN	44.094	44.169	0.076	0.172
AL.4	FLAXSBM	1.842	1.832	-0.01	-0.549
AL.4	FLAXSBN	1.575	1.577	0.002	0.102
AL.4	CANSFM	63.008	62.975	-0.033	-0.052
AL.4	CANSFN	53.869	54.289	0.419	0.779
AL.4	CANSBM	92.837	92.152	-0.685	-0.738
AL.4	CANSBN	79.372	79.496	0.124	0.156
AL.4	FLDPSBM	35.219	34.867	-0.352	-0.999
AL.4	FLDPSBN	30.108	30.189	0.082	0.271

Region	Crops	BASE	$5	DIFF	PRCNTCHG
AL.5	HAY	201.699	215.542	13.843	6.863
AL.5	ALFALFA	298.524	304.822	6.298	2.11
AL.5	WHTHQSBI	49.39	48.704	-0.686	-1.39
AL.5	WHTHQSBI	28.224	27.985	-0.239	-0.848
AL.5	DURUMSB	0.909	0.89	-0.02	-2.148
AL.5	DURUMSB	0.52	0.513	-0.007	-1.279
AL.5	BARFDSBM	39.161	38.047	-1.114	-2.845
AL.5	BARFDSBN	22.378	22.052	-0.326	-1.457
AL.5	BARMTSBM	41.139	39.945	-1.194	-2.903
AL.5	BARMTSBN	23.508	23.162	-0.346	-1.47
AL.5	OATSSBM	8.668	8.362	-0.306	-3.533
AL.5	OATSSBN	4.953	4.859	-0.094	-1.901
AL.5	FLAXSBM	0.131	0.124	-0.007	-5.524
AL.5	FLAXSBN	0.075	0.073	-0.002	-2.992
AL.5	CANSFM	12.935	12.944	0.009	0.071
AL.5	CANSFN	7.392	7.476	0.085	1.144
AL.5	CANSBM	25.48	24.957	-0.523	-2.054
AL.5	CANSBN	14.559	14.401	-0.158	-1.083
AL.5	LENTSBM	0.084	0.083	-6.39E-04	-0.764
AL.5	LENTSBN	0.048	0.048	-1.99E-04	-0.416
AL.5	FLDPSBM	5.199	5.001	-0.198	-3.8
AL.5	FLDPSBN	2.971	2.915	-0.056	-1.882

Region	Crops	BASE	$5	DIFF	PRCNTCHG
AL.6	HAY	185.916	193.999	8.083	4.348
AL.6	ALFALFA	369.831	375.844	6.013	1.626
AL.6	WHTHQSBI	29.294	28.755	-0.539	-1.841
AL.6	WHTHQSBI	17.927	17.705	-0.222	-1.24
AL.6	DURUMSB	0.415	0.406	-0.009	-2.151
AL.6	DURUMSB	0.254	0.25	-0.004	-1.473
AL.6	BARFDSBM	24.325	23.717	-0.608	-2.5
AL.6	BARFDSBN	14.886	14.642	-0.244	-1.641
AL.6	BARMTSBM	24.476	23.79	-0.686	-2.804
AL.6	BARMTSBN	14.978	14.713	-0.265	-1.772
AL.6	OATSSBM	21.877	20.893	-0.984	-4.496
AL.6	OATSSBN	13.387	13	-0.387	-2.893
AL.6	FLAXSBM	0.107	0.103	-0.004	-3.673
AL.6	FLAXSBN	0.066	0.064	-0.002	-2.339
AL.6	CANSFM	16.393	16.436	0.043	0.261
AL.6	CANSFN	10.032	10.156	0.124	1.236
AL.6	CANSBM	7.76	7.573	-0.187	-2.407
AL.6	CANSBN	4.749	4.676	-0.073	-1.537
AL.6	LENTSBM	0.08	0.08	-5.22E-04	-0.65
AL.6	LENTSBN	0.049	0.049	-2.05E-04	-0.417
AL.6	FLDPSBM	3.849	3.724	-0.125	-3.237
AL.6	FLDPSBN	2.355	2.306	-0.049	-2.069

Regional distribution of carbon sequestering crops/technology ('000 ha) - Alberta -Policy all -$5

Region	Crops	BASE	$5	DIFF	PRCNTCHG
AL.7	HAY	215.92	225.152	9.232	4.276
AL.7	ALFALFA	270.718	275.339	4.621	1.707
AL.7	WHTHQSBI	133.721	131.978	-1.743	-1.304
AL.7	WHTHQSBI	71.525	71.26	-0.266	-0.371
AL.7	DURUMSB	1.653	1.641	-0.012	-0.7
AL.7	DURUMSB	0.884	0.882	-0.002	-0.198
AL.7	BARFDSBM	34.684	34.036	-0.648	-1.869
AL.7	BARFDSBN	18.552	18.485	-0.067	-0.361
AL.7	BARMTSBN	17.713	17.359	-0.354	-1.998
AL.7	BARMTSBN	9.475	9.436	-0.038	-0.401
AL.7	OATSSBM	27.601	26.707	-0.894	-3.24
AL.7	OATSSBN	14.763	14.635	-0.129	-0.871
AL.7	FLAXSBM	1.619	1.588	-0.031	-1.898
AL.7	FLAXSBN	0.866	0.861	-0.004	-0.499
AL.7	CANSFM	58.525	58.53	0.005	0.008
AL.7	CANSFN	31.303	31.776	0.472	1.509
AL.7	CANSBM	36.534	35.874	-0.66	-1.806
AL.7	CANSBN	19.542	19.453	-0.089	-0.455
AL.7	LENTSBM	0.103	0.1	-0.003	-3.122
AL.7	LENTSBN	0.055	0.055	-4.45E-04	-0.806
AL.7	FLDPSBM	13.495	13.156	-0.339	-2.511
AL.7	FLDPSBN	7.218	7.172	-0.046	-0.633

Regional distribution of carbon sequestering crops/technology ('000 ha) - Other Provinces- Policy all - $5

Region	Crops	BASE	$5	DIFF	PRCNTCHG
BC.1	HAY	8.836	9.056	0.22	2.486
BC.1	ALFALFA	1.21	1.226	0.015	1.255
BC.2	HAY	18.426	18.816	0.39	2.117
BC.2	ALFALFA	1.9	1.92	0.02	1.067
BC.3	HAY	6.054	6.167	0.113	1.866
BC.3	ALFALFA	14.894	15.039	0.144	0.967
BC.4	HAY	4.003	4.128	0.125	3.115
BC.4	ALFALFA	8.668	8.807	0.139	1.598
BC.5	HAY	34.931	35.395	0.464	1.328
BC.5	ALFALFA	22.05	22.194	0.144	0.653
BC.6	HAY	1.195	1.193	-0.001	-0.093
BC.6	ALFALFA	0.556	0.556	-5.48E-04	-0.098
BC.7	HAY	21.638	21.93	0.292	1.351
BC.7	ALFALFA	24.216	24.378	0.162	0.669
BC.8	HAY	67.862	69.791	1.929	2.843
BC.8	ALFALFA	75.53	76.685	1.154	1.528

Region	Crops	BASE	$5	DIFF	PRCNTCHG
NB.1	HAY	68.06	69.681	1.621	2.381
NB.1	ALFALFA	10.417	10.497	0.08	0.763

Region	Crops	BASE	$5	DIFF	PRCNTCHG
PE.1	HAY	45.747	47.428	1.681	3.675
PE.1	ALFALFA	12.325	12.47	0.145	1.176

Region	Crops	BASE	$5	DIFF	PRCNTCHG
NS.1	HAY	62.087	62.707	0.619	0.998
NS.1	ALFALFA	12.832	12.858	0.027	0.207

Region	Crops	BASE	$5	DIFF	PRCNTCHG
NF.1	HAY	5.347	5.366	0.019	0.348
NF.1	ALFALFA	1.084	1.084	9.41E-05	0.009

Appendix D2

Regional distribution of carbon sequestering crops/technology ('000 ha) - Alberta -Policy all -$15

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
AL.1	HAY	27.6	29.141	1.541	5.582
AL.1	ALFALFA	101.788	106.897	5.109	5.019
AL.1	WHTHQSFI	84.647	84.585	-0.062	-0.073
AL.1	WHTHQSFI	81.587	82.19	0.603	0.739
AL.1	WHTHQSBI	13.687	13.545	-0.142	-1.038
AL.1	WHTHQSBI	13.193	13.217	0.024	0.182
AL.1	DURUMSFI	46.671	46.657	-0.015	-0.032
AL.1	DURUMSFI	44.985	45.139	0.155	0.343
AL.1	BARFDSBM	12.582	12.566	-0.017	-0.132
AL.1	BARFDSBN	12.128	12.299	0.171	1.408
AL.1	BARMTSBN	20.547	20:46	-0.087	-0.423
AL.1	BARMTSBN	19.804	20.009	0.205	1.035
AL.1	OATSSBM	13.973	14.046	0.073	0.522
AL.1	OATSSBN	13.468	13.947	0.479	3.556
AL.1	FLAXSBM	0.034	0.033	-1.96E-04	-0.586
AL.1	FLAXSBN	0.032	0.032	3.17E-05	0.098
AL.1	CANSBM	5.54	5.481	-0.059	-1.064
AL.1	CANSBN	5.34	5.349	0.008	0.158
AL.1	LENTSBM	1.144	1.133	-0.011	-0.983
AL.1	LENTSBN	1.103	1.104	0.002	0.161
AL.1	FLDPSBM	15.792	15.4	-0.392	-2.483
AL.1	FLDPSBN	15.221	15.301	0.079	0.521

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
AL.2	ALFALFA	80.908	84.201	3.293	4.07
AL.2	WHTHQSFI	91.567	91.484	-0.084	-0.091
AL.2	WHTHQSFI	90.074	90.682	0.608	0.675
AL.2	WHTHQSBI	95.368	96	0.632	0.663
AL.2	WHTHQSBI	93.813	95.127	1.314	1.401
AL.2	DURUMSB	66.373	66.651	0.278	0.419
AL.2	DURUMSB	65.292	65.868	0.576	0.883
AL.2	BARFDSBM	7.197	7.369	0.172	2.385
AL.2	BARFDSBN	7.08	7.364	0.284	4.005
AL.2	BARMTSBN	112.436	114.217	1.781	1.584
AL.2	BARMTSBN	110.603	113.738	3.135	2.835
AL.2	FLAXSBM	1.389	1.4	0.011	0.78
AL.2	FLAXSBN	1.367	1.389	0.022	1.628
AL.2	CANSFM	34.997	34.926	-0.071	-0.204
AL.2	CANSFN	34.427	34.853	0.426	1.238
AL.2	LENTSBM	1.066	1.076	0.01	0.906
AL.2	LENTSBN	1.049	1.069	0.02	1.898
AL.2	FLDPSBM	29.325	30.096	0.771	2.631
AL.2	FLDPSBN	28.85	30.374	1.523	5.281

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
AL.3	HAY	89.548	96.817	7.268	8.117
AL.3	ALFALFA	167.063	173.265	6.202	3.713
AL.3	WHTHQSFI	0.59	0.592	0.001	0.204
AL.3	WHTHQSFI	0.353	0.36	0.007	2.043
AL.3	WHTHQSBI	82.484	82.069	-0.415	-0.503
AL.3	WHTHQSBI	49.287	49.57	0.283	0.575
AL.3	DURUMSB	10.876	10.841	-0.035	-0.323
AL.3	DURUMSB	6.499	6.521	0.022	0.34
AL.3	BARFDSBM	40.389	40.586	0.197	0.488
AL.3	BARFDSBN	24.133	24.926	0.793	3.285
AL.3	BARMTSBN	111.838	111.763	-0.075	-0.067
AL.3	BARMTSBN	66.826	68.479	1.653	2.473
AL.3	OATSSBM	3.324	3.357	0.033	1.002
AL.3	OATSSBN	1.986	2.053	0.067	3.365
AL.3	FLAXSBM	0.272	0.268	-0.005	-1.671
AL.3	FLAXSBN	0.163	0.166	0.003	1.765
AL.3	CANSFM	20.28	20.338	0.059	0.291
AL.3	CANSFN	12.115	12.463	0.348	2.87
AL.3	LENTSBM	0.238	0.234	-0.004	-1.632
AL.3	LENTSBN	0.142	0.145	0.002	1.747
AL.3	FLDPSBM	6.253	6.166	-0.087	-1.397
AL.3	FLDPSBN	3.737	3.798	0.061	1.636

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
AL.4	HAY	116.959	128.537	11.577	9.898
AL.4	ALFALFA	219.412	236.207	16.795	7.655
AL.4	WHTHQSBI	244.277	238.548	-5.728	-2.345
AL.4	WHTHQSBI	208.847	210.042	1.194	0.572
AL.4	DURUMSFI	2.715	2.713	-0.002	-0.068
AL.4	DURUMSFI	2.321	2.343	0.022	0.963
AL.4	BARFDSBM	76.873	76.29	-0.583	-0.758
AL.4	BARFDSBN	65.723	67.053	1.329	2.023
AL.4	BARMTSBN	102.378	101.181	-1.196	-1.168
AL.4	BARMTSBN	87.529	89.304	1.775	2.028
AL.4	OATSSBM	51.574	51.347	-0.227	-0.44
AL.4	OATSSBN	44.094	45.892	1.798	4.078
AL.4	FLAXSBM	1.842	1.813	-0.03	-1.611
AL.4	FLAXSBN	1.575	1.58	0.005	0.322
AL.4	CANSFM	63.008	62.907	-0.101	-0.161
AL.4	CANSFN	53.869	55.129	1.259	2.337
AL.4	CANSBM	92.837	90.843	-1.994	-2.148
AL.4	CANSBN	79.372	79.761	0.389	0.49
AL.4	FLDPSBM	35.219	34.165	-1.054	-2.994
AL.4	FLDPSBN	30.108	30.338	0.231	0.766

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
AL.5	HAY	201.699	236.566	34.867	17.286
AL.5	ALFALFA	298.524	311.993	13.468	4.512
AL.5	WHTHQSBI	49.39	47.881	-1.51	-3.057
AL.5	WHTHQSBI	28.224	27.856	-0.368	-1.304
AL.5	DURUMSB	0.909	0.865	-0.044	-4.853
AL.5	DURUMSB	0.52	0.509	-0.011	-2.09
AL.5	BARFDSBM	39.161	37.267	-1.893	-4.835
AL.5	BARFDSBN	22.378	22.219	-0.159	-0.711
AL.5	BARMTSBN	41.139	38.939	-2.2	-5.347
AL.5	BARMTSBN	23.508	23.254	-0.254	-1.081
AL.5	OATSSBM	8.668	8.24	-0.428	-4.94
AL.5	OATSSBN	4.953	4.949	-0.004	-0.08
AL.5	FLAXSBM	0.131	0.115	-0.016	-12.502
AL.5	FLAXSBN	0.075	0.071	-0.004	-4.816
AL.5	CANSFM	12.935	12.963	0.027	0.212
AL.5	CANSFN	7.392	7.645	0.254	3.432
AL.5	CANSBM	25.48	24.31	-1.17	-4.59
AL.5	CANSBN	14.559	14.303	-0.256	-1.758
AL.5	LENTSBM	0.084	0.082	-0.001	-1.693
AL.5	LENTSBN	0.048	0.047	-3.14E-04	-0.657
AL.5	FLDPSBM	5.199	4.749	-0.449	-8.645
AL.5	FLDPSBN	2.971	2.879	-0.091	-3.072

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
AL.6	HAY	185.916	205.89	19.973	10.743
AL.6	ALFALFA	369.831	382.317	12.486	3.376
AL.6	WHTHQSBI	29.294	27.999	-1.295	-4.422
AL.6	WHTHQSBI	17.927	17.469	-0.458	-2.553
AL.6	DURUMSB	0.415	0.393	-0.021	-5.174
AL.6	DURUMSB	0.254	0.246	-0.008	-3.029
AL.6	BARFDSBM	24.325	23.137	-1.188	-4.883
AL.6	BARFDSBN	14.886	14.564	-0.322	-2.166
AL.6	BARMTSBN	24.476	23.073	-1.403	-5.732
AL.6	BARMTSBN	14.978	14.584	-0.394	-2.629
AL.6	OATSSBM	21.877	20.216	-1.661	-7.592
AL.6	OATSSBN	13.387	13.032	-0.355	-2.653
AL.6	FLAXSBM	0.107	0.098	-0.009	-8.846
AL.6	FLAXSBN	0.066	0.062	-0.003	-4.838
AL.6	CANSFM	16.393	16.521	0.128	0.782
AL.6	CANSFN	10.032	10.404	0.372	3.71
AL.6	CANSBM	7.76	7.309	-0.451	-5.815
AL.6	CANSBN	4.749	4.598	-0.151	-3.17
AL.6	LENTSBM	0.08	0.079	-0.001	-1.562
AL.6	LENTSBN	0.049	0.049	-4.22E-04	-0.86
AL.6	FLDPSBM	3.849	3.552	-0.297	-7.711
AL.6	FLDPSBN	2.355	2.256	-0.099	-4.202

Regional distribution of carbon sequestering crops/technology ('000 ha) - Alberta -Policy all -$5

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
AL.7	HAY	215.92	237.945	22.025	10.2
AL.7	ALFALFA	270.718	280.048	9.331	3.447
AL.7	WHTHQSBI	133.721	129.781	-3.94	-2.947
AL.7	WHTHQSBI	71.525	71.405	-0.12	-0.168
AL.7	DURUMSB	1.653	1.626	-0.027	-1.637
AL.7	DURUMSB	0.884	0.883	-9.07E-04	-0.103
AL.7	BARFDSBM	34.684	33.58	-1.104	-3.184
AL.7	BARFDSBN	18.552	18.8	0.248	1.339
AL.7	BARMTSBN	17.713	17.064	-0.649	-3.664
AL.7	BARMTSBN	9.475	9.582	0.107	1.134
AL.7	OATSSBM	27.601	25.574	-2.027	-7.344
AL.7	OATSSBN	14.763	14.693	-0.07	-0.472
AL.7	FLAXSBM	1.619	1.547	-0.072	-4.432
AL.7	FLAXSBN	0.866	0.863	-0.002	-0.268
AL.7	CANSFM	58.525	58.541	0.015	0.026
AL.7	CANSFN	31.303	32.723	1.419	4.534
AL.7	CANSBM	36.534	34.994	-1.541	-4.217
AL.7	CANSBN	19.542	19.495	-0.047	-0.24
AL.7	LENTSBM	0.103	0.096	-0.008	-7.347
AL.7	LENTSBN	0.055	0.055	-2.24E-04	-0.405
AL.7	FLDPSBM	13.495	12.698	-0.797	-5.908
AL.7	FLDPSBN	7.218	7.2	-0.018	-0.252

Regional distribution of carbon sequestering crops/technology ('000 ha) - Other Provinces- Policy all - $15

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
BC.1	HAY	8.836	9.498	0.662	7.487
BC.1	ALFALFA	1.21	1.256	0.046	3.773
BC.2	HAY	18.426	19.602	1.176	6.385
BC.2	ALFALFA	1.9	1.961	0.061	3.201
BC.3	HAY	6.054	6.399	0.344	5.686
BC.3	ALFALFA	14.894	15.332	0.437	2.936
BC.4	HAY	4.003	4.379	0.376	9.393
BC.4	ALFALFA	8.668	9.083	0.416	4.794
BC.5	HAY	34.931	36.33	1.399	4.004
BC.5	ALFALFA	22.05	22.478	0.428	1.94
BC.6	HAY	1.195	1.19	-0.004	-0.353
BC.6	ALFALFA	0.556	0.554	-0.002	-0.365
BC.7	HAY	21.638	22.505	0.867	4.005
BC.7	ALFALFA	24.216	24.686	0.47	1.941
BC.8	HAY	67.862	73.586	5.724	8.435
BC.8	ALFALFA	75.53	78.939	3.409	4.513

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
NB.1	HAY	68.06	72.9	4.84	7.111
NB.1	ALFALFA	10.417	10.654	0.237	2.275

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
PE.1	HAY	45.747	50.666	4.92	10.754
PE.1	ALFALFA	12.325	12.746	0.422	3.42

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
NS.1	HAY	62.087	63.452	1.365	2.198
NS.1	ALFALFA	12.832	12.84	0.008	0.061

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
NF.1	HAY	5.347	5.39	0.042	0.791
NF.1	ALFALFA	1.084	1.08	-0.004	-0.379

Regional distribution of carbon sequestering crops/technology ('000 ha) - Alberta -Policy all -$50

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
AL.1	HAY	27.6	32.104	4.504	16.32
AL.1	ALFALFA	101.788	116.531	14.743	14.484
AL.1	WHTHQSFI	84.647	84.482	-0.165	-0.194
AL.1	WHTHQSFI	81.587	83.662	2.075	2.543
AL.1	WHTHQSBI	13.687	13.236	-0.451	-3.296
AL.1	WHTHQSBI	13.193	13.301	0.109	0.822
AL.1	DURUMSFI	46.671	46.58	-0.091	-0.195
AL.1	DURUMSFI	44.985	45.458	0.473	1.052
AL.1	BARFDSBM	12.582	12.707	0.125	0.994
AL.1	BARFDSBN	12.128	12.873	0.745	6.142
AL.1	BARMTSBM	20.547	20.451	-0.096	-0.467
AL.1	BARMTSBN	19.804	20.677	0.873	4.407
AL.1	OATSSBM	13.973	15.333	1.36	9.731
AL.1	OATSSBN	13.468	16.14	2.671	19.834
AL.1	FLAXSBM	0.034	0.033	-7.02E-04	-2.095
AL.1	FLAXSBN	0.032	0.032	5.85E-05	0.181
AL.1	CANSBM	5.54	5.336	-0.204	-3.691
AL.1	CANSBN	5.34	5.361	0.02	0.383
AL.1	LENTSBM	1.144	1.104	-0.04	-3.465
AL.1	LENTSBN	1.103	1.106	0.004	0.335
AL.1	FLDPSBM	15.792	14.393	-1.399	-8.858
AL.1	FLDPSBN	15.221	15.376	0.154	1.014

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
AL.2	ALFALFA	80.908	90.753	9.844	12.167
AL.2	WHTHQSFI	91.567	91.426	-0.141	-0.154
AL.2	WHTHQSFI	90.074	92.221	2.146	2.383
AL.2	WHTHQSBI	95.368	97.833	2.465	2.585
AL.2	WHTHQSBI	93.813	98.553	4.739	5.052
AL.2	DURUMSB	66.373	67.431	1.058	1.594
AL.2	DURUMSB	65.292	67.342	2.051	3.141
AL.2	BARFDSBM	7.197	7.899	0.701	9.742
AL.2	BARFDSBN	7.08	8.16	1.08	15.256
AL.2	BARMTSBM	112.436	119.453	7.017	6.241
AL.2	BARMTSBN	110.603	122.23	11.627	10.513
AL.2	FLAXSBM	1.389	1.427	0.037	2.686
AL.2	FLAXSBN	1.367	1.442	0.075	5.517
AL.2	CANSFM	34.997	34.628	-0.369	-1.054
AL.2	CANSFN	34.427	35.711	1.285	3.732
AL.2	LENTSBM	1.066	1.1	0.034	3.15
AL.2	LENTSBN	1.049	1.116	0.068	6.46
AL.2	FLDPSBM	29.325	31.973	2.649	9.032
AL.2	FLDPSBN	28.85	34.016	5.166	17.906

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
AL.3	HAY	89.548	111.308	21.76	24.3
AL.3	ALFALFA	167.063	184.258	17.196	10.293
AL.3	WHTHQSFI	0.59	0.6	0.01	1.678
AL.3	WHTHQSFI	0.353	0.38	0.028	7.856
AL.3	WHTHQSBI	82.484	81.511	-0.973	-1.179
AL.3	WHTHQSBI	49.287	50.494	1.207	2.45
AL.3	DURUMSB	10.876	10.784	-0.092	-0.841
AL.3	DURUMSB	6.499	6.588	0.089	1.371
AL.3	BARFDSBM	40.389	42.089	1.7	4.21
AL.3	BARFDSBN	24.133	27.397	3.264	13.527
AL.3	BARMTSBM	111.838	113.52	1.682	1.504
AL.3	BARMTSBN	66.826	73.519	6.692	10.015
AL.3	OATSSBM	3.324	3.63	0.306	9.211
AL.3	OATSSBN	1.986	2.32	0.334	16.82
AL.3	FLAXSBM	0.272	0.257	-0.016	-5.738
AL.3	FLAXSBN	0.163	0.172	0.009	5.717
AL.3	CANSFM	20.28	20.473	0.193	0.952
AL.3	CANSFN	12.115	13.267	1.152	9.509
AL.3	LENTSBM	0.238	0.224	-0.013	-5.613
AL.3	LENTSBN	0.142	0.15	0.008	5.668
AL.3	FLDPSBM	6.253	5.947	-0.306	-4.895
AL.3	FLDPSBN	3.737	3.931	0.194	5.201

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
AL.4	HAY	116.959	152.208	35.249	30.138
AL.4	ALFALFA	219.412	269.841	50.429	22.984
AL.4	WHTHQSBI	244.277	226.732	-17.545	-7.182
AL.4	WHTHQSBI	208.847	213.995	5.148	2.465
AL.4	DURUMSFI	2.715	2.729	0.015	0.536
AL.4	DURUMSFI	2.321	2.414	0.093	3.99
AL.4	BARFDSBM	76.873	75.61	-1.263	-1.642
AL.4	BARFDSBN	65.723	70.819	5.095	7.753
AL.4	BARMTSBM	102.378	99.074	-3.304	-3.227
AL.4	BARMTSBN	87.529	94.012	6.483	7.406
AL.4	OATSSBM	51.574	54.118	2.545	4.934
AL.4	OATSSBN	44.094	52.96	8.866	20.107
AL.4	FLAXSBM	1.842	1.726	-0.117	-6.337
AL.4	FLAXSBN	1.575	1.579	0.004	0.241
AL.4	CANSFM	63.008	62.639	-0.369	-0.586
AL.4	CANSFN	53.869	58.055	4.186	7.771
AL.4	CANSBM	92.837	84.977	-7.86	-8.466
AL.4	CANSBN	79.372	79.676	0.304	0.383
AL.4	FLDPSBM	35.219	31.074	-4.145	-11.769
AL.4	FLDPSBN	30.108	30.353	0.246	0.816

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
AL.5	HAY	201.699	299.951	98.252	48.712
AL.5	ALFALFA	298.524	332.602	34.078	11.415
AL.5	WHTHQSBI	49.39	45.496	-3.894	-7.884
AL.5	WHTHQSBI	28.224	27.714	-0.511	-1.809
AL.5	DURUMSB	0.909	0.779	-0.13	-14.32
AL.5	DURUMSB	0.52	0.494	-0.026	-4.91
AL.5	BARFDSBM	39.161	33.3	-5.861	-14.966
AL.5	BARFDSBN	22.378	22.11	-0.267	-1.193
AL.5	BARMTSBM	41.139	34.102	-7.037	-17.106
AL.5	BARMTSBN	23.508	22.816	-0.692	-2.943
AL.5	OATSSBM	8.668	7.775	-0.893	-10.305
AL.5	OATSSBN	4.953	5.245	0.292	5.894
AL.5	FLAXSBM	0.131	0.073	-0.059	-44.814
AL.5	FLAXSBN	0.075	0.061	-0.014	-19.131
AL.5	CANSFM	12.935	13.027	0.092	0.708
AL.5	CANSFN	7.392	8.237	0.846	11.443
AL.5	CANSBM	25.48	21.289	-4.191	-16.447
AL.5	CANSBN	14.559	13.541	-1.018	-6.991
AL.5	LENTSBM	0.084	0.079	-0.005	-6.054
AL.5	LENTSBN	0.048	0.047	-0.001	-2.605
AL.5	FLDPSBM	5.199	3.585	-1.613	-31.032
AL.5	FLDPSBN	2.971	2.604	-0.366	-12.328

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
AL.6	HAY	185.916	245.986	60.069	32.31
AL.6	ALFALFA	369.831	404.45	34.618	9.361
AL.6	WHTHQSBI	29.294	26.248	-3.047	-10.4
AL.6	WHTHQSBI	17.927	17.219	-0.708	-3.951
AL.6	DURUMSB	0.415	0.357	-0.058	-13.872
AL.6	DURUMSB	0.254	0.237	-0.016	-6.487
AL.6	BARFDSBM	24.325	20.849	-3.476	-14.29
AL.6	BARFDSBN	14.886	14.137	-0.749	-5.032
AL.6	BARMTSBM	24.476	20.252	-4.224	-17.257
AL.6	BARMTSBN	14.978	13.954	-1.024	-6.839
AL.6	OATSSBM	21.877	18.307	-3.57	-16.318
AL.6	OATSSBN	13.387	13.402	0.015	0.109
AL.6	FLAXSBM	0.107	0.075	-0.032	-29.652
AL.6	FLAXSBN	0.066	0.055	-0.011	-16.264
AL.6	CANSFM	16.393	16.821	0.428	2.608
AL.6	CANSFN	10.032	11.272	1.241	12.368
AL.6	CANSBM	7.76	6.252	-1.507	-19.426
AL.6	CANSBN	4.749	4.243	-0.506	-10.65
AL.6	LENTSBM	0.08	0.076	-0.004	-5.227
AL.6	LENTSBN	0.049	0.048	-0.001	-2.887
AL.6	FLDPSBM	3.849	2.857	-0.992	-25.771
AL.6	FLDPSBN	2.355	2.024	-0.331	-14.062

Regional distribution of carbon sequestering crops/technology ('000 ha) - Alberta -Policy all -$50

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
AL.7	HAY	215.92	284.605	68.685	31.811
AL.7	ALFALFA	270.718	298.173	27.455	10.142
AL.7	WHTHQSBI	133.721	121.271	-12.451	-9.311
AL.7	WHTHQSBI	71.525	71.523	-0.002	-0.003
AL.7	DURUMSB	1.653	1.568	-0.085	-5.142
AL.7	DURUMSB	0.884	0.884	-1.56E-04	-0.018
AL.7	BARFDSBM	34.684	32.132	-2.552	-7.357
AL.7	BARFDSBN	18.552	19.975	1.423	7.67
AL.7	BARMTSBN	17.713	16.086	-1.627	-9.184
AL.7	BARMTSBN	9.475	10.118	0.644	6.796
AL.7	OATSSBM	27.601	21.192	-6.409	-23.22
AL.7	OATSSBN	14.763	14.741	-0.022	-0.149
AL.7	FLAXSBM	1.619	1.392	-0.227	-14.001
AL.7	FLAXSBN	0.866	0.865	-8.21E-04	-0.095
AL.7	CANSFM	58.525	58.578	0.053	0.09
AL.7	CANSFN	31.303	36.033	4.73	15.11
AL.7	CANSBM	36.534	31.675	-4.86	-13.302
AL.7	CANSBN	19.542	19.532	-0.01	-0.052
AL.7	LENTSBM	0.103	0.079	-0.024	-23.202
AL.7	LENTSBN	0.055	0.055	-3.14E-05	-0.057
AL.7	FLDPSBM	13.495	10.964	-2.531	-18.753
AL.7	FLDPSBN	7.218	7.224	0.006	0.087

Regional distribution of carbon sequestering crops/technology ('000 ha) - Other Provinces- Policy all - $50

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
BC.1	HAY	8.836	11.022	2.186	24.734
BC.1	ALFALFA	1.21	1.363	0.152	12.566
BC.2	HAY	18.426	22.305	3.88	21.056
BC.2	ALFALFA	1.9	2.102	0.202	10.631
BC.3	HAY	6.054	7.165	1.111	18.348
BC.3	ALFALFA	14.894	16.315	1.421	9.539
BC.4	HAY	4.003	5.244	1.241	30.998
BC.4	ALFALFA	8.668	10.045	1.377	15.892
BC.5	HAY	34.931	39.451	4.52	12.94
BC.5	ALFALFA	22.05	23.448	1.398	6.34
BC.6	HAY	1.195	1.182	-0.013	-1.074
BC.6	ALFALFA	0.556	0.55	-0.006	-1.073
BC.7	HAY	21.638	23.747	2.109	9.745
BC.7	ALFALFA	24.216	25.341	1.126	4.648
BC.8	HAY	67.862	83.111	15.249	22.471
BC.8	ALFALFA	75.53	84.575	9.045	11.975

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
NB.1	HAY	68.06	83.683	15.623	22.954
NB.1	ALFALFA	10.417	11.181	0.764	7.331

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
PE.1	HAY	45.747	62.126	16.38	35.806
PE.1	ALFALFA	12.325	13.726	1.401	11.367

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
NS.1	HAY	62.087	67.037	4.949	7.972
NS.1	ALFALFA	12.832	12.915	0.083	0.65

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
NF.1	HAY	5.347	5.448	0.1	1.878
NF.1	ALFALFA	1.084	1.057	-0.027	-2.477

Regional distribution of carbon sequestering crops/technology ('000 ha) - Alberta -Policy all -$100

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
AL.1	HAY	27.6	35.189	7.589	27.495
AL.1	ALFALFA	101.788	126.155	24.368	23.939
AL.1	WHTHQSFI	84.647	84.418	-0.228	-0.27
AL.1	WHTHQSFI	81.587	85.812	4.224	5.178
AL.1	WHTHQSBI	13.687	13.027	-0.661	-4.826
AL.1	WHTHQSBI	13.193	13.666	0.473	3.587
AL.1	DURUMSFI	46.671	46.396	-0.276	-0.591
AL.1	DURUMSFI	44.985	45.841	0.857	1.904
AL.1	BARFDSBI	12.582	13.221	0.639	5.075
AL.1	BARFDSBN	12.128	13.996	1.868	15.406
AL.1	BARMTSBI	20.547	20.869	0.322	1.568
AL.1	BARMTSBI	19.804	22.057	2.252	11.372
AL.1	OATSSBM	13.973	17.274	3.3	23.62
AL.1	OATSSBN	13.468	19.366	5.898	43.788
AL.1	FLAXSBM	0.034	0.032	-0.001	-3.498
AL.1	FLAXSBN	0.032	0.033	3.46E-04	1.072
AL.1	CANSBM	5.54	5.211	-0.329	-5.947
AL.1	CANSBN	5.34	5.461	0.121	2.263
AL.1	LENTSBM	1.144	1.077	-0.067	-5.851
AL.1	LENTSBN	1.103	1.122	0.02	1.78
AL.1	FLDPSBM	15.792	13.389	-2.403	-15.218
AL.1	FLDPSBN	15.221	15.91	0.688	4.523

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
AL.2	ALFALFA	80.908	97.687	16.779	20.738
AL.2	WHTHQSFI	91.567	91.321	-0.246	-0.269
AL.2	WHTHQSFI	90.074	94.427	4.352	4.832
AL.2	WHTHQSBI	95.368	101.486	6.118	6.415
AL.2	WHTHQSBI	93.813	104.502	10.689	11.394
AL.2	DURUMSB	66.373	68.889	2.516	3.79
AL.2	DURUMSB	65.292	69.798	4.506	6.902
AL.2	BARFDSBI	7.197	8.836	1.639	22.768
AL.2	BARFDSBN	7.08	9.49	2.41	34.038
AL.2	BARMTSBI	112.436	128.937	16.501	14.676
AL.2	BARMTSBI	110.603	136.361	25.758	23.289
AL.2	FLAXSBM	1.389	1.48	0.091	6.526
AL.2	FLAXSBN	1.367	1.533	0.167	12.21
AL.2	CANSFM	34.997	34.203	-0.795	-2.271
AL.2	CANSFN	34.427	36.948	2.521	7.324
AL.2	LENTSBM	1.066	1.147	0.081	7.587
AL.2	LENTSBN	1.049	1.198	0.149	14.231
AL.2	FLDPSBM	29.325	35.576	6.251	21.316
AL.2	FLDPSBN	28.85	40.118	11.267	39.054

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
AL.3	HAY	89.548	123.716	34.168	38.156
AL.3	ALFALFA	167.063	188.768	21.706	12.993
AL.3	WHTHQSFM	0.59	0.611	0.021	3.482
AL.3	WHTHQSFN	0.353	0.409	0.056	15.86
AL.3	WHTHQSBM	82.484	80.054	-2.43	-2.946
AL.3	WHTHQSBN	49.287	51.397	2.11	4.282
AL.3	DURUMSBM	10.876	10.636	-0.24	-2.207
AL.3	DURUMSBN	6.499	6.642	0.143	2.202
AL.3	BARFDSBM	40.389	43.847	3.458	8.562
AL.3	BARFDSBN	24.133	30.705	6.573	27.235
AL.3	BARMTSBM	111.838	114.566	2.728	2.44
AL.3	BARMTSBN	66.826	79.83	13.003	19.458
AL.3	OATSSBM	3.324	3.898	0.574	17.275
AL.3	OATSSBN	1.986	2.633	0.646	32.546
AL.3	FLAXSBM	0.272	0.234	-0.039	-14.172
AL.3	FLAXSBN	0.163	0.177	0.014	8.73
AL.3	CANSFM	20.28	20.666	0.387	1.907
AL.3	CANSFN	12.115	14.417	2.302	19.001
AL.3	LENTSBM	0.238	0.205	-0.033	-13.993
AL.3	LENTSBN	0.142	0.154	0.012	8.561
AL.3	FLDPSBM	6.253	5.474	-0.78	-12.466
AL.3	FLDPSBN	3.737	4.024	0.287	7.692

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
AL.4	HAY	116.959	180.865	63.905	54.639
AL.4	ALFALFA	219.412	308.714	89.302	40.7
AL.4	WHTHQSBI	244.277	209.757	-34.519	-14.131
AL.4	WHTHQSBI	208.847	219.989	11.142	5.335
AL.4	DURUMSFI	2.715	2.74	0.025	0.933
AL.4	DURUMSFI	2.321	2.503	0.182	7.846
AL.4	BARFDSBI	76.873	75.888	-0.985	-1.281
AL.4	BARFDSBN	65.723	77.328	11.605	17.657
AL.4	BARMTSBI	102.378	97.948	-4.43	-4.327
AL.4	BARMTSBI	87.529	102.348	14.819	16.931
AL.4	OATSSBM	51.574	57.551	5.977	11.589
AL.4	OATSSBN	44.094	62.574	18.48	41.912
AL.4	FLAXSBM	1.842	1.613	-0.229	-12.442
AL.4	FLAXSBN	1.575	1.586	0.011	0.669
AL.4	CANSFM	63.008	62.279	-0.729	-1.158
AL.4	CANSFN	53.869	62.242	8.372	15.542
AL.4	CANSBM	92.837	77.699	-15.138	-16.306
AL.4	CANSBN	79.372	80.491	1.119	1.409
AL.4	FLDPSBM	35.219	26.915	-8.304	-23.578
AL.4	FLDPSBN	30.108	30.548	0.44	1.462

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
AL.5	HAY	201.699	362.601	160.902	79.773
AL.5	ALFALFA	298.524	343.737	45.213	15.145
AL.5	WHTHQSBI	49.39	41.795	-7.595	-15.378
AL.5	WHTHQSBI	28.224	27.325	-0.899	-3.186
AL.5	DURUMSB	0.909	0.654	-0.256	-28.119
AL.5	DURUMSB	0.52	0.472	-0.048	-9.244
AL.5	BARFDSBI	39.161	28.627	-10.533	-26.898
AL.5	BARFDSBN	22.378	22.518	0.14	0.626
AL.5	BARMTSBI	41.139	28.148	-12.992	-31.58
AL.5	BARMTSBI	23.508	22.743	-0.765	-3.254
AL.5	OATSSBM	8.668	7.032	-1.636	-18.869
AL.5	OATSSBN	4.953	5.623	0.67	13.523
AL.5	FLAXSBM	0.131	0.066	-0.066	-50
AL.5	FLAXSBN	0.075	0.047	-0.028	-37.179
AL.5	CANSFM	12.935	13.119	0.183	1.417
AL.5	CANSFN	7.392	9.083	1.692	22.886
AL.5	CANSBM	25.48	17.291	-8.188	-32.137
AL.5	CANSBN	14.559	12.632	-1.927	-13.238
AL.5	LENTSBM	0.084	0.074	-0.01	-11.984
AL.5	LENTSBN	0.048	0.045	-0.002	-5.083
AL.5	FLDPSBM	5.199	2.599	-2.6	-50.015
AL.5	FLDPSBN	2.971	2.245	-0.726	-24.435

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
AL.6	HAY	185.916	290.624	104.708	56.32
AL.6	ALFALFA	369.831	421.475	51.644	13.964
AL.6	WHTHQSBM	29.294	23.608	-5.686	-19.41
AL.6	WHTHQSBN	17.927	16.775	-1.152	-6.428
AL.6	DURUMSBM	0.415	0.306	-0.108	-26.145
AL.6	DURUMSBN	0.254	0.225	-0.029	-11.262
AL.6	BARFDSBM	24.325	18.271	-6.054	-24.887
AL.6	BARFDSBN	14.886	13.968	-0.919	-6.17
AL.6	BARMTSBM	24.476	16.916	-7.56	-30.887
AL.6	BARMTSBN	14.978	13.488	-1.49	-9.949
AL.6	OATSSBM	21.877	15.605	-6.272	-28.669
AL.6	OATSSBN	13.387	13.956	0.569	4.249
AL.6	FLAXSBM	0.107	0.052	-0.055	-51.637
AL.6	FLAXSBN	0.066	0.046	-0.02	-30.036
AL.6	CANSFM	16.393	17.248	0.855	5.216
AL.6	CANSFN	10.032	12.513	2.481	24.736
AL.6	CANSBM	7.76	4.899	-2.861	-36.874
AL.6	CANSBN	4.749	3.832	-0.916	-19.293
AL.6	LENTSBM	0.08	0.072	-0.008	-10.031
AL.6	LENTSBN	0.049	0.047	-0.003	-5.347
AL.6	FLDPSBM	3.849	1.935	-1.913	-49.714
AL.6	FLDPSBN	2.355	1.737	-0.618	-26.256

Regional distribution of carbon sequestering crops/technology ('000 ha) - Alberta -Policy all -$100

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
AL.7	HAY	215.92	338.383	122.463	56.717
AL.7	ALFALFA	270.718	313.827	43.109	15.924
AL.7	WHTHQSBI	133.721	111.121	-22.6	-16.901
AL.7	WHTHQSBI	71.525	72.761	1.236	1.727
AL.7	DURUMSB	1.653	1.498	-0.154	-9.346
AL.7	DURUMSB	0.884	0.892	0.008	0.937
AL.7	BARFDSBM	34.684	31.196	-3.488	-10.056
AL.7	BARFDSBN	18.552	22.273	3.722	20.061
AL.7	BARMTSBN	17.713	15.28	-2.433	-13.734
AL.7	BARMTSBN	9.475	11.203	1.728	18.24
AL.7	OATSSBM	27.601	15.975	-11.626	-42.122
AL.7	OATSSBN	14.763	15.354	0.591	4.002
AL.7	FLAXSBM	1.619	1.208	-0.41	-25.361
AL.7	FLAXSBN	0.866	0.887	0.021	2.475
AL.7	CANSFM	58.525	58.64	0.114	0.195
AL.7	CANSFN	31.303	40.769	9.466	30.239
AL.7	CANSBM	36.534	27.69	-8.844	-24.209
AL.7	CANSBN	19.542	19.998	0.456	2.336
AL.7	LENTSBM	0.103	0.06	-0.044	-42.221
AL.7	LENTSBN	0.055	0.058	0.002	4.077
AL.7	FLDPSBM	13.495	8.859	-4.636	-34.356
AL.7	FLDPSBN	7.218	7.456	0.238	3.3

Regional distribution of carbon sequestering crops/technology ('000 ha) - Other Provinces- Policy all - $100

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
BC.1	HAY	8.836	11.825	2.989	33.826
BC.1	ALFALFA	1.21	1.417	0.206	17.041
BC.2	HAY	18.426	23.337	4.912	26.657
BC.2	ALFALFA	1.9	2.152	0.252	13.258
BC.3	HAY	6.054	8.214	2.159	35.666
BC.3	ALFALFA	14.894	17.676	2.782	18.676
BC.4	HAY	4.003	6.41	2.407	60.142
BC.4	ALFALFA	8.668	11.352	2.684	30.968
BC.5	HAY	34.931	42.219	7.288	20.865
BC.5	ALFALFA	22.05	24.297	2.247	10.193
BC.6	HAY	1.195	1.172	-0.023	-1.893
BC.6	ALFALFA	0.556	0.546	-0.01	-1.84
BC.7	HAY	21.638	24.696	3.058	14.133
BC.7	ALFALFA	24.216	25.821	1.606	6.631
BC.8	HAY	67.862	90.129	22.266	32.811
BC.8	ALFALFA	75.53	88.668	13.137	17.393

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
NB.1	HAY	68.06	86.627	18.567	27.28
NB.1	ALFALFA	10.417	11.325	0.908	8.712

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
PE.1	HAY	45.747	76.391	30.645	66.988
PE.1	ALFALFA	12.325	14.945	2.62	21.259

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
NS.1	HAY	62.087	69.465	7.377	11.882
NS.1	ALFALFA	12.832	12.877	0.045	0.35

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
NF.1	HAY	5.347	5.51	0.163	3.048
NF.1	ALFALFA	1.084	1.018	-0.066	-6.085

Regional distribution of carbon sequestering crops/technology ('000 ha) Saskatchewan - Policy all -$5

Region	Crops	BASE	$5	DIFF	PRCNTCHG
SA.1	HAY	36.152	37.784	1.632	4.513
SA.1	ALFALFA	101.189	104.143	2.954	2.92
SA.1	WHTHQSBM	95.654	95.22	-0.433	-0.453
SA.1	WHTHQSBN	171.379	172.422	1.043	0.609
SA.1	DURUMSFM	10.764	10.758	-0.006	-0.053
SA.1	DURUMSFN	19.285	19.343	0.058	0.301
SA.1	DURUMSBM	9.06	9.046	-0.014	-0.156
SA.1	DURUMSBN	16.233	16.255	0.022	0.138
SA.1	BARFDSBM	4.333	4.314	-0.02	-0.453
SA.1	BARFDSBN	7.76	7.833	0.073	0.94
SA.1	BARMTSBM	29.102	28.984	-0.118	-0.406
SA.1	BARMTSBN	52.142	52.504	0.362	0.694
SA.1	OATSSBM	21.457	21.233	-0.224	-1.044
SA.1	OATSSBN	38.444	38.788	0.344	0.895
SA.1	FLAXSBM	24.341	24.211	-0.13	-0.534
SA.1	FLAXSBN	43.611	43.868	0.258	0.591
SA.1	CANSFM	46.433	46.406	-0.027	-0.058
SA.1	CANSFN	83.192	83.666	0.473	0.569
SA.1	LENTSBM	4.073	4.066	-0.007	-0.18
SA.1	LENTSBN	7.297	7.309	0.012	0.168
SA.1	FLDPSBM	16.915	16.814	-0.101	-0.599
SA.1	FLDPSBN	30.306	30.57	0.264	0.871

Region	Crops	BASE	$5	DIFF	PRCNTCHG
SA.2	HAY	21.951	23.154	1.203	5.481
SA.2	ALFALFA	66.181	68.549	2.367	3.577
SA.2	WHTHQSBM	73.357	73.128	-0.228	-0.311
SA.2	WHTHQSBN	136.15	137.127	0.977	0.718
SA.2	DURUMSFM	62.87	62.85	-0.019	-0.03
SA.2	DURUMSFN	116.686	116.965	0.279	0.239
SA.2	DURUMSBM	20.18	20.156	-0.025	-0.123
SA.2	DURUMSBN	37.454	37.543	0.089	0.236
SA.2	BARFDSBM	2.588	2.579	-0.009	-0.357
SA.2	BARFDSBN	4.803	4.849	0.046	0.956
SA.2	BARMTSBM	27.74	27.672	-0.069	-0.247
SA.2	BARMTSBN	51.485	51.839	0.354	0.687
SA.2	OATSSBM	8.929	8.864	-0.065	-0.73
SA.2	OATSSBN	16.573	16.753	0.18	1.088
SA.2	FLAXSBM	27.986	27.902	-0.084	-0.3
SA.2	FLAXSBN	51.941	52.188	0.247	0.476
SA.2	CANSBM	26.714	26.639	-0.076	-0.283
SA.2	CANSBN	49.587	49.836	0.249	0.503
SA.2	LENTSBM	47.646	47.579	-0.067	-0.141
SA.2	LENTSBN	88.43	88.606	0.176	0.199
SA.2	FLDPSBM	35.563	35.392	-0.171	-0.482
SA.2	FLDPSBN	66.006	66.656	0.651	0.986

Region	Crops	BASE	$5	DIFF	PRCNTCHG
SA.3	HAY	53.5	56.529	3.029	5.663
SA.3	ALFALFA	175.084	187.398	12.314	7.033
SA.3	WHTHQSFM	21.684	21.665	-0.02	-0.09
SA.3	WHTHQSFN	40.6	40.699	0.099	0.243
SA.3	WHTHQSBM	110.999	110.509	-0.49	-0.441
SA.3	WHTHQSBN	207.853	208.094	0.241	0.116
SA.3	DURUMSFM	170.735	170.627	-0.108	-0.063
SA.3	DURUMSFN	319.674	320.022	0.349	0.109
SA.3	BARFDSBM	6.388	6.323	-0.065	-1.016
SA.3	BARFDSBN	11.961	11.996	0.035	0.296
SA.3	BARMTSBM	33.967	33.749	-0.218	-0.641
SA.3	BARMTSBN	63.594	63.733	0.139	0.219
SA.3	OATSSBM	12.913	12.707	-0.206	-1.596
SA.3	OATSSBN	24.178	24.217	0.04	0.164
SA.3	FLAXSBM	8.716	8.653	-0.063	-0.725
SA.3	FLAXSBN	16.319	16.333	0.014	0.085
SA.3	CANSBM	14.715	14.653	-0.061	-0.416
SA.3	CANSBN	27.551	27.567	0.016	0.057
SA.3	LENTSBM	45.502	45.363	-0.139	-0.306
SA.3	LENTSBN	85.196	85.232	0.036	0.042
SA.3	FLDPSBM	56.323	55.604	-0.718	-1.275
SA.3	FLDPSBN	105.455	105.68	0.225	0.214

Region	Crops	BASE	$5	DIFF	PRCNTCHG
SA.4	HAY	24.722	25.837	1.115	4.509
SA.4	ALFALFA	43.086	45.402	2.316	5.375
SA.4	WHTHQSFM	40.958	40.906	-0.052	-0.128
SA.4	WHTHQSFN	49.991	50.154	0.163	0.326
SA.4	WHTHQSBM	2.07	2.063	-0.006	-0.307
SA.4	WHTHQSBN	2.526	2.539	0.013	0.506
SA.4	DURUMSFM	60.528	60.492	-0.036	-0.059
SA.4	DURUMSFN	73.876	73.991	0.115	0.156
SA.4	BARFDSBM	9.161	9.12	-0.041	-0.445
SA.4	BARFDSBN	11.181	11.286	0.104	0.932
SA.4	BARMTSBM	9.297	9.261	-0.035	-0.381
SA.4	BARMTSBN	11.349	11.442	0.093	0.821
SA.4	OATSSBM	4.118	4.078	-0.04	-0.983
SA.4	OATSSBN	5.027	5.094	0.068	1.347
SA.4	FLAXSBM	0.205	0.205	-6.15E-04	-0.3
SA.4	FLAXSBN	0.251	0.252	0.001	0.494
SA.4	CANSBM	2.761	2.75	-0.011	-0.4
SA.4	CANSBN	3.37	3.392	0.022	0.661
SA.4	LENTSBM	4.402	4.394	-0.008	-0.19
SA.4	LENTSBN	5.373	5.389	0.016	0.301

Region	Crops	BASE	$5	DIFF	PRCNTCHG
SA.5	HAY	53.128	56.933	3.805	7.163
SA.5	ALFALFA	172.431	176.216	3.785	2.195
SA.5	WHTHQSBM	200.714	200.227	-0.487	-0.243
SA.5	WHTHQSBN	175.707	177.858	2.151	1.224
SA.5	DURUMSBM	9.501	9.49	-0.011	-0.112
SA.5	DURUMSBN	8.317	8.367	0.05	0.604
SA.5	BARFDSBM	7.583	7.574	-0.01	-0.13
SA.5	BARFDSBN	6.639	6.743	0.104	1.566
SA.5	BARMTSBM	93.216	93.136	-0.08	-0.086
SA.5	BARMTSBN	81.603	82.534	0.931	1.141
SA.5	OATSSBM	66.597	66.235	-0.362	-0.544
SA.5	OATSSBN	58.299	59.613	1.313	2.253
SA.5	FLAXSBM	24.777	24.713	-0.064	-0.259
SA.5	FLAXSBN	21.69	21.935	0.245	1.13
SA.5	CANSFM	90.432	90.575	0.143	0.158
SA.5	CANSFN	79.165	80.339	1.174	1.483
SA.5	CANSBM	37.338	37.267	-0.071	-0.19
SA.5	CANSBN	32.686	33.021	0.335	1.026
SA.5	LENTSBM	6.132	6.125	-0.007	-0.108
SA.5	LENTSBN	5.368	5.394	0.026	0.491
SA.5	FLDPSBM	53.041	52.942	-0.099	-0.187
SA.5	FLDPSBN	46.433	47.337	0.904	1.947

Region	Crops	BASE	$5	DIFF	PRCNTCHG
SA.6	HAY	40.012	41.049	1.036	2.59
SA.6	ALFALFA	140.263	143.584	3.321	2.367
SA.6	WHTHQSBM	225.865	225.033	-0.831	-0.368
SA.6	WHTHQSBN	337.648	339.167	1.518	0.45
SA.6	DURUMSFM	11.014	11.008	-0.005	-0.046
SA.6	DURUMSFN	16.464	16.508	0.043	0.262
SA.6	DURUMSBM	25.099	25.072	-0.026	-0.105
SA.6	DURUMSBN	37.52	37.583	0.062	0.166
SA.6	BARFDSBM	8.936	8.902	-0.035	-0.388
SA.6	BARFDSBN	13.359	13.479	0.12	0.901
SA.6	BARMTSBM	75.858	75.621	-0.238	-0.313
SA.6	BARMTSBN	113.403	114.187	0.784	0.691
SA.6	OATSSBM	23.566	23.39	-0.176	-0.748
SA.6	OATSSBN	35.231	35.614	0.383	1.086
SA.6	FLAXSBM	22.63	22.562	-0.068	-0.301
SA.6	FLAXSBN	33.829	33.988	0.159	0.47
SA.6	CANSFM	92.444	92.353	-0.091	-0.099
SA.6	CANSFN	138.196	139.099	0.903	0.653
SA.6	LENTSBM	40.414	40.347	-0.068	-0.167
SA.6	LENTSBN	60.418	60.555	0.136	0.226
SA.6	FLDPSBM	55.708	55.428	-0.28	-0.502
SA.6	FLDPSBN	83.279	83.986	0.707	0.849

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Region	Crops	BASE	$5	DIFF	PRCNTCHG	Region	Crops	BASE	$5	DIFF	PRCNTCHG	Region	Crops	BASE	$5	DIFF	PRCNTCHG
SA.7	HAY	18.407	18.965	0.559	3.035	SA.8	HAY	33.207	35.416	2.209	6.652	SA.9	HAY	93.786	100.782	6.996	7.459
SA.7	ALFALFA	43.247	44.44	1.193	2.759	SA.8	ALFALFA	108.491	110.603	2.113	1.947	SA.9	ALFALFA	260.506	265.958	5.452	2.093
SA.7	WHTHQSFM	39.868	39.695	-0.173	-0.433	SA.8	WHTHQSBM	199.235	198.242	-0.993	-0.499	SA.9	WHTHQSBM	196.7	194.807	-1.893	-0.962
SA.7	WHTHQSFN	69.228	69.78	0.551	0.796	SA.8	WHTHQSBN	153.118	154.124	1.006	0.657	SA.9	WHTHQSBN	177.307	177.983	0.676	0.381
SA.7	WHTHQSBM	87.04	86.629	-0.411	-0.472	SA.8	DURUMSBM	4.509	4.502	-0.007	-0.163	SA.9	DURUMSBM	1.013	1.01	-0.003	-0.286
SA.7	WHTHQSBN	151.139	151.922	0.784	0.518	SA.8	DURUMSBN	3.466	3.474	0.008	0.239	SA.9	DURUMSBN	0.913	0.914	9.20E-04	0.101
SA.7	DURUMSFM	47.053	46.995	-0.058	-0.123	SA.8	BARFDSBM	9.909	9.87	-0.04	-0.401	SA.9	BARFDSBM	93.77	92.723	-1.047	-1.117
SA.7	DURUMSFN	81.704	81.901	0.197	0.242	SA.8	BARFDSBN	7.616	7.691	0.074	0.977	SA.9	BARFDSBN	84.514	85.128	0.613	0.726
SA.7	BARFDSBM	3.943	3.913	-0.03	-0.762	SA.8	BARMTSBM	88.204	87.915	-0.289	-0.328	SA.9	BARMTSBM	16.019	15.835	-0.184	-1.148
SA.7	BARFDSBN	6.846	6.919	0.073	1.068	SA.8	BARMTSBN	67.798	68.345	0.547	0.808	SA.9	BARMTSBN	14.44	14.536	0.096	0.668
SA.7	BARMTSBM	50.044	49.741	-0.304	-0.607	SA.8	OATSSBM	29.151	28.897	-0.254	-0.873	SA.9	OATSSBM	42.508	41.665	-0.843	-1.984
SA.7	BARMTSBN	86.899	87.641	0.742	0.854	SA.8	OATSSBN	22.407	22.698	0.292	1.302	SA.9	OATSSBN	38.321	38.637	0.317	0.827
SA.7	OATSSBM	7.011	6.92	-0.091	-1.299	SA.8	FLAXSBM	16.53	16.447	-0.083	-0.502	SA.9	FLAXSBM	4.81	4.768	-0.042	-0.878
SA.7	OATSSBN	12.174	12.348	0.174	1.432	SA.8	FLAXSBN	12.705	12.789	0.083	0.656	SA.9	FLAXSBN	4.337	4.355	0.018	0.406
SA.7	FLAXSBM	1.962	1.95	-0.012	-0.62	SA.8	CANSFM	46.151	46.081	-0.07	-0.152	SA.9	CANSFM	70.822	70.652	-0.171	-0.241
SA.7	FLAXSBN	3.406	3.431	0.025	0.723	SA.8	CANSFN	35.474	35.808	0.334	0.942	SA.9	CANSFN	63.84	64.573	0.733	1.148
SA.7	CANSFM	35.301	35.149	-0.152	-0.432	SA.8	CANSBM	79.059	78.714	-0.345	-0.436	SA.9	CANSBM	49.292	48.848	-0.444	-0.9
SA.7	CANSFN	61.299	61.795	0.497	0.81	SA.8	CANSBN	60.765	61.142	0.377	0.62	SA.9	CANSBN	44.427	44.611	0.184	0.415
SA.7	LENTSBM	27.161	27.09	-0.071	-0.263	SA.8	LENTSBM	2.492	2.486	-0.006	-0.255	SA.9	LENTSBM	2.255	2.244	-0.011	-0.486
SA.7	LENTSBN	47.164	47.302	0.138	0.293	SA.8	LENTSBN	1.916	1.923	0.007	0.381	SA.9	LENTSBN	2.033	2.037	0.004	0.195
SA.7	FLDPSBM	42.495	42.082	-0.413	-0.973	SA.8	FLDPSBM	76.978	76.569	-0.41	-0.532	SA.9	FLDPSBM	73.203	72.113	-1.091	-1.49
SA.7	FLDPSBN	73.79	74.711	0.921	1.249	SA.8	FLDPSBN	59.168	59.889	0.721	1.218	SA.9	FLDPSBN	65.986	66.5	0.514	0.779

Regional distribution of carbon sequestering crops/technology ('000 ha) Saskatchewan - Policy all -$15

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
SA.1	HAY	36.152	40.235	4.083	11.295
SA.1	ALFALFA	101.189	108.048	6.859	6.778
SA.1	WHTHQSBM	95.654	94.454	-1.199	-1.254
SA.1	WHTHQSBN	171.379	174.723	3.344	1.951
SA.1	DURUMSFM	10.764	10.753	-0.011	-0.098
SA.1	DURUMSFN	19.285	19.47	0.185	0.957
SA.1	DURUMSBM	9.06	9.029	-0.031	-0.343
SA.1	DURUMSBN	16.233	16.321	0.088	0.543
SA.1	BARFDSBM	4.333	4.341	0.008	0.179
SA.1	BARFDSBN	7.76	8.095	0.335	4.32
SA.1	BARMTSBM	29.102	29.054	-0.048	-0.166
SA.1	BARMTSBN	52.142	53.772	1.63	3.127
SA.1	OATSSBM	21.457	20.936	-0.521	-2.43
SA.1	OATSSBN	38.444	39.732	1.288	3.351
SA.1	FLAXSBM	24.341	24.003	-0.338	-1.39
SA.1	FLAXSBN	43.611	44.478	0.867	1.989
SA.1	CANSFM	46.433	46.344	-0.089	-0.191
SA.1	CANSFN	83.192	84.597	1.404	1.688
SA.1	LENTSBM	4.073	4.056	-0.017	-0.416
SA.1	LENTSBN	7.297	7.343	0.046	0.626
SA.1	FLDPSBM	16.915	16.663	-0.252	-1.488
SA.1	FLDPSBN	30.306	31.162	0.856	2.823

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
SA.2	HAY	21.951	25.052	3.102	14.129
SA.2	ALFALFA	66.181	71.911	5.729	8.657
SA.2	WHTHQSBM	73.357	72.704	-0.653	-0.89
SA.2	WHTHQSBN	136.15	139.029	2.88	2.115
SA.2	DURUMSFM	62.87	62.811	-0.058	-0.093
SA.2	DURUMSFN	116.686	117.521	0.835	0.716
SA.2	DURUMSBM	20.18	20.115	-0.066	-0.326
SA.2	DURUMSBN	37.454	37.739	0.285	0.76
SA.2	BARFDSBM	2.588	2.607	0.019	0.726
SA.2	BARFDSBN	4.803	5.023	0.22	4.591
SA.2	BARMTSBM	27.74	27.772	0.031	0.113
SA.2	BARMTSBN	51.485	52.988	1.503	2.918
SA.2	OATSSBM	8.929	8.773	-0.156	-1.746
SA.2	OATSSBN	16.573	17.181	0.609	3.672
SA.2	FLAXSBM	27.986	27.788	-0.198	-0.707
SA.2	FLAXSBN	51.941	52.782	0.841	1.618
SA.2	CANSBM	26.714	26.511	-0.204	-0.762
SA.2	CANSBN	49.587	50.423	0.836	1.686
SA.2	LENTSBM	47.646	47.496	-0.149	-0.314
SA.2	LENTSBN	88.43	89.07	0.64	0.724
SA.2	FLDPSBM	35.563	35.129	-0.434	-1.221
SA.2	FLDPSBN	66.006	67.989	1.983	3.005

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
SA.3	HAY	53.5	61.096	7.597	14.2
SA.3	ALFALFA	175.084	206.608	31.524	18.005
SA.3	WHTHQSFM	21.684	21.612	-0.073	-0.336
SA.3	WHTHQSFN	40.6	40.869	0.269	0.663
SA.3	WHTHQSBM	110.999	109.075	-1.924	-1.734
SA.3	WHTHQSBN	207.853	207.706	-0.147	-0.071
SA.3	DURUMSFM	170.735	170.43	-0.305	-0.178
SA.3	DURUMSFN	319.674	320.762	1.088	0.34
SA.3	BARFDSBM	6.388	6.239	-0.149	-2.338
SA.3	BARFDSBN	11.961	12.161	0.2	1.673
SA.3	BARMTSBM	33.967	33.393	-0.574	-1.689
SA.3	BARMTSBN	63.594	64.168	0.575	0.904
SA.3	OATSSBM	12.913	12.198	-0.715	-5.536
SA.3	OATSSBN	24.178	24.108	-0.07	-0.29
SA.3	FLAXSBM	8.716	8.495	-0.22	-2.528
SA.3	FLAXSBN	16.319	16.296	-0.023	-0.143
SA.3	CANSBM	14.715	14.499	-0.216	-1.467
SA.3	CANSBN	27.551	27.533	-0.017	-0.063
SA.3	LENTSBM	45.502	45.012	-0.49	-1.077
SA.3	LENTSBN	85.196	85.15	-0.046	-0.054
SA.3	FLDPSBM	56.323	53.742	-2.581	-4.582
SA.3	FLDPSBN	105.455	105.282	-0.173	-0.164

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
SA.4	HAY	24.722	27.371	2.649	10.714
SA.4	ALFALFA	43.086	48.715	5.629	13.065
SA.4	WHTHQSFM	40.958	40.805	-0.153	-0.373
SA.4	WHTHQSFN	49.991	50.485	0.494	0.989
SA.4	WHTHQSBM	2.07	2.041	-0.029	-1.402
SA.4	WHTHQSBN	2.526	2.551	0.025	0.993
SA.4	DURUMSFM	60.528	60.416	-0.111	-0.184
SA.4	DURUMSFN	73.876	74.216	0.34	0.46
SA.4	BARFDSBM	9.161	8.94	-0.221	-2.417
SA.4	BARFDSBN	11.181	11.361	0.179	1.603
SA.4	BARMTSBM	9.297	9.092	-0.205	-2.202
SA.4	BARMTSBN	11.349	11.517	0.169	1.485
SA.4	OATSSBM	4.118	3.944	-0.175	-4.248
SA.4	OATSSBN	5.027	5.165	0.138	2.746
SA.4	FLAXSBM	0.205	0.203	-0.003	-1.402
SA.4	FLAXSBN	0.251	0.253	0.002	0.957
SA.4	CANSBM	2.761	2.71	-0.051	-1.851
SA.4	CANSBN	3.37	3.413	0.043	1.268
SA.4	LENTSBM	4.402	4.363	-0.039	-0.888
SA.4	LENTSBN	5.373	5.404	0.031	0.575

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
SA.5	HAY	53.128	61.716	8.588	16.164
SA.5	ALFALFA	172.431	179.641	7.21	4.181
SA.5	WHTHQSBM	200.714	199.921	-0.793	-0.395
SA.5	WHTHQSBN	175.707	182.769	7.062	4.019
SA.5	DURUMSBM	9.501	9.484	-0.017	-0.176
SA.5	DURUMSBN	8.317	8.482	0.165	1.988
SA.5	BARFDSBM	7.583	7.692	0.109	1.431
SA.5	BARFDSBN	6.639	7.066	0.427	6.437
SA.5	BARMTSBM	93.216	93.719	0.502	0.539
SA.5	BARMTSBN	81.603	85.01	3.408	4.176
SA.5	OATSSBM	66.597	66.055	-0.542	-0.813
SA.5	OATSSBN	58.299	62.681	4.381	7.515
SA.5	FLAXSBM	24.777	24.678	-0.099	-0.4
SA.5	FLAXSBN	21.69	22.496	0.806	3.717
SA.5	CANSFM	90.432	90.859	0.426	0.472
SA.5	CANSFN	79.165	82.702	3.537	4.468
SA.5	CANSBM	37.338	37.203	-0.135	-0.362
SA.5	CANSBN	32.686	33.79	1.104	3.378
SA.5	LENTSBM	6.132	6.122	-0.01	-0.163
SA.5	LENTSBN	5.368	5.455	0.087	1.619
SA.5	FLDPSBM	53.041	52.844	-0.198	-0.372
SA.5	FLDPSBN	46.433	49.236	2.803	6.037

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
SA.6	HAY	40.012	42.315	2.303	5.756
SA.6	ALFALFA	140.263	147.422	7.159	5.104
SA.6	WHTHQSBM	225.865	223.812	-2.052	-0.909
SA.6	WHTHQSBN	337.648	342.808	5.159	1.528
SA.6	DURUMSFM	11.014	10.999	-0.015	-0.136
SA.6	DURUMSFN	16.464	16.595	0.13	0.791
SA.6	DURUMSBM	25.099	25.019	-0.08	-0.317
SA.6	DURUMSBN	37.52	37.706	0.186	0.495
SA.6	BARFDSBM	8.936	8.977	0.04	0.45
SA.6	BARFDSBN	13.359	13.908	0.55	4.114
SA.6	BARMTSBM	75.858	75.908	0.05	0.066
SA.6	BARMTSBN	113.403	116.869	3.466	3.056
SA.6	OATSSBM	23.566	23.058	-0.509	-2.158
SA.6	OATSSBN	35.231	36.385	1.154	3.276
SA.6	FLAXSBM	22.63	22.43	-0.2	-0.883
SA.6	FLAXSBN	33.829	34.321	0.491	1.453
SA.6	CANSFM	92.444	92.167	-0.278	-0.3
SA.6	CANSFN	138.196	140.914	2.718	1.967
SA.6	LENTSBM	40.414	40.229	-0.185	-0.458
SA.6	LENTSBN	60.418	60.854	0.435	0.721
SA.6	FLDPSBM	55.708	54.886	-0.822	-1.475
SA.6	FLDPSBN	83.279	85.344	2.065	2.48

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REGION	CROP	BASE	$15	DIFF	PRCNTCHG	REGION	CROP	BASE	$15	DIFF	PRCNTCHG	REGION	CROP	BASE	$15	DIFF	PRCNTCHG
SA.7	HAY	18.407	19.667	1.26	6.845	SA.8	HAY	33.207	37.899	4.692	14.13	SA.9	HAY	93.786	109.759	15.972	17.03
SA.7	ALFALFA	43.247	45.881	2.635	6.092	SA.8	ALFALFA	108.491	112.147	3.656	3.37	SA.9	ALFALFA	260.506	270.816	10.31	3.958
SA.7	WHTHQSFM	39.868	39.351	-0.517	-1.297	SA.8	WHTHQSBM	199.235	196.796	-2.439	-1.224	SA.9	WHTHQSBM	196.7	192.074	-4.626	-2.352
SA.7	WHTHQSFN	69.228	70.914	1.686	2.435	SA.8	WHTHQSBN	153.118	156.487	3.369	2.2	SA.9	WHTHQSBN	177.307	180.261	2.954	1.666
SA.7	WHTHQSBM	87.04	85.833	-1.207	-1.387	SA.8	DURUMSBM	4.509	4.491	-0.018	-0.41	SA.9	DURUMSBM	1.013	1.006	-0.007	-0.669
SA.7	WHTHQSBN	151.139	153.627	2.488	1.646	SA.8	DURUMSBN	3.466	3.494	0.028	0.806	SA.9	DURUMSBN	0.913	0.918	0.005	0.506
SA.7	DURUMSFM	47.053	46.875	-0.178	-0.378	SA.8	BARFDSBM	9.909	9.953	0.043	0.435	SA.9	BARFDSBM	93.77	92.555	-1.216	-1.297
SA.7	DURUMSFN	81.704	82.283	0.58	0.709	SA.8	BARFDSBN	7.616	7.962	0.346	4.544	SA.9	BARFDSBN	84.514	88.048	3.533	4.181
SA.7	BARFDSBM	3.943	3.914	-0.029	-0.731	SA.8	BARMTSBM	88.204	88.328	0.124	0.14	SA.9	BARMTSBM	16.019	15.756	-0.263	-1.642
SA.7	BARFDSBN	6.846	7.172	0.327	4.773	SA.8	BARMTSBN	67.798	70.246	2.448	3.611	SA.9	BARMTSBN	14.44	14.988	0.548	3.795
SA.7	BARMTSBM	50.044	49.571	-0.473	-0.946	SA.8	OATSSBM	29.151	28.465	-0.686	-2.353	SA.9	OATSSBM	42.508	40.422	-2.086	-4.907
SA.7	BARMTSBN	86.899	89.817	2.918	3.358	SA.8	OATSSBN	22.407	23.335	0.928	4.143	SA.9	OATSSBN	38.321	39.621	1.3	3.393
SA.7	OATSSBM	7.011	6.734	-0.276	-3.942	SA.8	FLAXSBM	16.53	16.315	-0.214	-1.296	SA.9	FLAXSBM	4.81	4.698	-0.113	-2.342
SA.7	OATSSBN	12.174	12.686	0.513	4.21	SA.8	FLAXSBN	12.705	12.989	0.283	2.231	SA.9	FLAXSBN	4.337	4.409	0.071	1.643
SA.7	FLAXSBM	1.962	1.924	-0.037	-1.906	SA.8	CANSFM	46.151	45.933	-0.218	-0.472	SA.9	CANSFM	70.822	70.311	-0.511	-0.722
SA.7	FLAXSBN	3.406	3.478	0.072	2.102	SA.8	CANSFN	35.474	36.486	1.013	2.855	SA.9	CANSFN	63.84	66.019	2.179	3.413
SA.7	CANSFM	35.301	34.839	-0.463	-1.311	SA.8	CANSBM	79.059	78.165	-0.894	-1.131	SA.9	CANSBM	49.292	48.159	-1.133	-2.299
SA.7	CANSFN	61.299	62.775	1.477	2.409	SA.8	CANSBN	60.765	61.981	1.216	2.001	SA.9	CANSBN	44.427	45.143	0.716	1.612
SA.7	LENTSBM	27.161	26.949	-0.212	-0.781	SA.8	LENTSBM	2.492	2.475	-0.017	-0.677	SA.9	LENTSBM	2.255	2.229	-0.027	-1.193
SA.7	LENTSBN	47.164	47.563	0.399	0.845	SA.8	LENTSBN	1.916	1.939	0.024	1.24	SA.9	LENTSBN	2.033	2.05	0.017	0.856
SA.7	FLDPSBM	42.495	41.158	-1.336	-3.145	SA.8	FLDPSBM	76.978	75.777	-1.202	-1.561	SA.9	FLDPSBM	73.203	70.398	-2.805	-3.832
SA.7	FLDPSBN	73.79	76.426	2.636	3.573	SA.8	FLDPSBN	59.168	61.338	2.17	3.667	SA.9	FLDPSBN	65.986	67.88	1.895	2.871

Regional distribution of carbon sequestering crops/technology ('000 ha) Saskatchewan - Policy all -$50

REGION	CROP	BASE	$50	DIFF	PRCNTCHG	REGION	CROP	BASE	$50	DIFF	PRCNTCHG	REGION	CROP	BASE	$50	DIFF	PRCNTCHG
SA.1	HAY	36.152	47.371	11.219	31.032	SA.2	HAY	21.951	30.767	8.816	40.161	SA.3	HAY	53.5	75.026	21.526	40.236
SA.1	ALFALFA	101.189	118.089	16.9	16.702	SA.2	ALFALFA	66.181	81.25	15.068	22.768	SA.3	ALFALFA	175.084	266.732	91.648	52.345
SA.1	WHTHQSBM	95.654	92.343	-3.311	-3.461	SA.2	WHTHQSBM	73.357	71.648	-1.708	-2.329	SA.3	WHTHQSFM	21.684	21.483	-0.202	-0.93
SA.1	WHTHQSBN	171.379	183.958	12.579	7.34	SA.2	WHTHQSBN	136.15	146.692	10.542	7.743	SA.3	WHTHQSFN	40.6	41.576	0.975	2.402
SA.1	DURUMSFM	10.764	10.727	-0.037	-0.34	SA.2	DURUMSFM	62.87	62.679	-0.191	-0.303	SA.3	WHTHQSBM	110.999	104.811	-6.188	-5.575
SA.1	DURUMSFN	19.285	19.9	0.614	3.186	SA.2	DURUMSFN	116.686	119.468	2.782	2.384	SA.3	WHTHQSBN	207.853	207.903	0.05	0.024
SA.1	DURUMSBM	9.06	8.97	-0.09	-0.997	SA.2	DURUMSBM	20.18	19.992	-0.189	-0.934	SA.3	DURUMSFM	170.735	169.682	-1.053	-0.617
SA.1	DURUMSBN	16.233	16.549	0.316	1.948	SA.2	DURUMSBN	37.454	38.457	1.003	2.677	SA.3	DURUMSFN	319.674	323.204	3.531	1.104
SA.1	BARFDSBM	4.333	4.529	0.196	4.518	SA.2	BARFDSBM	2.588	2.741	0.153	5.926	SA.3	BARFDSBM	6.388	6.08	-0.308	-4.825
SA.1	BARFDSBN	7.76	9.167	1.406	18.124	SA.2	BARFDSBN	4.803	5.705	0.902	18.778	SA.3	BARFDSBN	11.961	12.98	1.019	8.519
SA.1	BARMTSBM	29.102	29.734	0.631	2.169	SA.2	BARMTSBM	27.74	28.365	0.625	2.254	SA.3	BARMTSBM	33.967	32.6	-1.367	-4.024
SA.1	BARMTSBN	52.142	58.99	6.848	13.134	SA.2	BARMTSBN	51.485	57.458	5.973	11.602	SA.3	BARMTSBN	63.594	66.543	2.95	4.638
SA.1	OATSSBM	21.457	19.944	-1.513	-7.053	SA.2	OATSSBM	8.929	8.47	-0.459	-5.141	SA.3	OATSSBM	12.913	10.5	-2.414	-18.69
SA.1	OATSSBN	38.444	43.159	4.715	12.265	SA.2	OATSSBN	16.573	18.735	2.162	13.047	SA.3	OATSSBN	24.178	23.899	-0.279	-1.153
SA.1	FLAXSBM	24.341	23.37	-0.971	-3.991	SA.2	FLAXSBM	27.986	27.4	-0.586	-2.093	SA.3	FLAXSBM	8.716	7.98	-0.736	-8.439
SA.1	FLAXSBN	43.611	46.743	3.133	7.183	SA.2	FLAXSBN	51.941	54.876	2.935	5.65	SA.3	FLAXSBN	16.319	16.236	-0.083	-0.507
SA.1	CANSFM	46.433	46.132	-0.3	-0.647	SA.2	CANSBM	26.714	26.116	-0.598	-2.238	SA.3	CANSBM	14.715	13.982	-0.732	-4.976
SA.1	CANSFN	83.192	87.889	4.697	5.646	SA.2	CANSBN	49.587	52.507	2.92	5.889	SA.3	CANSBN	27.551	27.476	-0.075	-0.272
SA.1	LENTSBM	4.073	4.023	-0.05	-1.236	SA.2	LENTSBM	47.646	47.191	-0.455	-0.955	SA.3	LENTSBM	45.502	43.872	-1.631	-3.584
SA.1	LENTSBN	7.297	7.461	0.164	2.245	SA.2	LENTSBN	88.43	90.632	2.201	2.489	SA.3	LENTSBN	85.196	85.042	-0.154	-0.181
SA.1	FLDPSBM	16.915	16.219	-0.697	-4.118	SA.2	FLDPSBM	35.563	34.278	-1.286	-3.616	SA.3	FLDPSBM	56.323	47.632	-8.691	-15.431
SA.1	FLDPSBN	30.306	33.471	3.164	10.441	SA.2	FLDPSBN	66.006	72.898	6.893	10.443	SA.3	FLDPSBN	105.455	104.775	-0.68	-0.645

REGION	CROP	BASE	$50	DIFF	PRCNTCHG	REGION	CROP	BASE	$50	DIFF	PRCNTCHG	REGION	CROP	BASE	$50	DIFF	PRCNTCHG
SA.4	HAY	24.722	31.932	7.209	29.161	SA.5	HAY	53.128	73.279	20.152	37.93	SA.6	HAY	40.012	45.362	5.35	13.37
SA.4	ALFALFA	43.086	58.86	15.775	36.612	SA.5	ALFALFA	172.431	184.329	11.898	6.9	SA.6	ALFALFA	140.263	156.151	15.888	11.327
SA.4	WHTHQSFM	40.958	40.447	-0.511	-1.247	SA.5	WHTHQSBM	200.714	200.576	-0.138	-0.069	SA.6	WHTHQSBM	225.865	219.901	-5.963	-2.64
SA.4	WHTHQSFN	49.991	51.636	1.645	3.291	SA.5	WHTHQSBN	175.707	201.052	25.346	14.425	SA.6	WHTHQSBN	337.648	356.289	18.641	5.521
SA.4	WHTHQSBM	2.07	1.979	-0.091	-4.398	SA.5	DURUMSBM	9.501	9.49	-0.01	-0.107	SA.6	DURUMSFM	11.014	10.969	-0.045	-0.405
SA.4	WHTHQSBN	2.526	2.617	0.091	3.611	SA.5	DURUMSBN	8.317	8.916	0.599	7.206	SA.6	DURUMSFN	16.464	16.903	0.439	2.667
SA.4	DURUMSFM	60.528	60.158	-0.37	-0.611	SA.5	BARFDSBM	7.583	8.248	0.665	8.77	SA.6	DURUMSBM	25.099	24.869	-0.23	-0.916
SA.4	DURUMSFN	73.876	75.011	1.135	1.536	SA.5	BARFDSBN	6.639	8.329	1.69	25.454	SA.6	DURUMSBN	37.52	38.197	0.676	1.802
SA.4	BARFDSBM	9.161	8.471	-0.69	-7.532	SA.5	BARMTSBM	93.216	96.963	3.746	4.019	SA.6	BARFDSBM	8.936	9.388	0.452	5.058
SA.4	BARFDSBN	11.181	11.841	0.66	5.904	SA.5	BARMTSBN	81.603	94.698	13.096	16.048	SA.6	BARFDSBN	13.359	15.669	2.31	17.292
SA.4	BARMTSBM	9.297	8.659	-0.638	-6.863	SA.5	OATSSBM	66.597	65.701	-0.895	-1.345	SA.6	BARMTSBM	75.858	77.869	2.01	2.65
SA.4	BARMTSBN	11.349	11.97	0.622	5.48	SA.5	OATSSBN	58.299	73.772	15.473	26.54	SA.6	BARMTSBN	113.403	127.675	14.272	12.585
SA.4	OATSSBM	4.118	3.568	-0.551	-13.377	SA.5	FLAXSBM	24.777	24.628	-0.149	-0.601	SA.6	OATSSBM	23.566	22.102	-1.465	-6.216
SA.4	OATSSBN	5.027	5.525	0.499	9.919	SA.5	FLAXSBN	21.69	24.54	2.85	13.142	SA.6	OATSSBN	35.231	39.411	4.18	11.864
SA.4	FLAXSBM	0.205	0.196	-0.009	-4.441	SA.5	CANSFM	90.432	91.863	1.431	1.582	SA.6	FLAXSBM	22.63	22.029	-0.6	-2.653
SA.4	FLAXSBN	0.251	0.259	0.009	3.397	SA.5	CANSFN	79.165	90.958	11.792	14.895	SA.6	FLAXSBN	33.829	35.585	1.756	5.19
SA.4	CANSBM	2.761	2.6	-0.161	-5.841	SA.5	CANSBM	37.338	37.105	-0.233	-0.623	SA.6	CANSFM	92.444	91.513	-0.931	-1.007
SA.4	CANSBN	3.37	3.525	0.155	4.595	SA.5	CANSBN	32.686	36.569	3.882	11.878	SA.6	CANSFN	138.196	147.244	9.048	6.547
SA.4	LENTSBM	4.402	4.28	-0.123	-2.785	SA.5	LENTSBM	6.132	6.115	-0.017	-0.281	SA.6	LENTSBM	40.414	39.871	-0.543	-1.344
SA.4	LENTSBN	5.373	5.486	0.113	2.101	SA.5	LENTSBN	5.368	5.672	0.304	5.662	SA.6	LENTSBN	60.418	61.98	1.562	2.585
						SA.5	FLDPSBM	53.041	53.135	0.093	0.176	SA.6	FLDPSBM	55.708	53.239	-2.469	-4.433
						SA.5	FLDPSBN	46.433	56.517	10.084	21.718	SA.6	FLDPSBN	83.279	90.6	7.322	8.792

Regional distribution of carbon sequestering crops/technology ('000 ha) Saskatchewan - Policy all -$50

REGION	CROP	BASE	$50	DIFF	PRCNTCHG	REGION	CROP	BASE	$50	DIFF	PRCNTCHG	REGION	CROP	BASE	$50	DIFF	PRCNTCHG
SA.7	HAY	18.407	21.409	3.002	16.311	SA.8	HAY	33.207	43.304	10.097	30.407	SA.9	HAY	93.786	132.593	38.807	41.378
SA.7	ALFALFA	43.247	49.288	6.041	13.97	SA.8	ALFALFA	108.491	112.915	4.424	4.078	SA.9	ALFALFA	260.506	277.662	17.157	6.586
SA.7	WHTHQSFM	39.868	38.128	-1.74	-4.365	SA.8	WHTHQSBM	199.235	192.227	-7.008	-3.518	SA.9	WHTHQSBM	196.7	184.279	-12.422	-6.315
SA.7	WHTHQSFN	69.228	74.833	5.605	8.096	SA.8	WHTHQSBN	153.118	165.121	12.003	7.839	SA.9	WHTHQSBN	177.307	189.938	12.63	7.123
SA.7	WHTHQSBM	87.04	83.043	-3.996	-4.591	SA.8	DURUMSBM	4.509	4.455	-0.054	-1.199	SA.9	DURUMSBM	1.013	0.995	-0.018	-1.814
SA.7	WHTHQSBN	151.139	159.421	8.282	5.48	SA.8	DURUMSBN	3.466	3.565	0.099	2.866	SA.9	DURUMSBN	0.913	0.933	0.019	2.133
SA.7	DURUMSFM	47.053	46.46	-0.592	-1.259	SA.8	BARFDSBM	9.909	10.434	0.525	5.297	SA.9	BARFDSBM	93.77	94.572	0.801	0.855
SA.7	DURUMSFN	81.704	83.631	1.927	2.359	SA.8	BARFDSBN	7.616	9.063	1.447	19	SA.9	BARFDSBN	84.514	100.67	16.156	19.116
SA.7	BARFDSBM	3.943	3.971	0.028	0.722	SA.8	BARMTSBM	88.204	91.115	2.911	3.3	SA.9	BARMTSBM	16.019	15.871	-0.148	-0.925
SA.7	BARFDSBN	6.846	8.153	1.308	19.102	SA.8	BARMTSBN	67.798	77.875	10.077	14.864	SA.9	BARMTSBN	14.44	16.916	2.477	17.151
SA.7	BARMTSBM	50.044	49.522	-0.522	-1.043	SA.8	OATSSBM	29.151	27.149	-2.002	-6.867	SA.9	OATSSBM	42.508	36.889	-5.618	-13.217
SA.7	BARMTSBN	86.899	98.501	11.602	13.351	SA.8	OATSSBN	22.407	25.735	3.328	14.853	SA.9	OATSSBN	38.321	43.915	5.595	14.6
SA.7	OATSSBM	7.011	6.105	-0.906	-12.924	SA.8	FLAXSBM	16.53	15.93	-0.6	-3.63	SA.9	FLAXSBM	4.81	4.505	-0.306	-6.352
SA.7	OATSSBN	12.174	13.909	1.735	14.252	SA.8	FLAXSBN	12.705	13.736	1.03	8.109	SA.9	FLAXSBN	4.337	4.641	0.304	6.999
SA.7	FLAXSBM	1.962	1.84	-0.122	-6.227	SA.8	CANSFM	46.151	45.425	-0.726	-1.573	SA.9	CANSFM	70.822	69.113	-1.71	-2.414
SA.7	FLAXSBN	3.406	3.649	0.243	7.128	SA.8	CANSFN	35.474	38.849	3.375	9.515	SA.9	CANSFN	63.84	71.17	7.33	11.482
SA.7	CANSFM	35.301	33.765	-1.536	-4.352	SA.8	CANSBM	79.059	76.53	-2.529	-3.199	SA.9	CANSBM	49.292	46.262	-3.03	-6.148
SA.7	CANSFN	61.299	66.236	4.937	8.054	SA.8	CANSBN	60.765	65.155	4.39	7.225	SA.9	CANSBN	44.427	47.465	3.038	6.838
SA.7	LENTSBM	27.161	26.469	-0.692	-2.547	SA.8	LENTSBM	2.492	2.443	-0.049	-1.977	SA.9	LENTSBM	2.255	2.182	-0.073	-3.234
SA.7	LENTSBN	47.164	48.522	1.358	2.879	SA.8	LENTSBN	1.916	2	0.085	4.425	SA.9	LENTSBN	2.033	2.107	0.074	3.624
SA.7	FLDPSBM	42.495	38.068	-4.427	-10.419	SA.8	FLDPSBM	76.978	73.65	-3.328	-4.324	SA.9	FLDPSBM	73.203	65.53	-7.673	-10.482
SA.7	FLDPSBN	73.79	82.589	8.799	11.925	SA.8	FLDPSBN	59.168	66.996	7.828	13.23	SA.9	FLDPSBN	65.986	73.848	7.862	11.914

Regional distribution of carbon sequestering crops/technology ('000 ha) Saskatchewan - Policy all -$100

REGION	CROP	BASE	$100	DIFF	PRCNTCHG	REGION	CROP	BASE	$100	DIFF	PRCNTCHG	REGION	CROP	BASE	$100	DIFF	PRCNTCHG
SA.1	HAY	36.152	56.194	20.042	55.437	SA.2	HAY	21.951	38.106	16.155	73.595	SA.3	HAY	53.5	92.883	39.383	73.614
SA.1	ALFALFA	101.189	129.143	27.954	27.625	SA.2	ALFALFA	66.181	92.459	26.277	39.705	SA.3	ALFALFA	175.084	345.152	170.068	97.135
SA.1	WHTHQSBM	95.654	89.452	-6.201	-6.483	SA.2	WHTHQSBM	73.357	70.375	-2.981	-4.064	SA.3	WHTHQSFM	21.684	21.342	-0.342	-1.576
SA.1	WHTHQSBN	171.379	197.085	25.706	14.999	SA.2	WHTHQSBN	136.15	157.966	21.816	16.024	SA.3	WHTHQSFN	40.6	42.67	2.069	5.097
SA.1	DURUMSFM	10.764	10.703	-0.061	-0.569	SA.2	DURUMSFM	62.87	62.489	-0.381	-0.606	SA.3	WHTHQSBM	110.999	98.894	-12.105	-10.906
SA.1	DURUMSFN	19.285	20.537	1.252	6.489	SA.2	DURUMSFN	116.686	122.248	5.562	4.767	SA.3	WHTHQSBN	207.853	208.529	0.676	0.325
SA.1	DURUMSBM	9.06	8.886	-0.175	-1.926	SA.2	DURUMSBM	20.18	19.814	-0.367	-1.817	SA.3	DURUMSFM	170.735	168.566	-2.169	-1.27
SA.1	DURUMSBN	16.233	16.878	0.645	3.973	SA.2	DURUMSBN	37.454	39.482	2.028	5.413	SA.3	DURUMSFN	319.674	326.628	6.954	2.175
SA.1	BARFDSBM	4.333	4.827	0.494	11.398	SA.2	BARFDSBM	2.588	2.966	0.378	14.611	SA.3	BARFDSBM	6.388	5.905	-0.483	-7.557
SA.1	BARFDSBN	7.76	10.758	2.998	38.632	SA.2	BARFDSBN	4.803	6.74	1.937	40.335	SA.3	BARFDSBN	11.961	14.252	2.291	19.151
SA.1	BARMTSBM	29.102	30.785	1.683	5.782	SA.2	BARMTSBM	27.74	29.365	1.625	5.858	SA.3	BARMTSBM	33.967	31.585	-2.382	-7.013
SA.1	BARMTSBN	52.142	66.628	14.486	27.782	SA.2	BARMTSBN	51.485	64.136	12.651	24.572	SA.3	BARMTSBN	63.594	70.181	6.587	10.359
SA.1	OATSSBM	21.457	19.114	-2.343	-10.921	SA.2	OATSSBM	8.929	8.304	-0.625	-6.999	SA.3	OATSSBM	12.913	8.393	-4.52	-35.006
SA.1	OATSSBN	38.444	49.097	10.653	27.711	SA.2	OATSSBN	16.573	21.445	4.873	29.402	SA.3	OATSSBN	24.178	24.203	0.025	0.103
SA.1	FLAXSBM	24.341	22.378	-1.963	-8.065	SA.2	FLAXSBM	27.986	26.834	-1.151	-4.114	SA.3	FLAXSBM	8.716	7.227	-1.489	-17.083
SA.1	FLAXSBN	43.611	49.883	6.272	14.381	SA.2	FLAXSBN	51.941	57.854	5.912	11.383	SA.3	FLAXSBN	16.319	16.112	-0.207	-1.267
SA.1	CANSFM	46.433	45.822	-0.611	-1.315	SA.2	CANSBM	26.714	25.515	-1.199	-4.487	SA.3	CANSBM	14.715	13.228	-1.487	-10.104
SA.1	CANSFN	83.192	92.565	9.372	11.266	SA.2	CANSBN	49.587	55.445	5.858	11.814	SA.3	CANSBN	27.551	27.356	-0.194	-0.705
SA.1	LENTSBM	4.073	3.971	-0.102	-2.502	SA.2	LENTSBM	47.646	46.748	-0.898	-1.884	SA.3	LENTSBM	45.502	42.153	-3.349	-7.361
SA.1	LENTSBN	7.297	7.622	0.325	4.457	SA.2	LENTSBN	88.43	92.858	4.427	5.007	SA.3	LENTSBN	85.196	84.745	-0.45	-0.528
SA.1	FLDPSBM	16.915	15.296	-1.619	-9.574	SA.2	FLDPSBM	35.563	32.781	-2.783	-7.824	SA.3	FLDPSBM	56.323	38.415	-17.908	-31.795
SA.1	FLDPSBN	30.306	36.192	5.885	19.419	SA.2	FLDPSBN	66.006	79.375	13.369	20.255	SA.3	FLDPSBN	105.455	103.111	-2.344	-2.223

REGION	CROP	BASE	$100	DIFF	PRCNTCHG	REGION	CROP	BASE	$100	DIFF	PRCNTCHG	REGION	CROP	BASE	$100	DIFF	PRCNTCHG
SA.4	HAY	24.722	37.377	12.655	51.189	SA.5	HAY	53.128	84.822	31.694	59.656	SA.6	HAY	40.012	48.506	8.494	21.228
SA.4	ALFALFA	43.086	71.305	28.219	65.495	SA.5	ALFALFA	172.431	184.157	11.726	6.8	SA.6	ALFALFA	140.263	164.439	24.176	17.236
SA.4	WHTHQSFM	40.958	39.926	-1.032	-2.52	SA.5	WHTHQSBM	200.714	202.313	1.599	0.797	SA.6	WHTHQSBM	225.865	214.167	-11.698	-5.179
SA.4	WHTHQSFN	49.991	53.268	3.278	6.556	SA.5	WHTHQSBN	175.707	228.441	52.734	30.013	SA.6	WHTHQSBN	337.648	375.224	37.575	11.129
SA.4	WHTHQSBM	2.07	1.87	-0.2	-9.654	SA.5	DURUMSBM	9.501	9.517	0.017	0.174	SA.6	DURUMSFM	11.014	10.923	-0.09	-0.82
SA.4	WHTHQSBN	2.526	2.685	0.159	6.287	SA.5	DURUMSBN	8.317	9.552	1.235	14.846	SA.6	DURUMSFN	16.464	17.342	0.877	5.328
SA.4	DURUMSFM	60.528	59.799	-0.729	-1.204	SA.5	BARFDSBM	7.583	9.1	1.516	19.995	SA.6	DURUMSBM	25.099	24.642	-0.457	-1.82
SA.4	DURUMSFN	73.876	76.16	2.284	3.091	SA.5	BARFDSBN	6.639	10.18	3.541	53.345	SA.6	DURUMSBN	37.52	38.88	1.36	3.625
SA.4	BARFDSBM	9.161	8.525	-0.636	-6.948	SA.5	BARMTSBM	93.216	101.784	8.568	9.191	SA.6	BARFDSBM	8.936	10.094	1.158	12.953
SA.4	BARFDSBN	11.181	13.417	2.236	19.994	SA.5	BARMTSBN	81.603	108.788	27.186	33.315	SA.6	BARFDSBN	13.359	18.362	5.004	37.458
SA.4	BARMTSBM	9.297	8.665	-0.632	-6.8	SA.5	OATSSBM	66.597	66.919	0.322	0.484	SA.6	BARMTSBM	75.858	81.265	5.407	7.127
SA.4	BARMTSBN	11.349	13.399	2.05	18.066	SA.5	OATSSBN	58.299	91.034	32.734	56.148	SA.6	BARMTSBN	113.403	144.056	30.653	27.03
SA.4	OATSSBM	4.118	2.913	-1.205	-29.261	SA.5	FLAXSBM	24.777	24.403	-0.373	-1.507	SA.6	OATSSBM	23.566	20.635	-2.931	-12.437
SA.4	OATSSBN	5.027	5.896	0.87	17.3	SA.5	FLAXSBN	21.69	27.318	5.628	25.949	SA.6	OATSSBN	35.231	43.602	8.37	23.758
SA.4	FLAXSBM	0.205	0.186	-0.02	-9.659	SA.5	CANSFM	90.432	93.32	2.888	3.193	SA.6	FLAXSBM	22.63	21.46	-1.17	-5.171
SA.4	FLAXSBN	0.251	0.266	0.015	6.026	SA.5	CANSFN	79.165	102.764	23.598	29.809	SA.6	FLAXSBN	33.829	37.382	3.553	10.503
SA.4	CANSBM	2.761	2.409	-0.352	-12.742	SA.5	CANSBM	37.338	36.858	-0.48	-1.285	SA.6	CANSFM	92.444	90.571	-1.873	-2.027
SA.4	CANSBN	3.37	3.641	0.271	8.046	SA.5	CANSBN	32.686	40.426	7.74	23.679	SA.6	CANSFN	138.196	156.309	18.112	13.106
SA.4	LENTSBM	4.402	4.135	-0.268	-6.082	SA.5	LENTSBM	6.132	6.093	-0.039	-0.63	SA.6	LENTSBM	40.414	39.346	-1.068	-2.644
SA.4	LENTSBN	5.373	5.571	0.198	3.681	SA.5	LENTSBN	5.368	5.973	0.605	11.263	SA.6	LENTSBN	60.418	63.576	3.158	5.227
						SA.5	FLDPSBM	53.041	52.286	-0.755	-1.424	SA.6	FLDPSBM	55.708	50.69	-5.018	-9.008
						SA.5	FLDPSBN	46.433	65.772	19.339	41.649	SA.6	FLDPSBN	83.279	97.742	14.464	17.368

Regional distribution of carbon sequestering crops/technology ('000 ha) Saskatchewan - Policy all -$100

REGION	CROP	BASE	$100	DIFF	PRCNTCHG	REGION	CROP	BASE	$100	DIFF	PRCNTCHG	REGION	CROP	BASE	$100	DIFF	PRCNTCHG
SA.7	HAY	18.407	23.296	4.89	26.564	SA.8	HAY	33.207	48.141	14.934	44.973	SA.9	HAY	93.786	156.964	63.178	67.364
SA.7	ALFALFA	43.247	52.762	9.516	22.004	SA.8	ALFALFA	108.491	110.038	1.547	1.426	SA.9	ALFALFA	260.506	278.008	17.502	6.718
SA.7	WHTHQSFM	39.868	36.381	-3.487	-8.747	SA.8	WHTHQSBM	199.235	186.135	-13.1	-6.575	SA.9	WHTHQSBM	196.7	173.184	-23.516	-11.955
SA.7	WHTHQSFN	69.228	80.413	11.185	16.157	SA.8	WHTHQSBN	153.118	177.765	24.647	16.097	SA.9	WHTHQSBN	177.307	203.801	26.494	14.942
SA.7	WHTHQSBM	87.04	79.107	-7.932	-9.113	SA.8	DURUMSBM	4.509	4.408	-0.101	-2.239	SA.9	DURUMSBM	1.013	0.978	-0.034	-3.406
SA.7	WHTHQSBN	151.139	167.828	16.69	11.043	SA.8	DURUMSBN	3.466	3.671	0.205	5.907	SA.9	DURUMSBN	0.913	0.954	0.041	4.504
SA.7	DURUMSFM	47.053	45.869	-1.184	-2.516	SA.8	BARFDSBM	9.909	11.293	1.384	13.962	SA.9	BARFDSBM	93.77	99.033	5.263	5.612
SA.7	DURUMSFN	81.704	85.578	3.874	4.742	SA.8	BARFDSBN	7.616	10.767	3.151	41.374	SA.9	BARFDSBN	84.514	120.075	35.561	42.077
SA.7	BARFDSBM	3.943	4.111	0.168	4.27	SA.8	BARMTSBM	88.204	96.178	7.973	9.039	SA.9	BARMTSBM	16.019	16.256	0.236	1.476
SA.7	BARFDSBN	6.846	9.649	2.803	40.944	SA.8	BARMTSBN	67.798	89.634	21.836	32.207	SA.9	BARMTSBN	14.44	19.871	5.431	37.614
SA.7	BARMTSBM	50.044	49.823	-0.221	-0.441	SA.8	OATSSBM	29.151	25.506	-3.645	-12.505	SA.9	OATSSBM	42.508	31.951	-10.557	-24.836
SA.7	BARMTSBN	86.899	111.498	24.599	28.308	SA.8	OATSSBN	22.407	29.333	6.926	30.91	SA.9	OATSSBN	38.321	50.165	11.844	30.909
SA.7	OATSSBM	7.011	5.196	-1.815	-25.882	SA.8	FLAXSBM	16.53	15.405	-1.125	-6.807	SA.9	FLAXSBM	4.81	4.241	-0.569	-11.837
SA.7	OATSSBN	12.174	15.639	3.465	28.463	SA.8	FLAXSBN	12.705	14.822	2.117	16.662	SA.9	FLAXSBN	4.337	4.983	0.646	14.887
SA.7	FLAXSBM	1.962	1.719	-0.242	-12.352	SA.8	CANSFM	46.151	44.699	-1.452	-3.147	SA.9	CANSFM	70.822	67.401	-3.421	-4.831
SA.7	FLAXSBN	3.406	3.896	0.49	14.371	SA.8	CANSFN	35.474	42.224	6.751	19.03	SA.9	CANSFN	63.84	78.498	14.658	22.961
SA.7	CANSFM	35.301	32.22	-3.082	-8.73	SA.8	CANSBM	79.059	74.299	-4.761	-6.022	SA.9	CANSBM	49.292	43.594	-5.698	-11.561
SA.7	CANSFN	61.299	71.162	9.863	16.09	SA.8	CANSBN	60.765	69.802	9.037	14.872	SA.9	CANSBN	44.427	50.825	6.398	14.401
SA.7	LENTSBM	27.161	25.774	-1.387	-5.106	SA.8	LENTSBM	2.492	2.401	-0.091	-3.659	SA.9	LENTSBM	2.255	2.119	-0.136	-6.027
SA.7	LENTSBN	47.164	49.873	2.709	5.744	SA.8	LENTSBN	1.916	2.091	0.175	9.151	SA.9	LENTSBN	2.033	2.189	0.156	7.687
SA.7	FLDPSBM	42.495	33.422	-9.073	-21.35	SA.8	FLDPSBM	76.978	69.905	-7.074	-9.189	SA.9	FLDPSBM	73.203	58.643	-14.56	-19.89
SA.7	FLDPSBN	73.79	91.126	17.336	23.494	SA.8	FLDPSBN	59.168	74.456	15.288	25.838	SA.9	FLDPSBN	65.986	82.326	16.34	24.763

Regional Distribution of carbon sequestering crops/technology ('000 ha) - Manitoba - Policy All -$5

Region	Crops	BASE	POLICY	DIFF	PRCNTCHG
MA.1	HAY	47.301	48.646	1.344	2.842
MA.1	ALFALFA	170.023	172.356	2.333	1.372
MA.1	WHTHQSBI	215.503	215.052	-0.451	-0.209
MA.1	WHTHQSBI	143.855	145.19	1.335	0.928
MA.1	DURUMSBI	4.887	4.884	-0.003	-0.063
MA.1	DURUMSBI	3.262	3.272	0.01	0.292
MA.1	BARFDSBV	18.664	18.678	0.014	0.073
MA.1	BARFDSBN	12.458	12.606	0.148	1.192
MA.1	BARMTSBN	54.931	54.929	-0.002	-0.004
MA.1	BARMTSBN	36.665	37.028	0.363	0.99
MA.1	OATSSBM	28.85	28.817	-0.032	-0.112
MA.1	OATSSBN	19.259	19.649	0.39	2.024
MA.1	FLAXSBM	25.385	25.344	-0.041	-0.161
MA.1	FLAXSBN	16.944	17.118	0.174	1.025
MA.1	CANSFM	38.788	38.831	0.043	0.11
MA.1	CANSFN	25.892	26.19	0.298	1.15
MA.1	CANSBM	68.254	68.16	-0.094	-0.137
MA.1	CANSBN	45.558	45.942	0.385	0.844
MA.1	LENTSBM	0.869	0.868	-9.06E-04	-0.104
MA.1	LENTSBN	0.58	0.583	0.003	0.455
MA.1	FLDPSBM	15.241	15.225	-0.016	-0.104
MA.1	FLDPSBN	10.174	10.334	0.161	1.578

Region	Crops	BASE	POLICY	DIFF	PRCNTCHG
MA.2	HAY	55.706	57.477	1.772	3.181
MA.2	ALFALFA	154.302	156.936	2.634	1.707
MA.2	WHTHQSBI	98.868	98.203	-0.665	-0.673
MA.2	WHTHQSBI	46.418	46.759	0.341	0.735
MA.2	DURUMSBI	0.554	0.552	-0.002	-0.276
MA.2	DURUMSBI	0.26	0.261	6.93E-04	0.266
MA.2	BARFDSBV	6.028	6.003	-0.025	-0.41
MA.2	BARFDSBN	2.83	2.855	0.025	0.893
MA.2	BARMTSBN	17.934	17.852	-0.082	-0.458
MA.2	BARMTSBN	8.42	8.491	0.071	0.84
MA.2	OATSSBM	14.98	14.798	-0.181	-1.211
MA.2	OATSSBN	7.033	7.13	0.097	1.385
MA.2	FLAXSBM	5.031	4.998	-0.033	-0.665
MA.2	FLAXSBN	2.362	2.38	0.018	0.766
MA.2	CANSFM	19.069	19.087	0.018	0.094
MA.2	CANSFN	8.953	9.072	0.119	1.331
MA.2	CANSBM	40.852	40.627	-0.225	-0.551
MA.2	CANSBN	19.177	19.31	0.134	0.697
MA.2	LENTSBM	0.019	0.019	-1.17E-04	-0.622
MA.2	LENTSBN	0.009	0.009	6.37E-05	0.721
MA.2	FLDPSBM	3.039	3.017	-0.022	-0.716
MA.2	FLDPSBN	1.427	1.445	0.018	1.256

Region	Crops	BASE	POLICY	DIFF	PRCNTCHG
MA.3	HAY	18.717	19.669	0.952	5.085
MA.3	ALFALFA	66.507	68.442	1.935	2.91
MA.3	WHTHQSBI	59.697	59.421	-0.276	-0.463
MA.3	WHTHQSBI	11.895	12.037	0.143	1.199
MA.3	DURUMSBI	0.328	0.327	-4.82E-04	-0.147
MA.3	DURUMSBI	0.065	0.065	2.24E-04	0.343
MA.3	BARFDSBV	7.952	7.934	-0.018	-0.226
MA.3	BARFDSBN	1.584	1.6	0.016	0.983
MA.3	BARMTSBN	7.557	7.542	-0.015	-0.198
MA.3	BARMTSBN	1.506	1.518	0.012	0.793
MA.3	OATSSBM	19.094	18.987	-0.107	-0.559
MA.3	OATSSBN	3.804	3.883	0.079	2.065
MA.3	FLAXSBM	8.66	8.614	-0.047	-0.538
MA.3	FLAXSBN	1.725	1.749	0.024	1.364
MA.3	CANSFM	6.44	6.434	-0.006	-0.086
MA.3	CANSFN	1.283	1.301	0.017	1.351
MA.3	CANSBM	19.181	19.101	-0.08	-0.418
MA.3	CANSBN	3.822	3.861	0.039	1.027
MA.3	LENTSBM	0.024	0.024	-6.11E-05	-0.255
MA.3	LENTSBN	0.005	0.005	2.76E-05	0.578
MA.3	FLDPSBM	9.486	9.412	-0.074	-0.785
MA.3	FLDPSBN	1.89	1.933	0.043	2.295

Region	Crops	BASE	POLICY	DIFF	PRCNTCHG
MA.4	HAY	12.679	13.44	0.76	5.997
MA.4	ALFALFA	46.163	47.746	1.583	3.43
MA.4	WHTHQSBI	81.888	81.799	-0.089	-0.108
MA.4	WHTHQSBI	17.706	17.827	0.121	0.682
MA.4	DURUMSBI	0.225	0.225	-1.21E-04	-0.054
MA.4	DURUMSBI	0.049	0.049	1.26E-04	0.26
MA.4	BARFDSBV	12.523	12.527	0.004	0.029
MA.4	BARFDSBN	2.708	2.729	0.022	0.801
MA.4	BARMTSBN	6.071	6.073	0.003	0.044
MA.4	BARMTSBN	1.313	1.326	0.014	1.031
MA.4	OATSSBM	13.477	13.471	-0.006	-0.048
MA.4	OATSSBN	2.914	2.962	0.048	1.653
MA.4	FLAXSBM	11.343	11.334	-0.01	-0.086
MA.4	FLAXSBN	2.454	2.481	0.027	1.093
MA.4	CANSFM	5.053	5.061	0.008	0.15
MA.4	CANSFN	1.093	1.104	0.011	1.048
MA.4	CANSBM	30.983	30.951	-0.032	-0.102
MA.4	CANSBN	6.698	6.752	0.054	0.809
MA.4	LENTSBM	0.015	0.015	-3.17E-05	-0.214
MA.4	LENTSBN	0.003	0.003	3.89E-05	1.214
MA.4	FLDPSBM	17.334	17.323	-0.011	-0.062
MA.4	FLDPSBN	3.748	3.835	0.087	2.331

Region	Crops	BASE	POLICY	DIFF	PRCNTCHG
MA.5	HAY	26.496	28.03	1.533	5.787
MA.5	ALFALFA	70.788	73.333	2.545	3.595
MA.5	WHTHQSBI	30.524	30.112	-0.411	-1.348
MA.5	WHTHQSBI	6.771	6.807	0.037	0.541
MA.5	DURUMSBI	0.112	0.111	-4.12E-04	-0.368
MA.5	DURUMSBI	0.025	0.025	3.97E-05	0.16
MA.5	BARFDSBV	6.377	6.309	-0.068	-1.069
MA.5	BARFDSBN	1.414	1.426	0.011	0.801
MA.5	BARMTSBN	4.438	4.394	-0.044	-0.993
MA.5	BARMTSBN	0.984	0.991	0.006	0.637
MA.5	OATSSBM	14.65	14.4	-0.25	-1.706
MA.5	OATSSBN	3.249	3.282	0.032	0.999
MA.5	FLAXSBM	3.917	3.86	-0.057	-1.459
MA.5	FLAXSBN	0.869	0.874	0.006	0.653
MA.5	CANSFM	8.501	8.499	-0.001	-0.017
MA.5	CANSFN	1.886	1.916	0.031	1.624
MA.5	CANSBM	4.211	4.163	-0.048	-1.13
MA.5	CANSBN	0.934	0.939	0.005	0.496
MA.5	LENTSBM	0.013	0.013	-2.28E-04	-1.715
MA.5	LENTSBN	0.003	0.003	2.21E-05	0.75
MA.5	FLDPSBM	2.689	2.606	-0.084	-3.11
MA.5	FLDPSBN	0.596	0.604	0.008	1.319

Region	Crops	BASE	POLICY	DIFF	PRCNTCHG
MA.6	HAY	58.308	60.472	2.165	3.713
MA.6	ALFALFA	148.857	151.493	2.636	1.771
MA.6	WHTHQSBI	42.92	42.22	-0.7	-1.631
MA.6	WHTHQSBI	6.219	6.216	-0.003	-0.04
MA.6	DURUMSBI	0.147	0.146	-6.14E-04	-0.418
MA.6	DURUMSBI	0.021	0.021	-5.38E-06	-0.025
MA.6	BARFDSBV	3.388	3.349	-0.039	-1.154
MA.6	BARFDSBN	0.491	0.491	4.32E-04	0.088
MA.6	BARMTSBN	12.928	12.703	-0.225	-1.74
MA.6	BARMTSBN	1.873	1.875	0.002	0.124
MA.6	OATSSBM	13.86	13.5	-0.36	-2.6
MA.6	OATSSBN	2.008	2.012	0.004	0.213
MA.6	FLAXSBM	4.041	3.957	-0.084	-2.071
MA.6	FLAXSBN	0.585	0.585	-1.13E-04	-0.019
MA.6	CANSFM	11.028	11.028	-7.39E-04	-0.007
MA.6	CANSFN	1.598	1.623	0.026	1.597
MA.6	CANSBM	7.838	7.716	-0.122	-1.556
MA.6	CANSBN	1.136	1.135	-9.91E-05	-0.009
MA.6	LENTSBM	0.018	0.017	-4.18E-04	-2.387
MA.6	LENTSBN	0.003	0.003	-1.85E-06	-0.073
MA.6	FLDPSBM	1.681	1.631	-0.049	-2.93
MA.6	FLDPSBN	0.244	0.244	2.18E-04	0.09

Regional Distribution of carbon sequestering crops/technology ('000 ha) - Manitoba - Policy All -$15

REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG
MA.1	HAY	47.301	50.356	3.055	6.458
MA.1	ALFALFA	170.023	174.554	4.53	2.664
MA.1	WHTHQSBM	215.503	214.685	-0.818	-0.38
MA.1	WHTHQSBN	143.855	148.228	4.373	3.04
MA.1	DURUMSBM	4.887	4.882	-0.005	-0.1
MA.1	DURUMSBN	3.262	3.294	0.032	0.974
MA.1	BARFDSBM	18.664	18.889	0.225	1.205
MA.1	BARFDSBN	12.458	13.021	0.563	4.522
MA.1	BARMTSBM	54.931	55.193	0.262	0.477
MA.1	BARMTSBN	36.665	37.933	1.268	3.458
MA.1	OATSSBM	28.85	29.187	0.338	1.17
MA.1	OATSSBN	19.259	20.716	1.457	7.564
MA.1	FLAXSBM	25.385	25.288	-0.097	-0.38
MA.1	FLAXSBN	16.944	17.478	0.534	3.149
MA.1	CANSFM	38.788	38.917	0.129	0.332
MA.1	CANSFN	25.892	26.785	0.892	3.446
MA.1	CANSBM	68.254	68.037	-0.217	-0.318
MA.1	CANSBN	45.558	46.748	1.19	2.613
MA.1	LENTSBM	0.869	0.867	-0.002	-0.18
MA.1	LENTSBN	0.58	0.589	0.009	1.511
MA.1	FLDPSBM	15.241	15.204	-0.037	-0.246
MA.1	FLDPSBN	10.174	10.668	0.494	4.854

REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG
MA.2	HAY	55.706	60.162	4.457	8
MA.2	ALFALFA	154.302	160.353	6.051	3.921
MA.2	WHTHQSBI	98.868	97.398	-1.47	-1.487
MA.2	WHTHQSBI	46.418	47.707	1.289	2.776
MA.2	DURUMSBI	0.554	0.55	-0.003	-0.58
MA.2	DURUMSBI	0.26	0.263	0.003	1.103
MA.2	BARFDSBIV	6.028	6.032	0.004	0.061
MA.2	BARFDSBN	2.83	2.942	0.112	3.971
MA.2	BARMTSBN	17.934	17.877	-0.057	-0.317
MA.2	BARMTSBN	8.42	8.72	0.3	3.567
MA.2	OATSSBM	14.98	14.574	-0.406	-2.708
MA.2	OATSSBN	7.033	7.389	0.357	5.069
MA.2	FLAXSBM	5.031	4.955	-0.076	-1.514
MA.2	FLAXSBN	2.362	2.428	0.066	2.779
MA.2	CANSFM	19.069	19.123	0.054	0.283
MA.2	CANSFN	8.953	9.311	0.358	3.995
MA.2	CANSBM	40.852	40.326	-0.526	-1.287
MA.2	CANSBN	19.177	19.632	0.455	2.375
MA.2	LENTSBM	0.019	0.019	-2.61E-04	-1.389
MA.2	LENTSBN	0.009	0.009	2.34E-04	2.647
MA.2	FLDPSBM	3.039	2.985	-0.054	-1.78
MA.2	FLDPSBN	1.427	1.486	0.059	4.136

REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG
MA.3	HAY	18.717	21.039	2.322	12.407
MA.3	ALFALFA	66.507	70.831	4.324	6.501
MA.3	WHTHQSBM	59.697	58.853	-0.843	-1.413
MA.3	WHTHQSBN	11.895	12.323	0.428	3.598
MA.3	DURUMSBM	0.328	0.326	-0.001	-0.421
MA.3	DURUMSBN	0.065	0.066	6.86E-04	1.051
MA.3	BARFDSBM	7.952	7.946	-0.007	-0.084
MA.3	BARFDSBN	1.584	1.64	0.056	3.521
MA.3	BARMTSBM	7.557	7.527	-0.03	-0.397
MA.3	BARMTSBN	1.506	1.545	0.039	2.595
MA.3	OATSSBM	19.094	18.909	-0.184	-0.964
MA.3	OATSSBN	3.804	4.072	0.268	7.041
MA.3	FLAXSBM	8.66	8.513	-0.147	-1.701
MA.3	FLAXSBN	1.725	1.794	0.069	3.983
MA.3	CANSFM	6.44	6.423	-0.017	-0.258
MA.3	CANSFN	1.283	1.335	0.052	4.067
MA.3	CANSBM	19.181	18.932	-0.249	-1.298
MA.3	CANSBN	3.822	3.938	0.116	3.026
MA.3	LENTSBM	0.024	0.024	-1.76E-04	-0.733
MA.3	LENTSBN	0.005	0.005	8.48E-05	1.777
MA.3	FLDPSBM	9.486	9.25	-0.236	-2.488
MA.3	FLDPSBN	1.89	2.016	0.126	6.642

REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG
MA.4	HAY	12.679	14.603	1.924	15.176
MA.4	ALFALFA	46.163	49.864	3.701	8.017
MA.4	WHTHQSBM	81.888	81.734	-0.154	-0.188
MA.4	WHTHQSBN	17.706	18.088	0.381	2.154
MA.4	DURUMSBM	0.225	0.225	-1.53E-04	-0.068
MA.4	DURUMSBN	0.049	0.049	4.25E-04	0.875
MA.4	BARFDSBM	12.523	12.621	0.098	0.78
MA.4	BARFDSBN	2.708	2.793	0.085	3.142
MA.4	BARMTSBM	6.071	6.115	0.044	0.725
MA.4	BARMTSBN	1.313	1.362	0.049	3.756
MA.4	OATSSBM	13.477	13.615	0.138	1.023
MA.4	OATSSBN	2.914	3.093	0.179	6.158
MA.4	FLAXSBM	11.343	11.317	-0.026	-0.23
MA.4	FLAXSBN	2.454	2.538	0.085	3.455
MA.4	CANSFM	5.053	5.076	0.023	0.452
MA.4	CANSFN	1.093	1.127	0.035	3.159
MA.4	CANSBM	30.983	30.919	-0.063	-0.205
MA.4	CANSBN	6.698	6.865	0.167	2.491
MA.4	LENTSBM	0.015	0.015	-5.25E-05	-0.354
MA.4	LENTSBN	0.003	0.003	1.27E-04	3.962
MA.4	FLDPSBM	17.334	17.302	-0.032	-0.186
MA.4	FLDPSBN	3.748	4.01	0.262	6.984

REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG
MA.5	HAY	26.496	30.49	3.994	15.072
MA.5	ALFALFA	70.788	76.915	6.127	8.656
MA.5	WHTHQSBI	30.524	29.465	-1.059	-3.469
MA.5	WHTHQSBI	6.771	6.922	0.151	2.232
MA.5	DURUMSBI	0.112	0.111	-0.001	-0.926
MA.5	DURUMSBI	0.025	0.025	1.67E-04	0.673
MA.5	BARFDSBIV	6.377	6.255	-0.122	-1.909
MA.5	BARFDSBN	1.414	1.467	0.052	3.691
MA.5	BARMTSBN	4.438	4.339	-0.099	-2.239
MA.5	BARMTSBN	0.984	1.011	0.026	2.657
MA.5	OATSSBM	14.65	14.127	-0.522	-3.565
MA.5	OATSSBN	3.249	3.399	0.15	4.603
MA.5	FLAXSBM	3.917	3.768	-0.149	-3.806
MA.5	FLAXSBN	0.869	0.891	0.022	2.515
MA.5	CANSFM	8.501	8.497	-0.004	-0.051
MA.5	CANSFN	1.886	1.978	0.092	4.882
MA.5	CANSBM	4.211	4.087	-0.124	-2.949
MA.5	CANSBN	0.934	0.952	0.018	1.917
MA.5	LENTSBM	0.013	0.013	-5.92E-04	-4.446
MA.5	LENTSBN	0.003	0.003	8.63E-05	2.924
MA.5	FLDPSBM	2.689	2.477	-0.212	-7.898
MA.5	FLDPSBN	0.596	0.629	0.032	5.413

REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG
MA.6	HAY	58.308	63.89	5.583	9.574
MA.6	ALFALFA	148.857	154.736	5.88	3.95
MA.6	WHTHQSBM	42.92	41.193	-1.727	-4.024
MA.6	WHTHQSBN	6.219	6.269	0.051	0.813
MA.6	DURUMSBM	0.147	0.146	-0.001	-0.99
MA.6	DURUMSBN	0.021	0.021	4.13E-05	0.194
MA.6	BARFDSBM	3.388	3.316	-0.072	-2.136
MA.6	BARFDSBN	0.491	0.5	0.009	1.738
MA.6	BARMTSBM	12.928	12.491	-0.437	-3.378
MA.6	BARMTSBN	1.873	1.915	0.042	2.225
MA.6	OATSSBM	13.86	13.102	-0.758	-5.471
MA.6	OATSSBN	2.008	2.066	0.058	2.864
MA.6	FLAXSBM	4.041	3.829	-0.212	-5.24
MA.6	FLAXSBN	0.585	0.591	0.006	0.999
MA.6	CANSFM	11.028	11.026	-0.002	-0.02
MA.6	CANSFN	1.598	1.675	0.077	4.802
MA.6	CANSBM	7.838	7.532	-0.306	-3.903
MA.6	CANSBN	1.136	1.144	0.008	0.733
MA.6	LENTSBM	0.018	0.016	-0.001	-5.828
MA.6	LENTSBN	0.003	0.003	2.69E-05	1.06
MA.6	FLDPSBM	1.681	1.558	-0.123	-7.322
MA.6	FLDPSBN	0.244	0.248	0.004	1.729

Regional Distribution of carbon sequestering crops/technology ('000 ha) - Manitoba - Policy All-$50

REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG	REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG	REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG
MA.1	HAY	47.301	55.165	7.864	16.625	MA.2	HAY	55.706	68.555	12.85	23.067	MA.3	HAY	18.717	25.242	6.525	34.861
MA.1	ALFALFA	170.023	179.189	9.165	5.391	MA.2	ALFALFA	154.302	170.081	15.779	10.226	MA.3	ALFALFA	66.507	77.473	10.966	16.489
MA.1	WHTHQSBM	215.503	213.677	-1.826	-0.848	MA.2	WHTHQSBM	98.868	95.067	-3.801	-3.845	MA.3	WHTHQSBM	59.697	57	-2.697	-4.518
MA.1	WHTHQSBN	143.855	158.977	15.122	10.512	MA.2	WHTHQSBN	46.418	51.203	4.785	10.307	MA.3	WHTHQSBN	11.895	13.347	1.453	12.212
MA.1	DURUMSBM	4.887	4.874	-0.013	-0.264	MA.2	DURUMSBM	0.554	0.545	-0.008	-1.5	MA.3	DURUMSBM	0.328	0.323	-0.005	-1.395
MA.1	DURUMSBN	3.262	3.371	0.108	3.324	MA.2	DURUMSBN	0.26	0.271	0.011	4.191	MA.3	DURUMSBN	0.065	0.068	0.002	3.509
MA.1	BARFDSBM	18.664	19.941	1.277	6.841	MA.2	BARFDSBM	6.028	6.253	0.225	3.733	MA.3	BARFDSBM	7.952	8.068	0.116	1.455
MA.1	BARFDSBN	12.458	14.695	2.237	17.956	MA.2	BARFDSBN	2.83	3.305	0.474	16.765	MA.3	BARFDSBN	1.584	1.798	0.214	13.536
MA.1	BARMTSBM	54.931	56.491	1.56	2.84	MA.2	BARMTSBM	17.934	18.26	0.326	1.818	MA.3	BARMTSBM	7.557	7.513	-0.044	-0.586
MA.1	BARMTSBN	36.665	41.345	4.679	12.762	MA.2	BARMTSBN	8.42	9.666	1.247	14.806	MA.3	BARMTSBN	1.506	1.648	0.142	9.429
MA.1	OATSSBM	28.85	31.169	2.319	8.04	MA.2	OATSSBM	14.98	13.934	-1.046	-6.983	MA.3	OATSSBM	19.094	19.009	-0.084	-0.442
MA.1	OATSSBN	19.259	24.919	5.66	29.387	MA.2	OATSSBN	7.033	8.363	1.33	18.917	MA.3	OATSSBN	3.804	4.804	1	26.279
MA.1	FLAXSBM	25.385	25.172	-0.213	-0.838	MA.2	FLAXSBM	5.031	4.834	-0.198	-3.929	MA.3	FLAXSBM	8.66	8.187	-0.473	-5.465
MA.1	FLAXSBN	16.944	18.79	1.845	10.891	MA.2	FLAXSBN	2.362	2.608	0.245	10.388	MA.3	FLAXSBN	1.725	1.956	0.231	13.366
MA.1	CANSFM	38.788	39.217	0.429	1.106	MA.2	CANSFM	19.069	19.249	0.18	0.942	MA.3	CANSFM	6.44	6.385	-0.055	-0.859
MA.1	CANSFN	25.892	28.866	2.974	11.486	MA.2	CANSFN	8.953	10.145	1.192	13.316	MA.3	CANSFN	1.283	1.457	0.174	13.571
MA.1	CANSBM	68.254	67.789	-0.464	-0.68	MA.2	CANSBM	40.852	39.513	-1.339	-3.278	MA.3	CANSBM	19.181	18.376	-0.806	-4.2
MA.1	CANSBN	45.558	49.677	4.12	9.042	MA.2	CANSBN	19.177	20.887	1.711	8.92	MA.3	CANSBN	3.822	4.212	0.391	10.218
MA.1	LENTSBM	0.869	0.865	-0.004	-0.437	MA.2	LENTSBM	0.019	0.018	-6.80E-04	-3.611	MA.3	LENTSBM	0.024	0.023	-5.79E-04	-2.414
MA.1	LENTSBN	0.58	0.61	0.03	5.219	MA.2	LENTSBN	0.009	0.01	8.74E-04	9.886	MA.3	LENTSBN	0.005	0.005	2.82E-04	5.916
MA.1	FLDPSBM	15.241	15.211	-0.03	-0.198	MA.2	FLDPSBM	3.039	2.905	-0.134	-4.422	MA.3	FLDPSBM	9.486	8.734	-0.752	-7.927
MA.1	FLDPSBN	10.174	11.878	1.704	16.752	MA.2	FLDPSBN	1.427	1.646	0.219	15.347	MA.3	FLDPSBN	1.89	2.316	0.426	22.551

REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG	REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG	REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG
MA.4	HAY	12.679	18.208	5.529	43.605	MA.5	HAY	26.496	38.308	11.812	44.581	MA.6	HAY	58.308	74.535	16.227	27.83
MA.4	ALFALFA	46.163	55.93	9.767	21.158	MA.5	ALFALFA	70.788	87.564	16.776	23.699	MA.6	ALFALFA	148.857	163.52	14.663	9.851
MA.4	WHTHQSBM	81.888	81.558	-0.33	-0.403	MA.5	WHTHQSBM	30.524	27.374	-3.15	-10.319	MA.6	WHTHQSBM	42.92	37.994	-4.926	-11.478
MA.4	WHTHQSBN	17.706	19.022	1.316	7.43	MA.5	WHTHQSBN	6.771	7.355	0.584	8.632	MA.6	WHTHQSBN	6.219	6.524	0.305	4.913
MA.4	DURUMSBM	0.225	0.225	-3.88E-04	-0.173	MA.5	DURUMSBM	0.112	0.109	-0.003	-2.808	MA.6	DURUMSBM	0.147	0.143	-0.004	-2.839
MA.4	DURUMSBN	0.049	0.05	0.001	2.97	MA.5	DURUMSBN	0.025	0.025	6.28E-04	2.53	MA.6	DURUMSBN	0.021	0.022	2.39E-04	1.121
MA.4	BARFDSBM	12.523	13.076	0.553	4.418	MA.5	BARFDSBM	6.377	6.202	-0.175	-2.749	MA.6	BARFDSBM	3.388	3.269	-0.12	-3.54
MA.4	BARFDSBN	2.708	3.044	0.337	12.429	MA.5	BARFDSBN	1.414	1.64	0.225	15.935	MA.6	BARFDSBN	0.491	0.539	0.048	9.726
MA.4	BARMTSBM	6.071	6.318	0.248	4.084	MA.5	BARMTSBM	4.438	4.198	-0.24	-5.406	MA.6	BARMTSBM	12.928	12.106	-0.821	-6.353
MA.4	BARMTSBN	1.313	1.502	0.189	14.399	MA.5	BARMTSBN	0.984	1.092	0.108	10.922	MA.6	BARMTSBN	1.873	2.104	0.231	12.332
MA.4	OATSSBM	13.477	14.353	0.876	6.5	MA.5	OATSSBM	14.65	13.519	-1.13	-7.716	MA.6	OATSSBM	13.86	12.166	-1.694	-12.224
MA.4	OATSSBN	2.914	3.6	0.686	23.53	MA.5	OATSSBN	3.249	3.883	0.634	19.499	MA.6	OATSSBN	2.008	2.321	0.313	15.58
MA.4	FLAXSBM	11.343	11.271	-0.072	-0.635	MA.5	FLAXSBM	3.917	3.468	-0.448	-11.45	MA.6	FLAXSBM	4.041	3.434	-0.607	-15.01
MA.4	FLAXSBN	2.454	2.742	0.289	11.759	MA.5	FLAXSBN	0.869	0.953	0.084	9.666	MA.6	FLAXSBN	0.585	0.62	0.034	5.856
MA.4	CANSFM	5.053	5.129	0.076	1.505	MA.5	CANSFM	8.501	8.486	-0.015	-0.171	MA.6	CANSFM	11.028	11.021	-0.007	-0.067
MA.4	CANSFN	1.093	1.208	0.115	10.545	MA.5	CANSFN	1.886	2.193	0.307	16.282	MA.6	CANSFN	1.598	1.854	0.256	16.02
MA.4	CANSBM	30.983	30.835	-0.147	-0.476	MA.5	CANSBM	4.211	3.841	-0.37	-8.791	MA.6	CANSBM	7.838	6.967	-0.871	-11.11
MA.4	CANSBN	6.698	7.265	0.567	8.464	MA.5	CANSBN	0.934	1.003	0.069	7.416	MA.6	CANSBN	1.136	1.185	0.049	4.333
MA.4	LENTSBM	0.015	0.015	-1.24E-04	-0.839	MA.5	LENTSBM	0.013	0.012	-0.002	-13.345	MA.6	LENTSBM	0.018	0.015	-0.003	-16.557
MA.4	LENTSBN	0.003	0.004	4.33E-04	13.522	MA.5	LENTSBN	0.003	0.003	3.31E-04	11.222	MA.6	LENTSBN	0.003	0.003	1.61E-04	6.354
MA.4	FLDPSBM	17.334	17.293	-0.041	-0.237	MA.5	FLDPSBM	2.689	2.067	-0.622	-23.131	MA.6	FLDPSBM	1.681	1.333	-0.348	-20.706
MA.4	FLDPSBN	3.748	4.639	0.891	23.771	MA.5	FLDPSBN	0.596	0.722	0.126	21.104	MA.6	FLDPSBN	0.244	0.267	0.023	9.481

Regional Distribution of carbon sequestering crops/technology ('000 ha) - Manitoba - Policy All -$100

REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG
MA.1	HAY	47.301	64.965	17.663	37.342
MA.1	ALFALFA	170.023	193.461	23.438	13.785
MA.1	WHTHQSBM	215.503	209.828	-5.675	-2.633
MA.1	WHTHQSBN	143.855	172.899	29.044	20.19
MA.1	DURUMSBM	4.887	4.848	-0.039	-0.792
MA.1	DURUMSBN	3.262	3.47	0.208	6.368
MA.1	BARFDSBM	18.664	21.419	2.755	14.762
MA.1	BARFDSBN	12.458	17.066	4.608	36.988
MA.1	BARMTSBM	54.931	57.937	3.006	5.472
MA.1	BARMTSBN	36.665	45.948	9.283	25.318
MA.1	OATSSBM	28.85	33.627	4.777	16.559
MA.1	OATSSBN	19.259	30.703	11.444	59.419
MA.1	FLAXSBM	25.385	24.639	-0.746	-2.937
MA.1	FLAXSBN	16.944	20.426	3.482	20.549
MA.1	CANSFM	38.788	39.648	0.86	2.217
MA.1	CANSFN	25.892	31.839	5.946	22.966
MA.1	CANSBM	68.254	66.582	-1.672	-2.449
MA.1	CANSBN	45.558	53.322	7.764	17.042
MA.1	LENTSBM	0.869	0.857	-0.012	-1.38
MA.1	LENTSBN	0.58	0.638	0.058	9.927
MA.1	FLDPSBM	15.241	14.747	-0.495	-3.245
MA.1	FLDPSBN	10.174	13.301	3.127	30.736

REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG
MA.2	HAY	55.706	83.081	27.375	49.142
MA.2	ALFALFA	154.302	189.643	35.341	22.904
MA.2	WHTHQSBM	98.868	89.845	-9.023	-9.126
MA.2	WHTHQSBN	46.418	55.379	8.96	19.304
MA.2	DURUMSBM	0.554	0.534	-0.02	-3.528
MA.2	DURUMSBN	0.26	0.28	0.02	7.833
MA.2	BARFDSBM	6.028	6.505	0.477	7.907
MA.2	BARFDSBN	2.83	3.792	0.962	33.979
MA.2	BARMTSBM	17.934	18.568	0.634	3.538
MA.2	BARMTSBN	8.42	10.906	2.486	29.523
MA.2	OATSSBM	14.98	12.901	-2.078	-13.874
MA.2	OATSSBN	7.033	9.699	2.667	37.916
MA.2	FLAXSBM	5.031	4.551	-0.481	-9.556
MA.2	FLAXSBN	2.362	2.813	0.451	19.078
MA.2	CANSFM	19.069	19.428	0.359	1.885
MA.2	CANSFN	8.953	11.337	2.384	26.633
MA.2	CANSBM	40.852	37.518	-3.333	-8.16
MA.2	CANSBN	19.177	22.286	3.11	16.216
MA.2	LENTSBM	0.019	0.017	-0.002	-8.794
MA.2	LENTSBN	0.009	0.01	0.002	18.141
MA.2	FLDPSBM	3.039	2.664	-0.375	-12.349
MA.2	FLDPSBN	1.427	1.814	0.387	27.149

REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG
MA.3	HAY	18.717	32.691	13.974	74.66
MA.3	ALFALFA	66.507	91.152	24.644	37.055
MA.3	WHTHQSBM	59.697	53.7	-5.997	-10.046
MA.3	WHTHQSBN	11.895	14.664	2.769	23.28
MA.3	DURUMSBM	0.328	0.317	-0.01	-3.114
MA.3	DURUMSBN	0.065	0.07	0.004	6.685
MA.3	BARFDSBM	7.952	8.227	0.275	3.457
MA.3	BARFDSBN	1.584	2.022	0.438	27.628
MA.3	BARMTSBM	7.557	7.443	-0.114	-1.514
MA.3	BARMTSBN	1.506	1.784	0.279	18.5
MA.3	OATSSBM	19.094	18.965	-0.129	-0.673
MA.3	OATSSBN	3.804	5.811	2.007	52.747
MA.3	FLAXSBM	8.66	7.593	-1.068	-12.328
MA.3	FLAXSBN	1.725	2.163	0.437	25.351
MA.3	CANSFM	6.44	6.329	-0.111	-1.717
MA.3	CANSFN	1.283	1.632	0.348	27.148
MA.3	CANSBM	19.181	17.372	-1.809	-9.431
MA.3	CANSBN	3.822	4.563	0.741	19.389
MA.3	LENTSBM	0.024	0.023	-0.001	-5.376
MA.3	LENTSBN	0.005	0.005	5.38E-04	11.276
MA.3	FLDPSBM	9.486	7.684	-1.802	-18.991
MA.3	FLDPSBN	1.89	2.681	0.79	41.823

REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG
MA.4	HAY	12.679	24.509	11.83	93.302
MA.4	ALFALFA	46.163	67.982	21.819	47.266
MA.4	WHTHQSBM	81.888	80.877	-1.011	-1.235
MA.4	WHTHQSBN	17.706	20.254	2.548	14.389
MA.4	DURUMSBM	0.225	0.224	-0.001	-0.528
MA.4	DURUMSBN	0.049	0.051	0.003	5.752
MA.4	BARFDSBM	12.523	13.752	1.229	9.816
MA.4	BARFDSBN	2.708	3.409	0.702	25.91
MA.4	BARMTSBM	6.071	6.605	0.534	8.799
MA.4	BARMTSBN	1.313	1.7	0.387	29.507
MA.4	OATSSBM	13.477	15.364	1.887	14.002
MA.4	OATSSBN	2.914	4.313	1.399	48.003
MA.4	FLAXSBM	11.343	11.09	-0.253	-2.233
MA.4	FLAXSBN	2.454	3.009	0.555	22.612
MA.4	CANSFM	5.053	5.206	0.152	3.011
MA.4	CANSFN	1.093	1.323	0.231	21.098
MA.4	CANSBM	30.983	30.483	-0.5	-1.612
MA.4	CANSBN	6.698	7.786	1.088	16.248
MA.4	LENTSBM	0.015	0.014	-3.88E-04	-2.617
MA.4	LENTSBN	0.003	0.004	8.36E-04	26.105
MA.4	FLDPSBM	17.334	16.77	-0.564	-3.252
MA.4	FLDPSBN	3.748	5.42	1.672	44.62

REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG
MA.5	HAY	26.496	50.983	24.487	92.416
MA.5	ALFALFA	70.788	106.715	35.927	50.753
MA.5	WHTHQSBM	30.524	23.69	-6.833	-22.387
MA.5	WHTHQSBN	6.771	7.823	1.052	15.543
MA.5	DURUMSBM	0.112	0.105	-0.007	-6.328
MA.5	DURUMSBN	0.025	0.026	0.001	4.32
MA.5	BARFDSBM	6.377	5.989	-0.388	-6.085
MA.5	BARFDSBN	1.414	1.857	0.443	31.298
MA.5	BARMTSBM	4.438	3.878	-0.56	-12.623
MA.5	BARMTSBN	0.984	1.182	0.197	20.036
MA.5	OATSSBM	14.65	12.076	-2.574	-17.57
MA.5	OATSSBN	3.249	4.447	1.197	36.848
MA.5	FLAXSBM	3.917	2.894	-1.023	-26.114
MA.5	FLAXSBN	0.869	1.009	0.14	16.121
MA.5	CANSFM	8.501	8.472	-0.029	-0.342
MA.5	CANSFN	1.886	2.5	0.614	32.568
MA.5	CANSBM	4.211	3.366	-0.845	-20.064
MA.5	CANSBN	0.934	1.049	0.116	12.367
MA.5	LENTSBM	0.013	0.009	-0.004	-30.345
MA.5	LENTSBN	0.003	0.004	5.55E-04	18.789
MA.5	FLDPSBM	2.689	1.345	-1.345	-50
MA.5	FLDPSBN	0.596	0.803	0.206	34.596

REGION	CROP	BASE	POLICY	DIFF	PRCNTCHG
MA.6	HAY	58.308	92.392	34.085	58.456
MA.6	ALFALFA	148.857	181.924	33.067	22.214
MA.6	WHTHQSBM	42.92	32.055	-10.865	-25.315
MA.6	WHTHQSBN	6.219	6.667	0.448	7.204
MA.6	DURUMSBM	0.147	0.138	-0.009	-6.25
MA.6	DURUMSBN	0.021	0.022	3.52E-04	1.654
MA.6	BARFDSBM	3.388	3.126	-0.263	-7.751
MA.6	BARFDSBN	0.491	0.583	0.092	18.72
MA.6	BARMTSBM	12.928	11.11	-1.818	-14.059
MA.6	BARMTSBN	1.873	2.31	0.437	23.308
MA.6	OATSSBM	13.86	10.137	-3.722	-26.857
MA.6	OATSSBN	2.008	2.585	0.577	28.741
MA.6	FLAXSBM	4.041	2.682	-1.359	-33.621
MA.6	FLAXSBN	0.585	0.633	0.047	8.103
MA.6	CANSFM	11.028	11.013	-0.015	-0.135
MA.6	CANSFN	1.598	2.11	0.512	32.046
MA.6	CANSBM	7.838	5.888	-1.95	-24.879
MA.6	CANSBN	1.136	1.204	0.068	6.006
MA.6	LENTSBM	0.018	0.011	-0.006	-36.924
MA.6	LENTSBN	0.003	0.003	2.25E-04	8.885
MA.6	FLDPSBM	1.681	0.879	-0.801	-47.679
MA.6	FLDPSBN	0.244	0.274	0.031	12.668

Regional distribution of carbon sequestering crops/technology ('000 ha) - Ontario - Policy All -$5

Region	Crops	BASE	$5	DIFF	PRCNTCHG
ON.1	HAY	6.19	6.224	0.034	0.542
ON.1	ALFALFA	18.274	18.302	0.028	0.154
ON.1	WHEATM	16.558	16.477	-0.081	-0.489
ON.1	WHEATN	27.936	27.898	-0.039	-0.139
ON.1	BARFDM	1.705	1.682	-0.023	-1.357
ON.1	BARFDN	2.876	2.87	-0.006	-0.214
ON.1	SOYM	76.36	76.135	-0.225	-0.295
ON.1	SOYN	128.836	128.744	-0.093	-0.072
ON.1	CORNGM	40.239	40.537	0.298	0.742
ON.1	CORNGN	67.891	68.753	0.862	1.27

Region	Crops	BASE	$5	DIFF	PRCNTCHG
ON.2	HAY	6.038	6.178	0.14	2.315
ON.2	ALFALFA	40.595	40.937	0.342	0.842
ON.2	WHEATM	7.74	7.737	-0.003	-0.039
ON.2	WHEATN	9.848	9.854	0.007	0.07
ON.2	BARFDM	3.467	3.468	0.001	0.035
ON.2	BARFDN	4.413	4.434	0.021	0.477
ON.2	SOYM	26.045	26.041	-0.004	-0.015
ON.2	SOYN	33.138	33.168	0.03	0.089
ON.2	CORNGM	32.422	32.428	0.007	0.02
ON.2	CORNGN	41.251	41.378	0.127	0.308

Region	Crops	BASE	$5	DIFF	PRCNTCHG
ON.3	HAY	22.382	23.094	0.712	3.182
ON.3	ALFALFA	27.893	28.264	0.371	1.329
ON.3	WHEATM	3.947	3.936	-0.012	-0.293
ON.3	WHEATN	7.052	7.053	0.002	0.024
ON.3	BARFDM	4.199	4.153	-0.046	-1.099
ON.3	BARFDN	7.502	7.526	0.024	0.324
ON.3	SOYM	15.855	15.819	-0.037	-0.231
ON.3	SOYN	28.325	28.336	0.011	0.04
ON.3	CORNGM	10.04	9.993	-0.046	-0.462
ON.3	CORNGN	17.936	17.97	0.034	0.191

Region	Crops	BASE	$5	DIFF	PRCNTCHG
ON.4	HAY	18.29	18.757	0.467	2.552
ON.4	ALFALFA	112.538	113.55	1.012	0.899
ON.4	WHEATM	13.789	13.769	-0.021	-0.149
ON.4	WHEATN	13.998	13.988	-0.01	-0.074
ON.4	BARFDM	12.349	12.289	-0.06	-0.487
ON.4	BARFDN	12.538	12.51	-0.028	-0.22
ON.4	SOYM	33.395	33.358	-0.038	-0.113
ON.4	SOYN	33.901	33.883	-0.018	-0.053
ON.4	CORNGM	37.095	37.011	-0.083	-0.224
ON.4	CORNGN	37.657	37.638	-0.018	-0.049

Region	Crops	BASE	$5	DIFF	PRCNTCHG
ON.5	HAY	50.838	52.273	1.435	2.824
ON.5	ALFALFA	140.313	141.803	1.49	1.062
ON.5	WHEATM	6.989	6.945	-0.044	-0.633
ON.5	WHEATN	5.48	5.457	-0.023	-0.425
ON.5	BARFDM	15.613	15.293	-0.32	-2.049
ON.5	BARFDN	12.243	12.061	-0.182	-1.487
ON.5	SOYM	15.933	15.854	-0.079	-0.496
ON.5	SOYN	12.494	12.447	-0.047	-0.373
ON.5	CORNGM	14.479	14.284	-0.196	-1.352
ON.5	CORNGN	11.354	11.243	-0.111	-0.977

Region	Crops	BASE	$5	DIFF	PRCNTCHG
ON.6	HAY	49.156	50.366	1.21	2.461
ON.6	ALFALFA	129.393	130.719	1.326	1.025
ON.6	WHEATM	5.765	5.715	-0.05	-0.87
ON.6	WHEATN	6.32	6.284	-0.036	-0.575
ON.6	BARFDM	9.758	9.566	-0.192	-1.97
ON.6	BARFDN	10.698	10.537	-0.16	-1.5
ON.6	SOYM	13.675	13.596	-0.079	-0.577
ON.6	SOYN	14.991	14.922	-0.069	-0.459
ON.6	CORNGM	17.23	17.005	-0.224	-1.302
ON.6	CORNGN	18.888	18.696	-0.191	-1.013

Region	Crops	BASE	$5	DIFF	PRCNTCHG
ON.7	HAY	10.642	10.694	0.052	0.491
ON.7	ALFALFA	1.582	1.584	0.002	0.152
ON.7	BARFDM	0.077	0.072	-0.005	-6.275
ON.7	BARFDN	0.133	0.125	-0.008	-5.869

Region	Crops	BASE	$5	DIFF	PRCNTCHG
ON.8	HAY	72.969	74.784	1.815	2.487
ON.8	ALFALFA	78.724	80.116	1.392	1.768
ON.8	WHEATM	0.897	0.847	-0.05	-5.547
ON.8	WHEATN	0.827	0.785	-0.042	-5.096
ON.8	BARFDM	4.179	3.832	-0.348	-8.317
ON.8	BARFDN	3.853	3.561	-0.292	-7.583
ON.8	SOYM	3.17	3.11	-0.06	-1.907
ON.8	SOYN	2.923	2.871	-0.052	-1.775
ON.8	CORNGM	4.491	4.33	-0.161	-3.59
ON.8	CORNGN	4.14	4.01	-0.13	-3.149

Region	Crops	BASE	$5	DIFF	PRCNTCHG
ON.9	HAY	53.326	54.934	1.609	3.017
ON.9	ALFALFA	60.182	60.997	0.815	1.355
ON.9	WHEATM	1.947	1.898	-0.049	-2.517
ON.9	WHEATN	1.569	1.541	-0.027	-1.752
ON.9	BARFDM	4.395	4.249	-0.146	-3.328
ON.9	BARFDN	3.541	3.442	-0.099	-2.809
ON.9	SOYM	12.468	12.37	-0.099	-0.791
ON.9	SOYN	10.046	9.977	-0.068	-0.682
ON.9	CORNGM	19.201	19.012	-0.189	-0.983
ON.9	CORNGN	15.47	15.369	-0.1	-0.648

Region	Crops	BASE	$5	DIFF	PRCNTCHG
ON.10	HAY	71.643	73.331	1.688	2.356
ON.10	ALFALFA	42.374	42.814	0.44	1.037
ON.10	WHEATM	1.157	1.015	-0.142	-12.27
ON.10	WHEATN	0.355	0.314	-0.041	-11.632
ON.10	BARFDM	5.506	5.21	-0.296	-5.373
ON.10	BARFDN	1.692	1.606	-0.085	-5.051
ON.10	SOYM	0.17	0.162	-0.008	-4.973
ON.10	SOYN	0.052	0.05	-0.002	-4.692
ON.10	CORNGM	0.063	0.061	-0.002	-3.761
ON.10	CORNGN	0.019	0.019	-6.78E-04	-3.503

Regional distribution of carbon sequestering crops/technology ('000 ha) - Ontario - Policy All -$15

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
ON.1	HAY	6.19	6.022	-0.168	-2.719
ON.1	ALFALFA	18.274	17.987	-0.287	-1.57
ON.1	WHEATM	16.558	16.407	-0.151	-0.912
ON.1	WHEATN	27.936	27.948	0.012	0.042
ON.1	BARFDM	1.705	1.649	-0.056	-3.257
ON.1	BARFDN	2.876	2.882	0.006	0.195
ON.1	SOYM	76.36	75.851	-0.509	-0.666
ON.1	SOYN	128.836	128.838	0.002	0.001
ON.1	CORNGM	40.239	41.04	0.802	1.992
ON.1	CORNGN	67.891	70.316	2.424	3.571

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
ON.2	HAY	6.038	6.279	0.241	3.984
ON.2	ALFALFA	40.595	41.11	0.515	1.268
ON.2	WHEATM	7.74	7.749	0.01	0.123
ON.2	WHEATN	9.848	9.89	0.042	0.429
ON.2	BARFDM	3.467	3.49	0.023	0.661
ON.2	BARFDN	4.413	4.504	0.091	2.059
ON.2	SOYM	26.045	26.075	0.03	0.115
ON.2	SOYN	33.138	33.281	0.143	0.431
ON.2	CORNGM	32.422	32.549	0.127	0.392
ON.2	CORNGN	41.251	41.771	0.52	1.26

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
ON.3	HAY	22.382	23.797	1.415	6.321
ON.3	ALFALFA	27.893	28.56	0.667	2.39
ON.3	WHEATM	3.947	3.933	-0.014	-0.365
ON.3	WHEATN	7.052	7.088	0.037	0.519
ON.3	BARFDM	4.199	4.136	-0.063	-1.501
ON.3	BARFDN	7.502	7.71	0.208	2.768
ON.3	SOYM	15.855	15.806	-0.049	-0.311
ON.3	SOYN	28.325	28.468	0.144	0.507
ON.3	CORNGM	10.04	9.971	-0.069	-0.683
ON.3	CORNGN	17.936	18.165	0.229	1.278

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
ON.4	HAY	18.29	19.153	0.863	4.719
ON.4	ALFALFA	112.538	114.195	1.657	1.472
ON.4	WHEATM	13.789	13.778	-0.011	-0.081
ON.4	WHEATN	13.998	14.014	0.016	0.112
ON.4	BARFDM	12.349	12.319	-0.03	-0.241
ON.4	BARFDN	12.538	12.611	0.073	0.582
ON.4	SOYM	33.395	33.369	-0.026	-0.078
ON.4	SOYN	33.901	33.937	0.036	0.105
ON.4	CORNGM	37.095	37.042	-0.053	-0.142
ON.4	CORNGN	37.657	37.797	0.141	0.373

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
ON.5	HAY	50.838	54.081	3.243	6.38
ON.5	ALFALFA	140.313	143.44	3.126	2.228
ON.5	WHEATM	6.989	6.903	-0.086	-1.227
ON.5	WHEATN	5.48	5.444	-0.037	-0.671
ON.5	BARFDM	15.613	14.941	-0.672	-4.306
ON.5	BARFDN	12.243	11.922	-0.321	-2.618
ON.5	SOYM	15.933	15.773	-0.16	-1.003
ON.5	SOYN	12.494	12.416	-0.078	-0.626
ON.5	CORNGM	14.479	14.07	-0.409	-2.827
ON.5	CORNGN	11.354	11.16	-0.194	-1.705

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
ON.6	HAY	49.156	51.728	2.572	5.233
ON.6	ALFALFA	129.393	131.933	2.54	1.963
ON.6	WHEATM	5.765	5.68	-0.085	-1.471
ON.6	WHEATN	6.32	6.272	-0.048	-0.757
ON.6	BARFDM	9.758	9.401	-0.357	-3.661
ON.6	BARFDN	10.698	10.453	-0.244	-2.284
ON.6	SOYM	13.675	13.534	-0.14	-1.027
ON.6	SOYN	14.991	14.892	-0.099	-0.659
ON.6	CORNGM	17.23	16.834	-0.395	-2.295
ON.6	CORNGN	18.888	18.621	-0.267	-1.413

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
ON.7	HAY	10.642	10.768	0.126	1.179
ON.7	ALFALFA	1.582	1.585	0.003	0.186
ON.7	BARFDM	0.077	0.065	-0.011	-14.785
ON.7	BARFDN	0.133	0.115	-0.018	-13.566

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
ON.10	HAY	71.643	75.931	4.288	5.985
ON.10	ALFALFA	42.374	43.408	1.033	2.438
ON.10	WHEATM	1.157	0.809	-0.347	-30.039
ON.10	WHEATN	0.355	0.255	-0.1	-28.127
ON.10	BARFDM	5.506	4.763	-0.743	-13.495
ON.10	BARFDN	1.692	1.478	-0.213	-12.599
ON.10	SOYM	0.17	0.15	-0.021	-12.188
ON.10	SOYN	0.052	0.046	-0.006	-11.393
ON.10	CORNGM	0.063	0.057	-0.006	-9.419
ON.10	CORNGN	0.019	0.018	-0.002	-8.645

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
ON.8	HAY	72.969	77.731	4.762	6.526
ON.8	ALFALFA	78.724	82.038	3.313	4.209
ON.8	WHEATM	0.897	0.778	-0.119	-13.276
ON.8	WHEATN	0.827	0.729	-0.098	-11.862
ON.8	BARFDM	4.179	3.333	-0.847	-20.258
ON.8	BARFDN	3.853	3.158	-0.695	-18.048
ON.8	SOYM	3.17	3.024	-0.146	-4.608
ON.8	SOYN	2.923	2.8	-0.123	-4.191
ON.8	CORNGM	4.491	4.099	-0.392	-8.718
ON.8	CORNGN	4.14	3.834	-0.306	-7.395

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
ON.9	HAY	53.326	57.231	3.906	7.324
ON.9	ALFALFA	60.182	62.064	1.882	3.127
ON.9	WHEATM	1.947	1.838	-0.109	-5.597
ON.9	WHEATN	1.569	1.512	-0.057	-3.656
ON.9	BARFDM	4.395	4.058	-0.338	-7.682
ON.9	BARFDN	3.541	3.324	-0.217	-6.125
ON.9	SOYM	12.468	12.246	-0.223	-1.785
ON.9	SOYN	10.046	9.9	-0.145	-1.446
ON.9	CORNGM	19.201	18.777	-0.424	-2.208
ON.9	CORNGN	15.47	15.283	-0.187	-1.209

Regional distribution of carbon sequestering crops/technology ('000 ha) - Ontario - Policy All -$50

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
ON.1	HAY	6.19	5.695	-0.496	-8.008
ON.1	ALFALFA	18.274	17.385	-0.889	-4.864
ON.1	WHEATM	16.558	16.346	-0.211	-1.276
ON.1	WHEATN	27.936	28.382	0.446	1.597
ON.1	BARFDM	1.705	1.631	-0.074	-4.351
ON.1	BARFDN	2.876	3.081	0.204	7.109
ON.1	SOYM	76.36	75.661	-0.699	-0.915
ON.1	SOYN	128.836	130.546	1.709	1.327
ON.1	CORNGM	40.239	41.463	1.224	3.042
ON.1	CORNGN	67.891	73.54	5.649	8.32

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
ON.2	HAY	6.038	6.755	0.716	11.866
ON.2	ALFALFA	40.595	42.068	1.473	3.628
ON.2	WHEATM	7.74	7.78	0.04	0.515
ON.2	WHEATN	9.848	9.998	0.15	1.524
ON.2	BARFDM	3.467	3.551	0.083	2.4
ON.2	BARFDN	4.413	4.73	0.316	7.171
ON.2	SOYM	26.045	26.166	0.121	0.463
ON.2	SOYN	33.138	33.64	0.502	1.515
ON.2	CORNGM	32.422	32.895	0.473	1.458
ON.2	CORNGN	41.251	43.043	1.793	4.345

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
ON.3	HAY	22.382	26.76	4.377	19.557
ON.3	ALFALFA	27.893	29.906	2.013	7.215
ON.3	WHEATM	3.947	3.906	-0.041	-1.033
ON.3	WHEATN	7.052	7.185	0.133	1.889
ON.3	BARFDM	4.199	4.025	-0.175	-4.156
ON.3	BARFDN	7.502	8.258	0.756	10.079
ON.3	SOYM	15.855	15.719	-0.136	-0.857
ON.3	SOYN	28.325	28.852	0.527	1.86
ON.3	CORNGM	10.04	9.847	-0.193	-1.919
ON.3	CORNGN	17.936	18.768	0.833	4.643

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
ON.4	HAY	18.29	20.911	2.621	14.33
ON.4	ALFALFA	112.538	117.425	4.887	4.342
ON.4	WHEATM	13.789	13.772	-0.017	-0.125
ON.4	WHEATN	13.998	14.069	0.071	0.504
ON.4	BARFDM	12.349	12.306	-0.044	-0.353
ON.4	BARFDN	12.538	12.841	0.304	2.423
ON.4	SOYM	33.395	33.352	-0.043	-0.13
ON.4	SOYN	33.901	34.064	0.163	0.48
ON.4	CORNGM	37.095	37.026	-0.068	-0.184
ON.4	CORNGN	37.657	38.236	0.58	1.54

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
ON.5	HAY	50.838	61.14	10.302	20.264
ON.5	ALFALFA	140.313	150.102	9.789	6.977
ON.5	WHEATM	6.989	6.721	-0.268	-3.838
ON.5	WHEATN	5.48	5.37	-0.11	-2.01
ON.5	BARFDM	15.613	13.512	-2.102	-13.46
ON.5	BARFDN	12.243	11.284	-0.959	-7.83
ON.5	SOYM	15.933	15.439	-0.494	-3.104
ON.5	SOYN	12.494	12.264	-0.23	-1.841
ON.5	CORNGM	14.479	13.201	-1.278	-8.826
ON.5	CORNGN	11.354	10.775	-0.579	-5.1

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
ON.6	HAY	49.156	57.206	8.05	16.377
ON.6	ALFALFA	129.393	137.161	7.768	6.003
ON.6	WHEATM	5.765	5.511	-0.255	-4.417
ON.6	WHEATN	6.32	6.186	-0.134	-2.12
ON.6	BARFDM	9.758	8.69	-1.068	-10.948
ON.6	BARFDN	10.698	10.021	-0.676	-6.323
ON.6	SOYM	13.675	13.253	-0.422	-3.082
ON.6	SOYN	14.991	14.715	-0.276	-1.839
ON.6	CORNGM	17.23	16.035	-1.195	-6.934
ON.6	CORNGN	18.888	18.134	-0.754	-3.991

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
ON.7	HAY	10.642	11.046	0.404	3.793
ON.7	ALFALFA	1.582	1.59	0.008	0.508
ON.7	BARFDM	0.077	0.04	-0.036	-47.407
ON.7	BARFDN	0.133	0.075	-0.058	-43.346

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
ON.10	HAY	71.643	84.138	12.495	17.441
ON.10	ALFALFA	42.374	45.296	2.922	6.895
ON.10	WHEATM	1.157	0.578	-0.578	-50
ON.10	WHEATN	0.355	0.178	-0.178	-50
ON.10	BARFDM	5.506	2.969	-2.537	-46.075
ON.10	BARFDN	1.692	0.961	-0.73	-43.16
ON.10	SOYM	0.17	0.1	-0.07	-41.196
ON.10	SOYN	0.052	0.032	-0.02	-38.609
ON.10	CORNGM	0.063	0.039	-0.023	-37.292
ON.10	CORNGN	0.019	0.013	-0.007	-34.709

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
ON.8	HAY	72.969	87.84	14.871	20.379
ON.8	ALFALFA	78.724	88.795	10.071	12.792
ON.8	WHEATM	0.897	0.507	-0.39	-43.472
ON.8	WHEATN	0.827	0.507	-0.32	-38.691
ON.8	BARFDM	4.179	2.09	-2.09	-50
ON.8	BARFDN	3.853	1.927	-1.927	-50
ON.8	SOYM	3.17	2.692	-0.478	-15.077
ON.8	SOYN	2.923	2.523	-0.4	-13.68
ON.8	CORNGM	4.491	2.922	-1.569	-34.937
ON.8	CORNGN	4.14	2.876	-1.265	-30.542

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
ON.9	HAY	53.326	66.997	13.671	25.637
ON.9	ALFALFA	60.182	66.774	6.592	10.953
ON.9	WHEATM	1.947	1.638	-0.309	-15.856
ON.9	WHEATN	1.569	1.414	-0.155	-9.896
ON.9	BARFDM	4.395	3.435	-0.96	-21.836
ON.9	BARFDN	3.541	2.952	-0.59	-16.649
ON.9	SOYM	12.468	11.832	-0.636	-5.102
ON.9	SOYN	10.046	9.648	-0.398	-3.958
ON.9	CORNGM	19.201	17.264	-1.936	-10.084
ON.9	CORNGN	15.47	14.425	-1.045	-6.753

Regional distribution of carbon sequestering crops/technology ('000 ha) - Ontario - Policy All -$100

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
ON.1	HAY	6.19	5.612	-0.579	-9.35
ON.1	ALFALFA	18.274	17.047	-1.227	-6.716
ON.1	WHEATM	16.558	16.351	-0.207	-1.251
ON.1	WHEATN	27.936	29.128	1.191	4.265
ON.1	BARFDM	1.705	1.628	-0.077	-4.52
ON.1	BARFDN	2.876	3.406	0.529	18.4
ON.1	SOYM	76.36	75.677	-0.683	-0.895
ON.1	SOYN	128.836	133.505	4.669	3.624
ON.1	CORNGM	40.239	41.411	1.172	2.913
ON.1	CORNGN	67.891	77.009	9.117	13.429

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
ON.2	HAY	6.038	7.64	1.602	26.531
ON.2	ALFALFA	40.595	44.02	3.425	8.437
ON.2	WHEATM	7.74	7.817	0.077	0.999
ON.2	WHEATN	9.848	10.145	0.297	3.02
ON.2	BARFDM	3.467	3.609	0.141	4.075
ON.2	BARFDN	4.413	5.015	0.602	13.633
ON.2	SOYM	26.045	26.269	0.223	0.858
ON.2	SOYN	33.138	34.119	0.981	2.961
ON.2	CORNGM	32.422	33.23	0.809	2.494
ON.2	CORNGN	41.251	44.659	3.408	8.261

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
ON.3	HAY	22.382	31.805	9.423	42.101
ON.3	ALFALFA	27.893	32.324	4.431	15.886
ON.3	WHEATM	3.947	3.857	-0.09	-2.29
ON.3	WHEATN	7.052	7.304	0.252	3.58
ON.3	BARFDM	4.199	3.77	-0.429	-10.225
ON.3	BARFDN	7.502	8.871	1.369	18.246
ON.3	SOYM	15.855	15.544	-0.312	-1.967
ON.3	SOYN	28.325	29.312	0.987	3.484
ON.3	CORNGM	10.04	9.573	-0.467	-4.653
ON.3	CORNGN	17.936	19.446	1.51	8.421

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
ON.4	HAY	18.29	24.036	5.746	31.417
ON.4	ALFALFA	112.538	123.582	11.044	9.814
ON.4	WHEATM	13.789	13.728	-0.062	-0.447
ON.4	WHEATN	13.998	14.114	0.116	0.83
ON.4	BARFDM	12.349	12.136	-0.213	-1.726
ON.4	BARFDN	12.538	13.019	0.481	3.837
ON.4	SOYM	33.395	33.259	-0.136	-0.408
ON.4	SOYN	33.901	34.178	0.277	0.818
ON.4	CORNGM	37.095	36.709	-0.385	-1.038
ON.4	CORNGN	37.657	38.545	0.888	2.358

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
ON.5	HAY	50.838	72.464	21.626	42.539
ON.5	ALFALFA	140.313	161.153	20.84	14.852
ON.5	WHEATM	6.989	6.424	-0.565	-8.081
ON.5	WHEATN	5.48	5.24	-0.24	-4.38
ON.5	BARFDM	15.613	11.13	-4.483	-28.714
ON.5	BARFDN	12.243	10.106	-2.137	-17.455
ON.5	SOYM	15.933	14.889	-1.044	-6.553
ON.5	SOYN	12.494	11.989	-0.504	-4.038
ON.5	CORNGM	14.479	11.727	-2.753	-19.01
ON.5	CORNGN	11.354	10.044	-1.31	-11.534

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
ON.6	HAY	49.156	66.254	17.098	34.783
ON.6	ALFALFA	129.393	146.268	16.875	13.042
ON.6	WHEATM	5.765	5.206	-0.56	-9.707
ON.6	WHEATN	6.32	6.006	-0.314	-4.961
ON.6	BARFDM	9.758	7.393	-2.365	-24.239
ON.6	BARFDN	10.698	9.091	-1.606	-15.016
ON.6	SOYM	13.675	12.758	-0.917	-6.707
ON.6	SOYN	14.991	14.355	-0.636	-4.24
ON.6	CORNGM	17.23	14.581	-2.649	-15.374
ON.6	CORNGN	18.888	17.095	-1.793	-9.491

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
ON.7	HAY	10.642	11.089	0.447	4.198
ON.7	ALFALFA	1.582	1.576	-0.006	-0.348
ON.7	BARFDM	0.077	0.038	-0.038	-50
ON.7	BARFDN	0.133	0.066	-0.066	-50

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
ON.10	HAY	71.643	86.142	14.498	20.237
ON.10	ALFALFA	42.374	45.396	3.022	7.131
ON.10	WHEATM	1.157	0.578	-0.578	-50
ON.10	WHEATN	0.355	0.178	-0.178	-50
ON.10	BARFDM	5.506	2.753	-2.753	-50
ON.10	BARFDN	1.692	0.846	-0.846	-50
ON.10	SOYM	0.17	0.085	-0.085	-50
ON.10	SOYN	0.052	0.026	-0.026	-49.921
ON.10	CORNGM	0.063	0.031	-0.031	-50
ON.10	CORNGN	0.019	0.01	-0.01	-50

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
ON.8	HAY	72.969	93.996	21.026	28.815
ON.8	ALFALFA	78.724	91.973	13.248	16.828
ON.8	WHEATM	0.897	0.448	-0.449	-50.035
ON.8	WHEATN	0.827	0.414	-0.414	-50
ON.8	BARFDM	4.179	2.09	-2.09	-50
ON.8	BARFDN	3.853	1.927	-1.927	-50
ON.8	SOYM	3.17	2.078	-1.092	-34.459
ON.8	SOYN	2.923	1.995	-0.928	-31.752
ON.8	CORNGM	4.491	2.245	-2.245	-50
ON.8	CORNGN	4.14	2.07	-2.07	-50

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
ON.9	HAY	53.326	82.641	29.315	54.973
ON.9	ALFALFA	60.182	74.47	14.288	23.742
ON.9	WHEATM	1.947	1.335	-0.612	-31.416
ON.9	WHEATN	1.569	1.262	-0.307	-19.545
ON.9	BARFDM	4.395	2.487	-1.908	-43.418
ON.9	BARFDN	3.541	2.371	-1.17	-33.035
ON.9	SOYM	12.468	11.216	-1.252	-10.041
ON.9	SOYN	10.046	9.267	-0.779	-7.755
ON.9	CORNGM	19.201	14.594	-4.606	-23.99
ON.9	CORNGN	15.47	12.789	-2.68	-17.327

Regional distribution of carbon sequestering crops/technology ('000 ha) - Quebec - Policy all-$5

Region	Crops	BASE	$5	DIFF	PRCNTCHG
QU.1	HAY	66.621	68.269	1.648	2.474
QU.1	ALFALFA	50.728	51.779	1.051	2.071
QU.1	WHEATM	0.645	0.628	-0.017	-2.696
QU.1	WHEATN	0.277	0.271	-0.006	-2.03
QU.1	BARFDM	9.135	8.765	-0.371	-4.057
QU.1	BARFDN	3.915	3.791	-0.125	-3.185
QU.1	SOYM	0.022	0.021	-3.03E-04	-1.407
QU.1	SOYN	0.009	0.009	-9.65E-05	-1.044
QU.1	CORNGM	0.089	0.088	-0.001	-1.519
QU.1	CORNGN	0.038	0.038	-3.25E-04	-0.848

Region	Crops	BASE	$5	DIFF	PRCNTCHG
QU.2	HAY	34.102	35.119	1.016	2.981
QU.2	ALFALFA	12.651	12.93	0.279	2.206
QU.2	WHEATM	0.244	0.238	-0.006	-2.649
QU.2	WHEATN	0.036	0.035	-3.74E-04	-1.043
QU.2	BARFDM	7.472	7.278	-0.194	-2.599
QU.2	BARFDN	1.098	1.087	-0.011	-0.972
QU.2	SOYM	0.126	0.124	-0.001	-1.022
QU.2	SOYN	0.018	0.018	-7.60E-05	-0.411
QU.2	CORNGM	0.195	0.193	-0.002	-1.037
QU.2	CORNGN	0.029	0.029	9.08E-05	0.317

Region	Crops	BASE	$5	DIFF	PRCNTCHG
QU.3	HAY	18.944	19.458	0.514	2.713
QU.3	ALFALFA	7.778	7.91	0.132	1.698
QU.3	WHEATM	0.238	0.233	-0.004	-1.842
QU.3	WHEATN	0.081	0.08	-9.58E-04	-1.185
QU.3	BARFDM	1.627	1.572	-0.055	-3.353
QU.3	BARFDN	0.554	0.539	-0.015	-2.739
QU.3	SOYM	0.197	0.196	-0.002	-0.802
QU.3	SOYN	0.067	0.067	-4.21E-04	-0.627
QU.3	CORNGM	0.57	0.565	-0.005	-0.906
QU.3	CORNGN	0.194	0.193	-9.25E-04	-0.477

Region	Crops	BASE	$5	DIFF	PRCNTCHG
QU.4	HAY	16.593	17.208	0.615	3.707
QU.4	ALFALFA	10.535	10.75	0.215	2.038
QU.4	WHEATM	0.268	0.265	-0.003	-0.975
QU.4	WHEATN	0.074	0.073	-4.69E-04	-0.635
QU.4	BARFDM	1.663	1.622	-0.041	-2.457
QU.4	BARFDN	0.459	0.45	-0.009	-1.872
QU.4	SOYM	1.134	1.128	-0.007	-0.573
QU.4	SOYN	0.313	0.312	-0.001	-0.415
QU.4	CORNGM	2.161	2.128	-0.033	-1.535
QU.4	CORNGN	0.596	0.589	-0.007	-1.167

Region	Crops	BASE	$5	DIFF	PRCNTCHG
QU.5	HAY	66.06	67.331	1.271	1.924
QU.5	ALFALFA	9.89	9.995	0.105	1.064
QU.5	WHEATM	0.347	0.339	-0.008	-2.335
QU.5	WHEATN	0.088	0.086	-0.002	-2.196
QU.5	BARFDM	3.522	3.307	-0.215	-6.099
QU.5	BARFDN	0.895	0.836	-0.058	-6.534
QU.5	SOYM	0.608	0.599	-0.009	-1.427
QU.5	SOYN	0.154	0.152	-0.002	-1.498
QU.5	CORNGM	1.852	1.787	-0.066	-3.543
QU.5	CORNGN	0.471	0.453	-0.018	-3.797

Region	Crops	BASE	$5	DIFF	PRCNTCHG
QU.6	HAY	13.228	13.797	0.569	4.302
QU.6	ALFALFA	10.94	11.215	0.275	2.511
QU.6	WHEATM	0.299	0.297	-0.002	-0.604
QU.6	WHEATN	0.034	0.034	-1.52E-04	-0.453
QU.6	BARFDM	2.451	2.416	-0.035	-1.435
QU.6	BARFDN	0.276	0.272	-0.004	-1.353
QU.6	SOYM	2.09	2.085	-0.005	-0.224
QU.6	SOYN	0.235	0.235	-4.67E-04	-0.199
QU.6	CORNGM	6.762	6.71	-0.052	-0.77
QU.6	CORNGN	0.761	0.755	-0.005	-0.717

Region	Crops	BASE	$5	DIFF	PRCNTCHG
QU.7	HAY	50.55	52.034	1.484	2.937
QU.7	ALFALFA	24.7	25.325	0.624	2.528
QU.7	WHEATM	0.28	0.272	-0.008	-2.924
QU.7	WHEATN	0.092	0.09	-0.002	-2.637
QU.7	BARFDM	2.327	2.167	-0.16	-6.87
QU.7	BARFDN	0.765	0.709	-0.055	-7.239
QU.7	SOYM	1.053	1.034	-0.018	-1.754
QU.7	SOYN	0.346	0.34	-0.006	-1.796
QU.7	CORNGM	2.151	2.076	-0.075	-3.466
QU.7	CORNGN	0.707	0.681	-0.026	-3.728

Region	Crops	BASE	$5	DIFF	PRCNTCHG
QU.8	HAY	56.091	56.844	0.754	1.344
QU.8	ALFALFA	7.93	8.019	0.089	1.126
QU.8	WHEATM	0.13	0.125	-0.005	-3.524
QU.8	WHEATN	0.057	0.056	-8.50E-04	-1.488
QU.8	BARFDM	2	1.925	-0.075	-3.75
QU.8	BARFDN	0.881	0.866	-0.015	-1.736
QU.8	SOYM	0.004	0.004	-5.56E-05	-1.274
QU.8	SOYN	0.002	0.002	-1.06E-05	-0.549
QU.8	CORNGM	0.011	0.011	-1.74E-04	-1.591
QU.8	CORNGN	0.005	0.005	-2.11E-06	-0.044

Region	Crops	BASE	$5	DIFF	PRCNTCHG
QU.9	HAY	106.46	107.967	1.507	1.415
QU.9	ALFALFA	34.197	34.47	0.273	0.799
QU.9	WHEATM	0.465	0.46	-0.005	-1.164
QU.9	WHEATN	0.193	0.192	-0.001	-0.56
QU.9	BARFDM	4.744	4.609	-0.135	-2.844
QU.9	BARFDN	1.967	1.932	-0.035	-1.766
QU.9	SOYM	0.526	0.523	-0.003	-0.631
QU.9	SOYN	0.218	0.217	-7.89E-04	-0.361
QU.9	CORNGM	2.577	2.562	-0.015	-0.583
QU.9	CORNGN	1.068	1.07	0.002	0.168

Region	Crops	BASE	$5	DIFF	PRCNTCHG
QU.10	HAY	50.487	52.523	2.037	4.034
QU.10	ALFALFA	40.469	41.37	0.901	2.227
QU.10	WHEATM	2.552	2.54	-0.012	-0.471
QU.10	WHEATN	0.609	0.608	-8.20E-04	-0.135
QU.10	BARFDM	5.906	5.832	-0.074	-1.249
QU.10	BARFDN	1.409	1.403	-0.006	-0.436
QU.10	SOYM	18.487	18.449	-0.038	-0.208
QU.10	SOYN	4.41	4.407	-0.003	-0.07
QU.10	CORNGM	55.934	55.533	-0.401	-0.718
QU.10	CORNGN	13.342	13.304	-0.038	-0.282

Region	Crops	BASE	$5	DIFF	PRCNTCHG
QU.11	HAY	65.883	67.549	1.666	2.529
QU.11	ALFALFA	25.371	25.766	0.395	1.557
QU.11	WHEATM	0.571	0.566	-0.005	-0.845
QU.11	WHEATN	0.153	0.153	-6.49E-04	-0.423
QU.11	BARFDM	6.282	6.139	-0.143	-2.274
QU.11	BARFDN	1.688	1.665	-0.022	-1.314
QU.11	SOYM	4.814	4.793	-0.021	-0.434
QU.11	SOYN	1.293	1.29	-0.003	-0.241
QU.11	CORNGM	13.799	13.613	-0.187	-1.352
QU.11	CORNGN	3.707	3.678	-0.029	-0.794

Regional distribution of carbon sequestering crops/technology ('000 ha) - Quebec - Policy all -$15

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
QU.1	HAY	66.621	70.185	3.564	5.35
QU.1	ALFALFA	50.728	52.778	2.05	4.041
QU.1	WHEATM	0.645	0.609	-0.037	-5.687
QU.1	WHEATN	0.277	0.266	-0.01	-3.726
QU.1	BARFDM	9.135	8.393	-0.743	-8.128
QU.1	BARFDN	3.915	3.7	-0.216	-5.508
QU.1	SOYM	0.022	0.021	-6.60E-04	-3.062
QU.1	SOYN	0.009	0.009	-1.86E-04	-2.015
QU.1	CORNGM	0.089	0.087	-0.003	-3.108
QU.1	CORNGN	0.038	0.038	-4.20E-04	-1.097

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
QU.2	HAY	34.102	36.38	2.278	6.68
QU.2	ALFALFA	12.651	13.232	0.581	4.591
QU.2	WHEATM	0.244	0.23	-0.014	-5.863
QU.2	WHEATN	0.036	0.035	-3.74E-04	-1.044
QU.2	BARFDM	7.472	7.066	-0.406	-5.433
QU.2	BARFDN	1.098	1.088	-0.01	-0.898
QU.2	SOYM	0.126	0.123	-0.003	-2.255
QU.2	SOYN	0.018	0.018	-8.29E-05	-0.449
QU.2	CORNGM	0.195	0.191	-0.004	-2.148
QU.2	CORNGN	0.029	0.029	5.48E-04	1.916

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
QU.3	HAY	18.944	20.107	1.163	6.139
QU.3	ALFALFA	7.778	8.054	0.276	3.552
QU.3	WHEATM	0.238	0.229	-0.009	-3.626
QU.3	WHEATN	0.081	0.079	-0.002	-2.054
QU.3	BARFDM	1.627	1.524	-0.103	-6.35
QU.3	BARFDN	0.554	0.529	-0.025	-4.492
QU.3	SOYM	0.197	0.194	-0.003	-1.617
QU.3	SOYN	0.067	0.066	-7.46E-04	-1.112
QU.3	CORNGM	0.57	0.562	-0.008	-1.457
QU.3	CORNGN	0.194	0.194	-3.30E-04	-0.17

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
QU.4	HAY	16.593	17.997	1.404	8.463
QU.4	ALFALFA	10.535	10.998	0.463	4.397
QU.4	WHEATM	0.268	0.262	-0.005	-2.001
QU.4	WHEATN	0.074	0.073	-8.17E-04	-1.107
QU.4	BARFDM	1.663	1.578	-0.084	-5.078
QU.4	BARFDN	0.459	0.444	-0.015	-3.291
QU.4	SOYM	1.134	1.121	-0.013	-1.184
QU.4	SOYN	0.313	0.311	-0.002	-0.743
QU.4	CORNGM	2.161	2.093	-0.068	-3.159
QU.4	CORNGN	0.596	0.584	-0.012	-2.056

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
QU.5	HAY	66.06	69.167	3.107	4.703
QU.5	ALFALFA	9.89	10.124	0.234	2.366
QU.5	WHEATM	0.347	0.328	-0.019	-5.425
QU.5	WHEATN	0.088	0.084	-0.005	-5.216
QU.5	BARFDM	3.522	3.035	-0.486	-13.814
QU.5	BARFDN	0.895	0.76	-0.135	-15.106
QU.5	SOYM	0.608	0.587	-0.02	-3.33
QU.5	SOYN	0.154	0.149	-0.006	-3.564
QU.5	CORNGM	1.852	1.699	-0.153	-8.259
QU.5	CORNGN	0.471	0.428	-0.042	-9.023

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
QU.6	HAY	13.228	14.522	1.294	9.783
QU.6	ALFALFA	10.94	11.537	0.597	5.455
QU.6	WHEATM	0.299	0.296	-0.004	-1.188
QU.6	WHEATN	0.034	0.033	-2.90E-04	-0.861
QU.6	BARFDM	2.451	2.389	-0.062	-2.529
QU.6	BARFDN	0.276	0.27	-0.006	-2.221
QU.6	SOYM	2.09	2.08	-0.009	-0.451
QU.6	SOYN	0.235	0.234	-9.02E-04	-0.384
QU.6	CORNGM	6.762	6.663	-0.098	-1.455
QU.6	CORNGN	0.761	0.751	-0.01	-1.279

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
QU.7	HAY	50.55	54.477	3.927	7.769
QU.7	ALFALFA	24.7	26.245	1.545	6.256
QU.7	WHEATM	0.28	0.26	-0.02	-7.247
QU.7	WHEATN	0.092	0.086	-0.006	-6.609
QU.7	BARFDM	2.327	1.937	-0.389	-16.729
QU.7	BARFDN	0.765	0.629	-0.136	-17.818
QU.7	SOYM	1.053	1.007	-0.046	-4.362
QU.7	SOYN	0.346	0.33	-0.016	-4.523
QU.7	CORNGM	2.151	1.958	-0.193	-8.967
QU.7	CORNGN	0.707	0.638	-0.069	-9.745

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
QU.8	HAY	56.091	57.775	1.684	3.003
QU.8	ALFALFA	7.93	8.099	0.169	2.135
QU.8	WHEATM	0.13	0.12	-0.01	-7.653
QU.8	WHEATN	0.057	0.056	-8.84E-04	-1.547
QU.8	BARFDM	2	1.845	-0.155	-7.746
QU.8	BARFDN	0.881	0.866	-0.015	-1.694
QU.8	SOYM	0.004	0.004	-1.20E-04	-2.742
QU.8	SOYN	0.002	0.002	-1.15E-05	-0.598
QU.8	CORNGM	0.011	0.011	-3.53E-04	-3.236
QU.8	CORNGN	0.005	0.005	6.70E-05	1.393

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
QU.9	HAY	106.46	109.337	2.877	2.702
QU.9	ALFALFA	34.197	34.613	0.416	1.217
QU.9	WHEATM	0.465	0.456	-0.009	-1.851
QU.9	WHEATN	0.193	0.192	-5.97E-04	-0.31
QU.9	BARFDM	4.744	4.547	-0.197	-4.157
QU.9	BARFDN	1.967	1.949	-0.018	-0.916
QU.9	SOYM	0.526	0.521	-0.005	-1.01
QU.9	SOYN	0.218	0.218	-4.86E-04	-0.223
QU.9	CORNGM	2.577	2.574	-0.002	-0.085
QU.9	CORNGN	1.068	1.092	0.023	2.17

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
QU.10	HAY	50.487	54.819	4.332	8.581
QU.10	ALFALFA	40.469	42.272	1.803	4.454
QU.10	WHEATM	2.552	2.53	-0.023	-0.893
QU.10	WHEATN	0.609	0.609	4.40E-04	0.072
QU.10	BARFDM	5.906	5.774	-0.132	-2.231
QU.10	BARFDN	1.409	1.412	0.003	0.221
QU.10	SOYM	18.487	18.414	-0.073	-0.394
QU.10	SOYN	4.41	4.411	7.88E-04	0.018
QU.10	CORNGM	55.934	55.23	-0.704	-1.259
QU.10	CORNGN	13.342	13.348	0.006	0.046

REGION	CROP	BASE	$15	DIFF	PRCNTCHG
QU.11	HAY	65.883	69.625	3.742	5.679
QU.11	ALFALFA	25.371	26.202	0.831	3.275
QU.11	WHEATM	0.571	0.561	-0.01	-1.67
QU.11	WHEATN	0.153	0.153	-7.94E-04	-0.518
QU.11	BARFDM	6.282	5.995	-0.287	-4.563
QU.11	BARFDN	1.688	1.659	-0.029	-1.69
QU.11	SOYM	4.814	4.772	-0.042	-0.881
QU.11	SOYN	1.293	1.289	-0.004	-0.318
QU.11	CORNGM	13.799	13.426	-0.373	-2.706
QU.11	CORNGN	3.707	3.669	-0.038	-1.028

Regional distribution of carbon sequestering crops/technology ('000 ha) - Quebec - Policy all -$100

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
QU.1	HAY	66.621	75.144	8.523	12.794
QU.1	ALFALFA	50.728	54.787	4.058	8
QU.1	WHEATM	0.645	0.568	-0.077	-11.937
QU.1	WHEATN	0.277	0.261	-0.015	-5.586
QU.1	BARFDM	9.135	7.567	-1.569	-17.171
QU.1	BARFDN	3.915	3.585	-0.33	-8.438
QU.1	SOYM	0.022	0.02	-0.001	-6.322
QU.1	SOYN	0.009	0.009	-2.75E-04	-2.973
QU.1	CORNGM	0.089	0.082	-0.007	-8.364
QU.1	CORNGN	0.038	0.038	-6.36E-04	-1.661

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
QU.2	HAY	34.102	39.67	5.568	16.327
QU.2	ALFALFA	12.651	13.906	1.254	9.915
QU.2	WHEATM	0.244	0.213	-0.031	-12.805
QU.2	WHEATN	0.036	0.037	0.001	3.261
QU.2	BARFDM	7.472	6.583	-0.889	-11.892
QU.2	BARFDN	1.098	1.123	0.025	2.309
QU.2	SOYM	0.126	0.12	-0.006	-4.832
QU.2	SOYN	0.018	0.019	2.04E-04	1.105
QU.2	CORNGM	0.195	0.182	-0.013	-6.589
QU.2	CORNGN	0.029	0.031	0.002	6.959

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
QU.3	HAY	18.944	21.85	2.906	15.338
QU.3	ALFALFA	7.778	8.385	0.607	7.801
QU.3	WHEATM	0.238	0.223	-0.015	-6.308
QU.3	WHEATN	0.081	0.079	-0.002	-2.201
QU.3	BARFDM	1.627	1.444	-0.183	-11.251
QU.3	BARFDN	0.554	0.526	-0.028	-5.021
QU.3	SOYM	0.197	0.192	-0.006	-2.825
QU.3	SOYN	0.067	0.066	-8.09E-04	-1.205
QU.3	CORNGM	0.57	0.551	-0.019	-3.316
QU.3	CORNGN	0.194	0.196	0.002	0.973

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
QU.4	HAY	16.593	20.009	3.416	20.588
QU.4	ALFALFA	10.535	11.559	1.024	9.722
QU.4	WHEATM	0.268	0.257	-0.011	-4.07
QU.4	WHEATN	0.074	0.073	-0.001	-1.438
QU.4	BARFDM	1.663	1.489	-0.174	-10.489
QU.4	BARFDN	0.459	0.438	-0.021	-4.497
QU.4	SOYM	1.134	1.107	-0.027	-2.397
QU.4	SOYN	0.313	0.31	-0.003	-0.976
QU.4	CORNGM	2.161	2.025	-0.137	-6.321
QU.4	CORNGN	0.596	0.58	-0.016	-2.643

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
QU.5	HAY	66.06	74.526	8.466	12.816
QU.5	ALFALFA	9.89	10.446	0.556	5.625
QU.5	WHEATM	0.347	0.3	-0.047	-13.483
QU.5	WHEATN	0.088	0.076	-0.012	-13.353
QU.5	BARFDM	3.522	2.31	-1.212	-34.404
QU.5	BARFDN	0.895	0.549	-0.346	-38.684
QU.5	SOYM	0.608	0.558	-0.05	-8.239
QU.5	SOYN	0.154	0.14	-0.014	-9.078
QU.5	CORNGM	1.852	1.474	-0.379	-20.446
QU.5	CORNGN	0.471	0.362	-0.108	-22.993

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
QU.6	HAY	13.228	16.422	3.194	24.145
QU.6	ALFALFA	10.94	12.305	1.365	12.48
QU.6	WHEATM	0.299	0.294	-0.006	-1.891
QU.6	WHEATN	0.034	0.033	-3.86E-04	-1.146
QU.6	BARFDM	2.451	2.343	-0.109	-4.432
QU.6	BARFDN	0.276	0.267	-0.009	-3.325
QU.6	SOYM	2.09	2.075	-0.015	-0.725
QU.6	SOYN	0.235	0.234	-0.001	-0.518
QU.6	CORNGM	6.762	6.604	-0.158	-2.336
QU.6	CORNGN	0.761	0.748	-0.013	-1.702

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
QU.7	HAY	50.55	62.247	11.697	23.139
QU.7	ALFALFA	24.7	28.987	4.287	17.355
QU.7	WHEATM	0.28	0.225	-0.056	-19.806
QU.7	WHEATN	0.092	0.075	-0.017	-18.305
QU.7	BARFDM	2.327	1.256	-1.071	-46.012
QU.7	BARFDN	0.765	0.385	-0.379	-49.619
QU.7	SOYM	1.053	0.927	-0.125	-11.891
QU.7	SOYN	0.346	0.303	-0.043	-12.508
QU.7	CORNGM	2.151	1.54	-0.611	-28.412
QU.7	CORNGN	0.707	0.488	-0.219	-31.006

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
QU.8	HAY	56.091	60.207	4.116	7.338
QU.8	ALFALFA	7.93	8.229	0.299	3.775
QU.8	WHEATM	0.13	0.108	-0.021	-16.5
QU.8	WHEATN	0.057	0.059	0.002	3.852
QU.8	BARFDM	2	1.665	-0.335	-16.769
QU.8	BARFDN	0.881	0.911	0.03	3.417
QU.8	SOYM	0.004	0.004	-2.55E-04	-5.841
QU.8	SOYN	0.002	0.002	2.33E-05	1.21
QU.8	CORNGM	0.011	0.01	-9.55E-04	-8.755
QU.8	CORNGN	0.005	0.005	3.21E-04	6.677

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
QU.9	HAY	106.46	111.92	5.459	5.128
QU.9	ALFALFA	34.197	34.569	0.372	1.087
QU.9	WHEATM	0.465	0.461	-0.004	-0.92
QU.9	WHEATN	0.193	0.199	0.007	3.405
QU.9	BARFDM	4.744	4.634	-0.11	-2.318
QU.9	BARFDN	1.967	2.134	0.167	8.493
QU.9	SOYM	0.526	0.524	-0.003	-0.518
QU.9	SOYN	0.218	0.223	0.004	2.047
QU.9	CORNGM	2.577	2.645	0.069	2.659
QU.9	CORNGN	1.068	1.177	0.109	10.167

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
QU.10	HAY	50.487	59.991	9.504	18.825
QU.10	ALFALFA	40.469	43.943	3.474	8.584
QU.10	WHEATM	2.552	2.522	-0.03	-1.186
QU.10	WHEATN	0.609	0.62	0.011	1.831
QU.10	BARFDM	5.906	5.703	-0.203	-3.444
QU.10	BARFDN	1.409	1.476	0.067	4.752
QU.10	SOYM	18.487	18.386	-0.101	-0.549
QU.10	SOYN	4.41	4.446	0.036	0.815
QU.10	CORNGM	55.934	54.942	-0.992	-1.774
QU.10	CORNGN	13.342	13.688	0.345	2.589

REGION	CROP	BASE	$50	DIFF	PRCNTCHG
QU.11	HAY	65.883	74.779	8.896	13.503
QU.11	ALFALFA	25.371	27.136	1.765	6.957
QU.11	WHEATM	0.571	0.552	-0.019	-3.249
QU.11	WHEATN	0.153	0.154	4.75E-04	0.31
QU.11	BARFDM	6.282	5.711	-0.57	-9.078
QU.11	BARFDN	1.688	1.697	0.009	0.554
QU.11	SOYM	4.814	4.733	-0.081	-1.684
QU.11	SOYN	1.293	1.295	0.002	0.167
QU.11	CORNGM	13.799	13.096	-0.704	-5.099
QU.11	CORNGN	3.707	3.726	0.018	0.499

Regional distribution of carbon sequestering crops/technology ('000 ha) - Quebec - Policy all - $100

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
QU.1	HAY	66.621	82.753	16.132	24.215
QU.1	ALFALFA	50.728	58.108	7.379	14.547
QU.1	WHEATM	0.645	0.532	-0.113	-17.566
QU.1	WHEATN	0.277	0.263	-0.014	-5.052
QU.1	BARFDM	9.135	6.216	-2.919	-31.956
QU.1	BARFDN	3.915	3.348	-0.567	-14.476
QU.1	SOYM	0.022	0.019	-0.003	-11.849
QU.1	SOYN	0.009	0.009	-4.79E-04	-5.178
QU.1	CORNGM	0.089	0.071	-0.018	-19.986
QU.1	CORNGN	0.038	0.036	-0.003	-6.577

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
QU.2	HAY	34.102	44.732	10.63	31.171
QU.2	ALFALFA	12.651	14.99	2.339	18.488
QU.2	WHEATM	0.244	0.196	-0.048	-19.801
QU.2	WHEATN	0.036	0.04	0.004	12.332
QU.2	BARFDM	7.472	5.81	-1.662	-22.249
QU.2	BARFDN	1.098	1.162	0.065	5.897
QU.2	SOYM	0.126	0.114	-0.011	-9.094
QU.2	SOYN	0.018	0.019	5.10E-04	2.76
QU.2	CORNGM	0.195	0.163	-0.032	-16.459
QU.2	CORNGN	0.029	0.032	0.003	10.641

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
QU.3	HAY	18.944	24.539	5.594	29.53
QU.3	ALFALFA	7.778	8.921	1.143	14.697
QU.3	WHEATM	0.238	0.219	-0.018	-7.754
QU.3	WHEATN	0.081	0.08	-3.80E-04	-0.47
QU.3	BARFDM	1.627	1.306	-0.321	-19.746
QU.3	BARFDN	0.554	0.513	-0.04	-7.269
QU.3	SOYM	0.197	0.187	-0.01	-5.039
QU.3	SOYN	0.067	0.066	-0.001	-1.812
QU.3	CORNGM	0.57	0.516	-0.054	-9.435
QU.3	CORNGN	0.194	0.192	-0.002	-0.856

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
QU.4	HAY	16.593	23.11	6.517	39.273
QU.4	ALFALFA	10.535	12.455	1.92	18.229
QU.4	WHEATM	0.268	0.254	-0.014	-5.112
QU.4	WHEATN	0.074	0.074	-1.87E-04	-0.253
QU.4	BARFDM	1.663	1.34	-0.323	-19.394
QU.4	BARFDN	0.459	0.425	-0.034	-7.414
QU.4	SOYM	1.134	1.084	-0.051	-4.478
QU.4	SOYN	0.313	0.308	-0.005	-1.653
QU.4	CORNGM	2.161	1.905	-0.256	-11.839
QU.4	CORNGN	0.596	0.57	-0.027	-4.483

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
QU.5	HAY	66.06	79.554	13.494	20.427
QU.5	ALFALFA	9.89	10.687	0.797	8.061
QU.5	WHEATM	0.347	0.256	-0.092	-26.419
QU.5	WHEATN	0.088	0.065	-0.023	-26.231
QU.5	BARFDM	3.522	1.761	-1.761	-50
QU.5	BARFDN	0.895	0.447	-0.447	-50
QU.5	SOYM	0.608	0.502	-0.106	-17.458
QU.5	SOYN	0.154	0.125	-0.03	-19.117
QU.5	CORNGM	1.852	1.049	-0.803	-43.343
QU.5	CORNGN	0.471	0.243	-0.228	-48.433

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
QU.6	HAY	13.228	19.334	6.107	46.166
QU.6	ALFALFA	10.94	13.516	2.576	23.55
QU.6	WHEATM	0.299	0.297	-0.003	-0.924
QU.6	WHEATN	0.034	0.034	4.51E-05	0.134
QU.6	BARFDM	2.451	2.264	-0.187	-7.633
QU.6	BARFDN	0.276	0.261	-0.015	-5.387
QU.6	SOYM	2.09	2.062	-0.028	-1.33
QU.6	SOYN	0.235	0.233	-0.002	-0.921
QU.6	CORNGM	6.762	6.48	-0.282	-4.171
QU.6	CORNGN	0.761	0.738	-0.022	-2.939

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
QU.7	HAY	50.55	66.775	16.226	32.098
QU.7	ALFALFA	24.7	30.057	5.357	21.688
QU.7	WHEATM	0.28	0.163	-0.117	-41.765
QU.7	WHEATN	0.092	0.057	-0.035	-38.456
QU.7	BARFDM	2.327	1.163	-1.163	-50
QU.7	BARFDN	0.765	0.382	-0.382	-50
QU.7	SOYM	1.053	0.771	-0.281	-26.74
QU.7	SOYN	0.346	0.249	-0.097	-27.909
QU.7	CORNGM	2.151	1.075	-1.075	-50
QU.7	CORNGN	0.707	0.353	-0.353	-50

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
QU.8	HAY	56.091	63.905	7.814	13.931
QU.8	ALFALFA	7.93	8.456	0.526	6.635
QU.8	WHEATM	0.13	0.095	-0.035	-26.743
QU.8	WHEATN	0.057	0.065	0.008	13.958
QU.8	BARFDM	2	1.375	-0.625	-31.249
QU.8	BARFDN	0.881	0.961	0.08	9.133
QU.8	SOYM	0.004	0.004	-4.79E-04	-10.972
QU.8	SOYN	0.002	0.002	5.98E-05	3.11
QU.8	CORNGM	0.011	0.009	-0.002	-20.041
QU.8	CORNGN	0.005	0.005	5.20E-04	10.823

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
QU.9	HAY	106.46	116.604	10.144	9.528
QU.9	ALFALFA	34.197	34.741	0.544	1.592
QU.9	WHEATM	0.465	0.476	0.011	2.337
QU.9	WHEATN	0.193	0.213	0.02	10.35
QU.9	BARFDM	4.744	4.683	-0.06	-1.272
QU.9	BARFDN	1.967	2.367	0.4	20.348
QU.9	SOYM	0.526	0.525	-0.002	-0.308
QU.9	SOYN	0.218	0.229	0.01	4.806
QU.9	CORNGM	2.577	2.657	0.08	3.114
QU.9	CORNGN	1.068	1.262	0.194	18.16

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
QU.10	HAY	50.487	68.265	17.778	35.214
QU.10	ALFALFA	40.469	46.79	6.321	15.619
QU.10	WHEATM	2.552	2.564	0.011	0.443
QU.10	WHEATN	0.609	0.646	0.037	6.117
QU.10	BARFDM	5.906	5.58	-0.327	-5.529
QU.10	BARFDN	1.409	1.562	0.153	10.858
QU.10	SOYM	18.487	18.309	-0.178	-0.965
QU.10	SOYN	4.41	4.488	0.078	1.764
QU.10	CORNGM	55.934	54.222	-1.712	-3.06
QU.10	CORNGN	13.342	14.097	0.754	5.654

REGION	CROP	BASE	$100	DIFF	PRCNTCHG
QU.11	HAY	65.883	82.772	16.889	25.635
QU.11	ALFALFA	25.371	28.651	3.28	12.928
QU.11	WHEATM	0.571	0.549	-0.022	-3.927
QU.11	WHEATN	0.153	0.158	0.004	2.89
QU.11	BARFDM	6.282	5.262	-1.02	-16.234
QU.11	BARFDN	1.688	1.739	0.051	3.033
QU.11	SOYM	4.814	4.663	-0.151	-3.136
QU.11	SOYN	1.293	1.301	0.007	0.56
QU.11	CORNGM	13.799	12.497	-1.302	-9.436
QU.11	CORNGN	3.707	3.772	0.065	1.753

Appendix I

Total crop acreage under tillage ('000 ha) and tillage adoption rate (% of cropland) - By Province

Alberta- Total Crop Area under Tillage('000 ha) and Tillage Adoption rate (% of cropland)

Policy Till - crop area under tillage ('000 ha)

Region	Total Cropland	Base	$5	$10	$15	$30	$50	$100
AL.1	1152.5	421.478	422.235	422.993	423.746	426.023	429.055	436.672
AL.2	1873.44	872.273	873.593	874.918	876.299	880.254	885.632	899.147
AL.3	838.86	441.785	443.437	445.206	446.919	452.075	458.75	475.609
AL.4	1954.1	1244.161	1249.858	1255.598	1261.286	1278.555	1301.374	1358.552
AL.5	796.87	287.724	289.009	290.408	291.698	295.825	301.009	314.127
AL.6	607.41	207.259	208.685	210.147	211.576	215.974	221.731	236.151
AL.7	1281.84	499.831	502.332	504.858	507.379	515.021	525.061	550.31
AL	8505.02	3974.511	3989.149	4004.128	4018.903	4063.727	4122.612	4270.568

Policy All - crop area under tillage ('000 ha)

Region	Total Cropland	Base	$5	$10	$15	$30	$50	$100
AL.1	1152.5	421.478	420.933	421.562	422.493	424.868	427.641	438.178
AL.2	1873.44	872.273	874.562	878.975	883.683	896.813	913.961	966.25
AL.3	838.86	441.785	440.784	442.279	444.695	450.901	457.253	470.579
AL.4	1954.1	1244.161	1240.831	1240.609	1241.249	1241.865	1242.542	1251.999
AL.5	796.87	287.724	282.541	280.286	279.143	274.652	262.374	242.138
AL.6	607.41	207.259	203.038	200.986	199.641	195.03	188.685	175.499
AL.7	1281.84	499.831	494.984	492.798	491.2	485.25	475.887	463.178
AL	8505.02	3974.511	3957.673	3957.495	3962.104	3969.379	3968.343	4007.821

Policy Till - Tillage adoption rate (% of cropland)

Region	Base	$5	$10	$15	$30	$50	$100
AL.1	36.57	36.64	36.70	36.77	36.97	37.23	37.89
AL.2	46.56	46.63	46.70	46.77	46.99	47.27	47.99
AL.3	52.66	52.86	53.07	53.28	53.89	54.69	56.70
AL.4	63.67	63.96	64.25	64.55	65.43	66.60	69.52
AL.5	36.11	36.27	36.44	36.61	37.12	37.77	39.42
AL.6	34.12	34.36	34.60	34.83	35.56	36.50	38.88
AL.7	38.99	39.19	39.39	39.58	40.18	40.96	42.93
AL	46.73	46.90	47.08	47.25	47.78	48.47	50.21

Policy All - Tillage adoption rate (% of cropland)

Region	Base	$5	$10	$15	$30	$50	$100
AL.1	36.57	36.52	36.58	36.66	36.86	37.11	38.02
AL.2	46.56	46.68	46.92	47.17	47.87	48.79	51.58
AL.3	52.66	52.55	52.72	53.01	53.75	54.51	56.10
AL.4	63.67	63.50	63.49	63.52	63.55	63.59	64.07
AL.5	36.11	35.46	35.17	35.03	34.47	32.93	30.39
AL.6	34.12	33.43	33.09	32.87	32.11	31.06	28.89
AL.7	38.99	38.62	38.44	38.32	37.86	37.13	36.13
AL	46.73	46.53	46.53	46.59	46.67	46.66	47.12

Saskatchewan - Total Crop Area under Tillage('000 ha) and Tillage Adoption rate (% of cropland)

Policy Till - crop area under tillage ('000 ha)

Region	Total Cropland	Base	$5	$10	$15	$30	$50	$100
SA.1	1391.81	731.781	736.601	741.441	746.259	760.685	779.998	828.249
SA.2	1705.4	952.688	957.514	962.381	967.219	981.777	1001.154	1049.66
SA.3	3231.15	1384.323	1390.926	1394.357	1397.447	1407.308	1420.582	1453.598
SA.4	1078.29	296.444	297.203	298.021	298.692	300.376	302.62	308.28
SA.5	2292.08	1105.238	1115.839	1126.37	1136.885	1168.451	1210.656	1316
SA.6	2429.84	1450.881	1456.963	1463.071	1469.121	1487.36	1511.648	1572.376
SA.7	1895.19	935.527	938.992	942.515	946.012	956.461	970.437	1005.481
SA.8	1606.16	976.651	980.414	984.153	987.972	999.158	1014.229	1051.799
SA.9	1807.62	1046.51	1051.988	1057.333	1062.888	1079.119	1100.963	1155.397
SA	17437.54	8880.043	8926.44	8969.642	9012.495	9140.695	9312.287	9740.84

Policy All - crop area under tillage ('000 ha)

Region	Total Cropland	Base	$5	$10	$15	$30	$50	$100
SA.1	1391.81	731.781	733.61	736.426	739.326	748.867	763.278	798.479
SA.2	1705.4	952.688	955.123	958.224	961.451	971.656	986.308	1022.74
SA.3	3231.15	1384.323	1383.426	1381.004	1378.73	1373.654	1368.256	1353.495
SA.4	1078.29	296.444	296.808	296.848	296.879	297.228	298.228	302.731
SA.5	2292.08	1105.238	1111.425	1119.797	1128.264	1155.225	1194.847	1292.841
SA.6	2429.84	1450.881	1453.882	1458.415	1463.189	1478.459	1501.303	1556.268
SA.7	1895.19	935.527	937.914	940.807	943.889	953.399	966.815	1000.284
SA.8	1606.16	976.651	977.606	980.096	982.955	992.441	1007.453	1044.794
SA.9	1807.62	1046.51	1043.939	1045.079	1046.945	1055.113	1071.801	1111.087
SA	17437.54	8880.043	8893.733	8916.696	8941.628	9026.042	9158.289	9482.719

Saskatchewan - Total Crop Area under Tillage('000 ha) and Tillage Adoption rate (% of cropland)

Policy Till - Tillage adoption rate (% of cropland)

Region	Base	$5	$10	$15	$30	$50	$100
SA.1	52.58	52.92	53.27	53.62	54.65	56.04	59.51
SA.2	55.86	56.15	56.43	56.72	57.57	58.70	61.55
SA.3	42.84	43.05	43.15	43.25	43.55	43.97	44.99
SA.4	27.49	27.56	27.64	27.70	27.86	28.06	28.59
SA.5	48.22	48.68	49.14	49.60	50.98	52.82	57.42
SA.6	59.71	59.96	60.21	60.46	61.21	62.21	64.71
SA.7	49.36	49.55	49.73	49.92	50.47	51.21	53.05
SA.8	60.81	61.04	61.27	61.51	62.21	63.15	65.49
SA.9	57.89	58.20	58.49	58.80	59.70	60.91	63.92
SA	50.92	51.19	51.44	51.68	52.42	53.40	55.86

Policy All - Tillage adoption rate (% of cropland)

Region	Base	$5	$10	$15	$30	$50	$100
SA.1	52.58	52.71	52.91	53.12	53.81	54.84	57.37
SA.2	55.86	56.01	56.19	56.38	56.98	57.83	59.97
SA.3	42.84	42.82	42.74	42.67	42.51	42.35	41.89
SA.4	27.49	27.53	27.53	27.53	27.56	27.66	28.08
SA.5	48.22	48.49	48.86	49.22	50.40	52.13	56.40
SA.6	59.71	59.83	60.02	60.22	60.85	61.79	64.05
SA.7	49.36	49.49	49.64	49.80	50.31	51.01	52.78
SA.8	60.81	60.87	61.02	61.20	61.79	62.72	65.05
SA.9	57.89	57.75	57.82	57.92	58.37	59.29	61.47
SA	50.92	51.00	51.14	51.28	51.76	52.52	54.38

Manitoba- Total Crop Area under Tillage('000 ha) and Tillage Adoption rate (% of cropland)

Policy Till - crop area under tillage ('000 ha)

Region	Total Cropland	Base	$5	$10	$15	$30	$50	$100
MA.1	1412.47	786.019	791.322	796.646	801.943	817.817	838.907	891.81
MA.2	641.16	303.263	305.322	307.426	309.508	315.718	324.107	344.965
MA.3	642.12	165.998	166.457	166.827	167.146	168.096	169.362	172.571
MA.4	769.3	217.598	218.555	219.516	220.47	223.286	227.11	236.623
MA.5	358.9	92.163	92.468	92.795	93.114	94.046	95.336	98.503
MA.6	361.97	112.027	112.242	112.472	112.709	113.352	114.282	116.558
MA	4185.92	1677.068	1686.366	1695.682	1704.89	1732.315	1769.104	1861.03

Policy All - crop area under tillage ('000 ha)

Region	Total Cropland	Base	$5	$10	$15	$30	$50	$100
MA.1	1412.47	786.019	788.7	793.021	796.609	807.622	827.534	863.744
MA.2	641.16	303.263	302.868	303.513	303.726	304.369	308.682	310.847
MA.3	642.12	165.998	165.748	165.649	165.437	164.832	165.229	163.048
MA.4	769.3	217.598	217.847	218.374	218.867	220.283	223.149	227.654
MA.5	358.9	92.163	91.334	90.933	90.416	88.872	88.145	82.524
MA.6	361.97	112.027	110.472	109.654	108.641	105.614	103.887	93.43
	4185.92	1677.068	1676.969	1681.144	1683.696	1691.592	1716.626	1741.247

Policy Till - Tillage adoption rate (% of cropland)

Region	Base	$5	$10	$15	$30	$50	$100
MA.1	55.65	56.02	56.40	56.78	57.90	59.39	63.14
MA.2	47.30	47.62	47.95	48.27	49.24	50.55	53.80
MA.3	25.85	25.92	25.98	26.03	26.18	26.38	26.88
MA.4	28.29	28.41	28.53	28.66	29.02	29.52	30.76
MA.5	25.68	25.76	25.86	25.94	26.20	26.56	27.45
MA.6	30.95	31.01	31.07	31.14	31.32	31.57	32.20
MA	40.06	40.29	40.51	40.73	41.38	42.26	44.46

Policy All - Tillage adoption rate (% of cropland)

Region	Base	$5	$10	$15	$30	$50	$100
MA.1	55.65	55.84	56.14	56.40	57.18	58.59	61.15
MA.2	47.30	47.24	47.34	47.37	47.47	48.14	48.48
MA.3	25.85	25.81	25.80	25.76	25.67	25.73	25.39
MA.4	28.29	28.32	28.39	28.45	28.63	29.01	29.59
MA.5	25.68	25.45	25.34	25.19	24.76	24.56	22.99
MA.6	30.95	30.52	30.29	30.01	29.18	28.70	25.81
MA	40.06	40.06	40.16	40.22	40.41	41.01	41.60

Ontario - Total Crop Area under Tillage('000 ha) and Tillage Adoption rate (% of cropland)

Policy Till - crop area under tillage ('000 ha)

Region	Total Cropland	Base	$5	$10	$15	$30	$50	$100
ON.1	616.11	362.401	363.073	363.746	364.411	366.44	369.14	375.898
ON.2	348.47	158.324	158.708	159.101	159.487	160.642	162.205	166.078
ON.3	199.42	94.856	95.391	95.943	96.479	98.114	100.306	105.751
ON.4	553.41	194.722	194.895	195.07	195.228	195.747	196.462	198.206
ON.5	274.93	94.585	94.648	94.724	94.787	94.997	95.284	96
ON.6	217.03	97.325	97.497	97.696	97.876	98.444	99.248	101.168
ON.7	0.91	0.21	0.21	0.21	0.21	0.211	0.212	0.215
ON.8	73.83	24.48	24.509	24.534	24.56	24.652	24.757	25.04
ON.9	196.59	68.637	68.712	68.789	68.862	69.091	69.384	70.144
ON.10	36.66	9.014	9.013	9.011	9.01	9.002	8.988	8.972
ON	2517.36	1104.554	1106.656	1108.824	1110.91	1117.34	1125.986	1147.472

Policy All - crop area under tillage ('000 ha)

Region	Total Cropland	Base	$5	$10	$15	$30	$50	$100
ON.1	616.11	362.401	363.096	364.002	364.931	367.496	370.65	378.115
ON.2	348.47	158.324	158.508	158.902	159.309	160.432	161.803	164.863
ON.3	199.42	94.856	94.786	95.019	95.277	95.903	96.56	97.677
ON.4	553.41	194.722	194.446	194.646	194.867	195.324	195.666	195.688
ON.5	274.93	94.585	93.584	93.067	92.629	91.024	88.566	81.549
ON.6	217.03	97.325	96.321	95.984	95.687	94.508	92.545	86.485
ON.7	0.91	0.21	0.197	0.189	0.18	0.153	0.115	0.104
ON.8	73.83	24.48	23.346	22.543	21.755	19.134	16.044	13.267
ON.9	196.59	68.637	67.858	67.377	66.938	65.252	62.608	55.321
ON.10	36.66	9.014	8.437	7.998	7.576	6.316	4.87	4.507
ON	2517.36	1104.554	1100.579	1099.727	1099.149	1095.542	1089.427	1077.576

Ontario - Total Crop Area under Tillage('000 ha) and Tillage Adoption rate (% of cropland)

Policy Till - Tillage adoption rate (% of cropland)

Region	Base	$5	$10	$15	$30	$50	$100
ON.1	58.82	58.93	59.04	59.15	59.48	59.91	61.01
ON.2	45.43	45.54	45.66	45.77	46.10	46.55	47.66
ON.3	47.57	47.83	48.11	48.38	49.20	50.30	53.03
ON.4	35.19	35.22	35.25	35.28	35.37	35.50	35.82
ON.5	34.40	34.43	34.45	34.48	34.55	34.66	34.92
ON.6	44.84	44.92	45.01	45.10	45.36	45.73	46.61
ON.7	23.08	23.08	23.08	23.08	23.19	23.30	23.63
ON.8	33.16	33.20	33.23	33.27	33.39	33.53	33.92
ON.9	34.91	34.95	34.99	35.03	35.14	35.29	35.68
ON.10	24.59	24.59	24.58	24.58	24.56	24.52	24.47
ON	43.88	43.96	44.05	44.13	44.39	44.73	45.58

Policy All - Tillage adoption rate (% of cropland)

Region	Base	$5	$10	$15	$30	$50	$100
ON.1	58.82	58.93	59.08	59.23	59.65	60.16	61.37
ON.2	45.43	45.49	45.60	45.72	46.04	46.43	47.31
ON.3	47.57	47.53	47.65	47.78	48.09	48.42	48.98
ON.4	35.19	35.14	35.17	35.21	35.29	35.36	35.36
ON.5	34.40	34.04	33.85	33.69	33.11	32.21	29.66
ON.6	44.84	44.38	44.23	44.09	43.55	42.64	39.85
ON.7	23.08	21.65	20.77	19.78	16.81	12.64	11.43
ON.8	33.16	31.62	30.53	29.47	25.92	21.73	17.97
ON.9	34.91	34.52	34.27	34.05	33.19	31.85	28.14
ON.10	24.59	23.01	21.82	20.67	17.23	13.28	12.29
ON	43.88	43.72	43.69	43.66	43.52	43.28	42.81

Quebec - Total Crop Area under Tillage('000 ha) and Tillage Adoption rate (% of cropland)

Policy Till - crop area under tillage ('000 ha)

Region	Total Cropland	Base	$5	$10	$15	$30	$50	$100
QU.1	67.93	14.13	14.199	14.269	14.336	14.543	14.824	15.536
QU.2	50.96	9.218	9.256	9.298	9.337	9.461	9.621	10.024
QU.3	23.86	3.528	3.566	3.605	3.644	3.761	3.917	4.307
QU.4	49.89	6.668	6.685	6.702	6.722	6.771	6.84	7.01
QU.5	31.64	7.937	7.962	7.989	8.015	8.096	8.203	8.469
QU.6	81.03	12.908	12.949	12.991	13.034	13.161	13.331	13.755
QU.7	47.12	7.721	7.749	7.779	7.81	7.902	8.024	8.33
QU.8	20.76	3.09	3.128	3.166	3.203	3.319	3.473	3.858
QU.9	76.63	11.758	11.865	11.973	12.081	12.406	12.844	13.931
QU.10	404.84	102.649	102.83	103.011	103.192	103.743	104.476	106.3
QU.11	138.89	32.307	32.401	32.498	32.594	32.877	33.26	34.221
QU	993.55	211.914	212.59	213.281	213.968	216.04	218.813	225.741

Policy All - crop area under tillage ('000 ha)

Region	Total Cropland	Base	$5	$10	$15	$30	$50	$100
QU.1	67.93	14.13	13.611	13.389	13.123	12.519	12.13	10.494
QU.2	50.96	9.218	9.002	8.896	8.78	8.517	8.308	7.536
QU.3	23.86	3.528	3.445	3.415	3.377	3.303	3.277	3.079
QU.4	49.89	6.668	6.567	6.517	6.466	6.353	6.279	5.96
QU.5	31.64	7.937	7.559	7.32	7.07	6.421	5.769	4.448
QU.6	81.03	12.908	12.804	12.761	12.716	12.625	12.598	12.369
QU.7	47.12	7.721	7.369	7.11	6.845	6.099	5.199	4.213
QU.8	20.76	3.09	2.994	2.955	2.909	2.814	2.764	2.516
QU.9	76.63	11.758	11.565	11.566	11.549	11.632	11.997	12.412
QU.10	404.84	102.649	102.076	101.915	101.728	101.453	101.783	101.468
QU.11	138.89	32.307	31.897	31.717	31.524	31.123	30.964	29.941
QU	993.55	211.914	208.889	207.561	206.087	202.859	201.068	194.436

Policy Till - Tillage adoption rate (% of cropland)

Region	Base	$5	$10	$15	$30	$50	$100
QU.1	20.80	20.90	21.01	21.10	21.41	21.82	22.87
QU.2	18.09	18.16	18.25	18.32	18.57	18.88	19.67
QU.3	14.79	14.95	15.11	15.27	15.76	16.42	18.05
QU.4	13.37	13.40	13.43	13.47	13.57	13.71	14.05
QU.5	25.09	25.16	25.25	25.33	25.59	25.93	26.77
QU.6	15.93	15.98	16.03	16.09	16.24	16.45	16.98
QU.7	16.39	16.45	16.51	16.57	16.77	17.03	17.68
QU.8	14.88	15.07	15.25	15.43	15.99	16.73	18.58
QU.9	15.34	15.48	15.62	15.77	16.19	16.76	18.18
QU.10	25.36	25.40	25.44	25.49	25.63	25.81	26.26
QU.11	23.26	23.33	23.40	23.47	23.67	23.95	24.64
QU	21.33	21.40	21.47	21.54	21.74	22.02	22.72

Policy All - Tillage adoption rate (% of cropland)

Region	Base	$5	$10	$15	$30	$50	$100
QU.1	20.80	20.04	19.71	19.32	18.43	17.86	15.45
QU.2	18.09	17.66	17.46	17.23	16.71	16.30	14.79
QU.3	14.79	14.44	14.31	14.15	13.84	13.73	12.90
QU.4	13.37	13.16	13.06	12.96	12.73	12.59	11.95
QU.5	25.09	23.89	23.14	22.35	20.29	18.23	14.06
QU.6	15.93	15.80	15.75	15.69	15.58	15.55	15.26
QU.7	16.39	15.64	15.09	14.53	12.94	11.03	8.94
QU.8	14.88	14.42	14.23	14.01	13.55	13.31	12.12
QU.9	15.34	15.09	15.09	15.07	15.18	15.66	16.20
QU.10	25.36	25.21	25.17	25.13	25.06	25.14	25.06
QU.11	23.26	22.97	22.84	22.70	22.41	22.29	21.56
QU	21.33	21.02	20.89	20.74	20.42	20.24	19.57

Total CO2 sequestered ('000 t) by region and province by technology - Policy All

Alberta

Moderate tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
AL.1	-0.074	-0.083	-0.077	-0.077	-0.105	0.033
AL.2	0.078	0.345	0.642	1.437	2.466	5.894
AL.3	-0.295	-0.248	-0.071	0.308	0.55	0.802
AL.4	-1.261	-2.086	-2.801	-5.122	-8.222	-14.972
AL.5	-0.59	-0.91	-1.125	-1.87	-3.459	-6.406
AL.6	-0.682	-1.07	-1.364	-2.325	-3.624	-6.527
AL.7	-0.684	-1.113	-1.488	-2.717	-4.503	-7.937
AL	-3.508	-5.165	-6.284	-10.366	-16.897	-29.113

No tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
AL.1	0.037	0.218	0.444	1.052	1.829	4.211
AL.2	0.684	1.77	2.902	6.124	10.355	22.671
AL.3	0.154	0.717	1.424	3.401	5.711	11.067
AL.4	0.815	2.35	4.106	9.066	15.618	33.969
AL.5	-0.59	-0.631	-0.459	-0.158	-0.902	-0.974
AL.6	-0.576	-0.723	-0.728	-0.852	-1.073	-1.073
AL.7	-0.086	0.292	0.777	2.035	3.475	8.968
AL	0.438	3.993	8.466	20.668	35.013	78.839

Perrenial - ('000 t)

Region	$5	$10	$15	$30	$50	$100
AL.1	4.076	6.658	8.779	15.591	25.41	42.186
AL.2	2.338	3.861	5.193	9.44	15.523	26.457
AL.3	12.063	19.522	25.193	43.873	72.854	104.493
AL.4	27.286	46.995	64.506	119.964	194.791	348.322
AL.5	45.79	80.249	109.891	202.675	300.856	468.609
AL.6	32.046	54.428	73.797	134.191	215.276	355.472
AL.7	27.432	45.724	62.089	115.146	190.377	327.863
AL	151.031	257.437	349.448	640.88	1015.087	1673.402

Total CO2 - ('000 t)

Region	$5	$10	$15	$30	$50	$100
AL.1	4.039	6.793	9.146	16.566	27.134	46.43
AL.2	3.1	5.976	8.737	17.001	28.344	55.022
AL.3	11.922	19.991	26.546	47.582	79.115	116.362
AL.4	26.84	47.259	65.811	123.908	202.187	367.319
AL.5	44.61	78.708	108.307	200.647	296.495	461.229
AL.6	30.788	52.635	71.705	131.014	210.579	347.872
AL.7	26.662	44.903	61.378	114.464	189.349	328.894
AL	147.961	256.265	351.63	651.182	1033.203	1723.128

Manitoba

Moderate tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
MA.1	-0.172	-0.048	-0.067	-0.056	0.89	0.809
MA.2	-0.267	-0.385	-0.558	-1.089	-1.274	-3.045
MA.3	0	0	0	0	0	0
MA.4	-0.021	-0.006	0.004	0.024	0.169	0.217
MA.5	-0.03461	4.477812	6.390212	1.615012	2.803412	-0.45699
MA.6	-0.05642	8.123258	4.694758	4.426658	5.578558	4.349658
MA	-0.55102	12.16207	10.46397	4.92067	8.16697	1.87367

No tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
MA.1	1.914	4.205	6.344	12.786	22.577	43.981
MA.2	0.485	1.169	1.76	3.549	6.581	12.574
MA.3	0.192	0.4	0.593	1.179	2.071	4.013
MA.4	0.18	0.387	0.59	1.2	2.091	4.091
MA.5	0.074	0.195	0.301	0.619	1.177	2.183
MA.6	0.013	0.079	0.128	0.282	0.646	1.135
MA	2.858	6.435	9.716	19.615	35.143	67.977

Perrenial - ('000 t)

Region	$5	$10	$15	$30	$50	$100
MA.1	5.53	7.845	11.404	21.967	25.604	61.795
MA.2	7.917	12.758	18.88	37.301	51.442	112.692
MA.3	4.869	7.685	11.21	21.665	29.504	65.142
MA.4	4.211	6.829	10.107	19.827	27.484	60.461
MA.5	7.777	13.133	19.299	37.562	54.514	115.199
MA.6	7.571	12.442	18.074	34.849	48.708	105.886
MA	37.875	60.692	88.974	173.171	237.256	521.175

Total CO2 - ('000 t)

Region	$5	$10	$15	$30	$50	$100
MA.1	7.272	12.002	17.681	34.697	49.071	106.585
MA.2	8.135	13.542	20.082	39.761	56.749	122.221
MA.3	5.061	8.085	11.803	22.844	31.575	69.155
MA.4	4.37	7.21	10.701	21.051	29.744	64.769
MA.5	7.816392	17.80581	25.99021	39.79601	58.49441	116.925
MA.6	7.527585	20.64426	22.89676	39.55766	54.93256	111.3707
MA	40.18198	79.28907	109.154	197.7067	280.566	591.0257

Total CO2 sequestered ('000 t) by region and province by technology - Policy All

Quebec

Moderate tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
QU.1	-0.043	-0.062	-0.086	-0.142	-0.182	-0.335
QU.10	-0.058	-0.08	-0.103	-0.148	-0.147	-0.243
QU.11	-0.052	-0.077	-0.105	-0.165	-0.201	-0.366
QU.2	-0.03	-0.046	-0.063	-0.103	-0.137	-0.257
QU.3	-0.027	-0.038	-0.05	-0.077	-0.091	-0.163
QU.4	-0.01	-0.014	-0.019	-0.031	-0.038	-0.071
QU.5	-0.065	-0.107	-0.15	-0.261	-0.372	-0.609
QU.6	-0.021	-0.03	-0.038	-0.056	-0.064	-0.11
QU.7	-0.057	-0.099	-0.144	-0.264	-0.411	-0.58
QU.8	-0.02	-0.03	-0.041	-0.069	-0.091	7.2089
QU.9	-0.047	-0.053	-0.062	-0.064	-0.014	0.009
QU	-0.43	-0.636	-0.861	-1.38	-1.748	4.4839

No tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
QU.1	-0.048	-0.063	-0.082	-0.121	-0.126	-0.214
QU.10	-0.018	-0.007	0.003	0.054	0.167	0.375
QU.11	-0.027	-0.03	-0.034	-0.029	0.014	0.06
QU.2	-0.008	-0.007	-0.007	0	0.019	0.05
QU.3	-0.01	-0.012	-0.016	-0.02	-0.016	-0.025
QU.4	-0.006	-0.009	-0.011	-0.013	-0.013	-0.02
QU.5	-0.007	-0.01	-0.014	-0.024	-0.035	-0.053
QU.6	-0.002	-0.003	-0.004	-0.005	-0.006	-0.009
QU.7	-0.01	-0.016	-0.026	-0.046	-0.073	-0.096
QU.8	-0.015	-0.013	-0.014	-0.005	0.031	0.084
QU.9	-0.021	-0.007	0.003	0.059	0.179	0.391
QU	-0.172	-0.177	-0.202	-0.15	0.141	0.543

Perrenial - ('000 t)

Region	$5	$10	$15	$30	$50	$100
QU.1	7.622	11.438	15.853	26.533	35.526	66.387
QU.10	9.588	14.684	20.021	32.812	42.355	78.651
QU.11	6.954	11.097	15.427	26.193	35.967	68.044
QU.2	3.848	6.094	8.491	14.444	20.264	38.522
QU.3	2.085	3.315	4.645	8.016	11.335	21.742
QU.4	2.891	4.664	6.505	11.106	15.468	29.391
QU.5	5.3	8.997	12.864	23.274	34.739	55.026
QU.6	2.877	4.642	6.448	11.1	15.548	29.611
QU.7	7.655	13.69	19.868	37.512	58.024	78.352
QU.8	2.133	3.338	4.69	7.997	11.171	21.103
QU.9	4.308	6.016	7.971	12.047	14.113	25.868
QU	55.261	87.975	122.783	211.034	294.51	512.697

Total CO2 - ('000 t)

Region	$5	$10	$15	$30	$50	$100
QU.1	7.531	11.313	15.685	26.27	35.218	65.838
QU.10	9.512	14.597	19.921	32.718	42.375	78.783
QU.11	6.875	10.99	15.288	25.999	35.78	67.738
QU.2	3.81	6.041	8.421	14.341	20.146	38.315
QU.3	2.048	3.265	4.579	7.919	11.228	21.554
QU.4	2.875	4.641	6.475	11.062	15.417	29.3
QU.5	5.228	8.88	12.7	22.989	34.332	54.364
QU.6	2.854	4.609	6.406	11.039	15.478	29.492
QU.7	7.588	13.575	19.698	37.202	57.54	77.676
QU.8	2.098	3.295	4.635	7.923	11.111	28.3959
QU.9	4.24	5.956	7.912	12.042	14.278	26.268
QU	54.659	87.162	121.72	209.504	292.903	517.7239

Ontario

Moderate tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
ON.1	-0.008	0.005	0.014	0.035	0.042	0.036
ON.10	0	0	0	0	0	0
ON.2	0	0.027	0.055	0.128	0.21	0.366
ON.3	-0.062	-0.076	-0.086	-0.14	-0.24	-0.572
ON.4	-0.016	-0.013	-0.008	-0.007	-0.013	-0.059
ON.5	0	0	0	0	0	0
ON.6	-0.059	-0.085	-0.107	-0.191	-0.323	-0.714
ON.7	0	0	0	0	0	0
ON.8	0	0	0	0	0	0
ON.9	-0.016	-0.029	-0.039	-0.079	-0.14	-0.307
ON	-0.161	-0.171	-0.171	-0.254	-0.464	-1.25

No tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
Region	5	10	15	30	50	100
ON.1	0.318	0.69	1.075	2.155	3.524	6.824
ON.10	-0.014	-0.025	-0.035	-0.067	-0.102	-0.116
ON.2	0.088	0.232	0.38	0.795	1.316	2.521
ON.3	0.058	0.271	0.498	1.102	1.814	3.323
ON.4	-0.013	0.016	0.047	0.126	0.205	0.323
ON.5	-0.079	-0.113	-0.139	-0.244	-0.413	-0.922
ON.6	-0.117	-0.145	-0.168	-0.275	-0.472	-1.115
ON.7	-0.001	-0.001	-0.002	-0.005	-0.008	-0.009
ON.8	-0.095	-0.159	-0.224	-0.44	-0.717	-0.978
ON.9	-0.065	-0.101	-0.134	-0.265	-0.481	-1.085
ON	0.08	0.665	1.298	2.882	4.666	8.766

Perrenial - ('000 t)

Region	$5	$10	$15	$30	$50	$100
ON.1	0.096	-0.279	-0.701	-1.531	-2.132	-2.781
ON.10	7.801	13.744	19.512	36.626	56.533	64.245
ON.2	1.254	1.647	1.966	3.348	5.7	13.088
ON.3	3.058	4.544	5.877	10.697	18.043	39.119
ON.4	3.633	4.96	6.191	10.882	18.445	41.252
ON.5	8.688	14.063	18.921	35.46	59.676	126.134
ON.6	6.324	9.642	12.747	23.423	39.443	84.714
ON.7	0.17	0.287	0.4	0.763	1.283	1.375
ON.8	10.819	19.086	27.243	53.778	84.143	115.629
ON.9	7.644	13.108	18.252	36.506	63.901	137.508
ON	49.487	80.802	110.408	209.952	345.035	620.283

Total CO2 - ('000 t)

Region	$5	$10	$15	$30	$50	$100
ON.1	0.406	0.416	0.388	0.659	1.434	4.079
ON.10	7.787	13.719	19.477	36.559	56.431	64.129
ON.2	1.342	1.906	2.401	4.271	7.226	15.975
ON.3	3.054	4.739	6.289	11.659	19.617	41.87
ON.4	3.604	4.963	6.23	11.001	18.637	41.516
ON.5	8.609	13.95	18.782	35.216	59.263	125.212
ON.6	6.148	9.412	12.472	22.957	38.648	82.885
ON.7	0.169	0.286	0.398	0.758	1.275	1.366
ON.8	10.724	18.927	27.019	53.338	83.426	114.651
ON.9	7.563	12.978	18.079	36.162	63.28	136.116
ON	49.406	81.296	111.535	212.58	349.237	627.799

Total CO2 sequestered ('000 t) by region and province by technology - Policy All

Saskatchewan

Moderate tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
SA.1	-0.318	-0.535	-0.736	-1.264	-1.803	-3.199
SA.2	-0.237	-0.39	-0.547	-0.935	-1.375	-2.457
SA.3	-0.151	-0.343	-0.531	-1.053	-1.71	-3.391
SA.4	-0.008	-0.023	-0.038	-0.074	-0.115	-0.185
SA.5	-0.307	-0.273	-0.223	0.174	1.318	3.89
SA.6	-0.467	-0.76	-1.041	-1.782	-2.512	-4.554
SA.7	-0.19	-0.355	-0.519	-0.99	-1.596	-3.109
SA.8	-0.367	-0.604	-0.81	-1.366	-1.887	-3.227
SA.9	-0.842	-1.384	-1.876	-3.156	-4.429	-7.773
SA	-2.887	-4.667	-6.321	-10.446	-14.109	-24.005

No tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
SA.1	1.601	3.554	5.524	11.766	20.702	42.681
SA.2	1.668	3.525	5.459	11.377	19.669	40.267
SA.3	0.35	0.399	0.485	1.083	2.128	4.521
SA.4	0.198	0.335	0.47	0.923	1.63	3.751
SA.5	4.511	9.654	14.828	30.792	53.061	108.681
SA.6	2.296	4.998	7.797	16.453	28.701	58.697
SA.7	1.808	3.745	5.762	11.826	20.153	40.93
SA.8	1.519	3.326	5.203	11.043	19.213	39.661
SA.9	1.505	3.821	6.3	14.359	26.448	56.047
SA	15.456	33.357	51.828	109.622	191.705	395.236

Perrenial - ('000 t)

Region	$5	$10	$15	$30	$50	$100
SA.1	11.772	20.115	28.087	49.465	72.178	123.2
SA.2	9.557	16.694	23.638	42.705	63.934	113.586
SA.3	35.446	63.092	90.378	167.76	261.455	483.877
SA.4	6.918	11.804	16.695	30.378	46.355	82.436
SA.5	14.195	22.164	29.545	47.202	59.939	81.202
SA.6	9.905	15.956	21.512	35.72	48.284	74.275
SA.7	3.532	5.785	7.855	13.19	18.24	29.053
SA.8	7.132	10.725	13.777	20.544	23.963	27.197
SA.9	23.279	36.964	49.152	79.209	104.661	150.884
SA	121.736	203.299	280.639	486.173	699.009	1165.71

Total CO2 - ('000 t)

Region	$5	$10	$15	$30	$50	$100
SA.1	13.055	23.134	32.875	59.967	91.077	162.682
SA.2	10.988	19.829	28.55	53.147	82.228	151.396
SA.3	35.645	63.148	90.332	167.79	261.873	485.007
SA.4	7.108	12.116	17.127	31.227	47.87	86.002
SA.5	18.399	31.545	44.15	78.168	114.318	193.773
SA.6	11.734	20.194	28.268	50.391	74.473	128.418
SA.7	5.15	9.175	13.098	24.026	36.797	66.874
SA.8	8.284	13.447	18.17	30.221	41.289	63.631
SA.9	23.942	39.401	53.576	90.412	126.68	199.158
SA	134.305	231.989	326.146	585.349	876.605	1536.941

British Columbia

Total CO2 - ('000 t)

Region	$5	$10	$15	$30	$50	$100
BC.1	0.568	1.137	1.712	3.436	5.658	7.733
BC.2	1.023	2.046	3.085	6.2	10.178	12.876
BC.3	0.237	0.472	0.717	1.449	2.322	4.531
BC.4	0.503	1.004	1.51	3.027	4.993	9.71
BC.5	0.981	1.962	2.947	5.898	9.548	15.385
BC.7	1.032	2.061	3.039	5.482	7.353	10.604
BC.8	8.027	16.052	23.776	46.915	63.251	92.175
BC	12.371	24.734	36.786	72.407	103.303	153.014

Other provinces

Total CO2 - ('000 t)

Region	$5	$10	$15	$30	$50	$100
NB.1	4.302	8.591	12.846	25.66	41.461	49.275
NF.1	0.048	0.074	0.097	0.154	0.186	0.246
NS.1	1.587	2.49	3.372	6.541	12.365	18.235
PE.1	4.285	8.488	12.535	25.102	41.729	78.068

Total CO2 sequestered ('000 t) by region and province by technology - Policy Till

Saskatchewan

Moderate tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
SA.1	-0.007	-0.006	-0.002	-0.015	-0.04	-0.07
SA.2	0.016	0.028	0.046	0.081	0.146	0.276
SA.3	0.036	-0.011	-0.06	-0.213	-0.401	-0.887
SA.4	-0.003	-0.002	-0.005	-0.023	-0.045	-0.096
SA.5	0.396	0.761	1.143	2.27	3.77	7.523
SA.6	-0.156	-0.294	-0.438	-0.897	-1.517	-3.016
SA.7	-0.143	-0.293	-0.434	-0.879	-1.461	-2.913
SA.8	-0.132	-0.265	-0.388	-0.796	-1.326	-2.654
SA.9	-0.22	-0.436	-0.644	-1.307	-2.184	-4.365
SA	-0.213	-0.518	-0.782	-1.779	-3.058	-6.202

No tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
SA.1	2.662	5.324	7.962	15.924	26.595	53.189
SA.2	2.453	4.924	7.381	14.794	24.629	49.305
SA.3	1.803	2.991	4.096	7.596	12.246	23.869
SA.4	0.27	0.548	0.801	1.499	2.43	4.765
SA.5	5.77	11.56	17.301	34.587	57.708	115.399
SA.6	3.182	6.356	9.502	19.054	31.784	63.515
SA.7	2.098	4.249	6.348	12.727	21.207	42.443
SA.8	2.05	4.093	6.153	12.289	20.507	41.03
SA.9	3.324	6.571	9.897	19.793	33.052	66.092
SA	23.612	46.616	69.441	138.263	230.158	459.607

Total CO2 - ('000 t)

Region	$5	$10	$15	$30	$50	$100
SA.1	2.655	5.318	7.96	15.909	26.555	53.119
SA.2	2.469	4.952	7.427	14.875	24.775	49.581
SA.3	1.839	2.98	4.036	7.383	11.845	22.982
SA.4	0.267	0.546	0.796	1.476	2.385	4.669
SA.5	6.166	12.321	18.444	36.857	61.478	122.922
SA.6	3.026	6.062	9.064	18.157	30.267	60.499
SA.7	1.955	3.956	5.914	11.848	19.746	39.53
SA.8	1.918	3.828	5.765	11.493	19.181	38.376
SA.9	3.104	6.135	9.253	18.486	30.868	61.727
SA	23.399	46.098	68.659	136.484	227.1	453.405

Alberta

Moderate tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
AL.1	0	-0.004	-0.008	-0.015	-0.028	-0.054
AL.2	-0.012	-0.021	-0.03	-0.063	-0.101	-0.183
AL.3	0.074	0.154	0.23	0.464	0.751	1.486
AL.4	-0.019	-0.031	-0.046	-0.085	-0.156	-0.32
AL.5	0.009	0.029	0.036	0.088	0.129	0.239
AL.6	0.081	0.168	0.249	0.507	0.836	1.661
AL.7	0.017	0.031	0.049	0.1	0.155	0.311
AL	0.15	0.326	0.48	0.996	1.586	3.14

No tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
AL.1	0.198	0.402	0.603	1.207	2.011	4.031
AL.2	0.507	1.013	1.535	3.053	5.099	10.221
AL.3	0.583	1.199	1.8	3.604	5.968	11.913
AL.4	2.965	5.932	8.885	17.83	29.684	59.372
AL.5	0.631	1.279	1.913	3.85	6.376	12.724
AL.6	0.545	1.095	1.639	3.294	5.485	10.961
AL.7	1.236	2.477	3.712	7.455	12.419	24.828
AL	6.665	13.397	20.087	40.293	67.042	134.05

Total CO2 - ('000 t)

Region	$5	$10	$15	$30	$50	$100
AL.1	0.198	0.398	0.595	1.192	1.983	3.977
AL.2	0.495	0.992	1.505	2.99	4.998	10.038
AL.3	0.657	1.353	2.03	4.068	6.719	13.399
AL.4	2.946	5.901	8.839	17.745	29.528	59.052
AL.5	0.64	1.308	1.949	3.938	6.505	12.963
AL.6	0.626	1.263	1.888	3.801	6.321	12.622
AL.7	1.253	2.508	3.761	7.555	12.574	25.139
AL	6.815	13.723	20.567	41.289	68.628	137.19

Manitoba

Moderate tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
MA.1	0.292	0.578	0.878	1.735	2.853	5.735
MA.2	0.097	0.207	0.307	0.609	1.032	2.067
MA.3	0	0	0	0	0	0
MA.4	0.065	0.129	0.195	0.384	0.643	1.292
MA.5	8.2034	7.9079	7.5687	7.5317	6.4196	4.3405
MA.6	1.9449	1.6341	1.1744	0.8479	9.291	6.1214
MA	10.6023	10.456	10.1231	11.1076	20.2386	19.5559

No tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
MA.1	2.527	5.075	7.587	15.184	25.323	50.594
MA.2	0.951	1.892	2.843	5.682	9.472	18.954
MA.3	0.255	0.503	0.747	1.472	2.443	4.872
MA.4	0.243	0.487	0.731	1.46	2.436	4.872
MA.5	0.189	0.379	0.569	1.135	1.893	3.789
MA.6	0.134	0.271	0.407	0.811	1.355	2.715
MA	4.299	8.607	12.884	25.744	42.922	85.796

Total CO2 - ('000 t)

Region	$5	$10	$15	$30	$50	$100
MA.1	2.819	5.653	8.465	16.919	28.176	56.329
MA.2	1.048	2.099	3.15	6.291	10.504	21.021
MA.3	0.255	0.503	0.747	1.472	2.443	4.872
MA.4	0.308	0.616	0.926	1.844	3.079	6.164
MA.5	8.3924	8.2869	8.1377	8.6667	8.3126	8.1295
MA.6	2.0789	1.9051	1.5814	1.6589	10.646	8.8364
MA	14.9013	19.063	23.0071	36.8516	63.1606	105.3519

Total CO2 sequestered ('000 t) by region and province by technology - Policy Till

Ontario

Moderate tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
ON.1	-0.007	-0.013	-0.018	-0.035	-0.057	-0.113
ON.10	0	0	0	0	0	0
ON.2	0.025	0.052	0.079	0.156	0.262	0.524
ON.3	0.035	0.07	0.104	0.21	0.354	0.709
ON.4	0.001	0.003	0.005	0.009	0.017	0.033
ON.5	0	0	0	0	0	0
ON.6	0.003	0.006	0.008	0.017	0.031	0.063
ON.7	0	0	0	0	0	0
ON.8	0	0	0	0	0	0
ON.9	0	0	0	-0.001	-0.002	-0.004
ON	0.057	0.118	0.178	0.356	0.605	1.212

No tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
ON.1	0.309	0.619	0.925	1.859	3.101	6.207
ON.10	0.001	0.002	0.002	0.003	0.006	0.012
ON.2	0.141	0.286	0.429	0.85	1.424	2.845
ON.3	0.37	0.748	1.119	2.243	3.747	7.491
ON.4	0.027	0.055	0.081	0.163	0.277	0.556
ON.5	0.022	0.047	0.069	0.14	0.234	0.471
ON.6	0.04	0.083	0.123	0.25	0.422	0.844
ON.7	0.001	0.001	0.001	0.001	0.001	0.002
ON.8	0.008	0.015	0.023	0.047	0.077	0.155
ON.9	0.018	0.036	0.054	0.108	0.179	0.359
ON	0.937	1.892	2.826	5.664	9.468	18.942

Total CO2 - ('000 t)

Region	$5	$10	$15	$30	$50	$100
ON.1	0.302	0.606	0.907	1.824	3.044	6.094
ON.10	0.001	0.002	0.002	0.003	0.006	0.012
ON.2	0.166	0.338	0.508	1.006	1.686	3.369
ON.3	0.405	0.818	1.223	2.453	4.101	8.2
ON.4	0.028	0.058	0.086	0.172	0.294	0.589
ON.5	0.022	0.047	0.069	0.14	0.234	0.471
ON.6	0.043	0.089	0.131	0.267	0.453	0.907
ON.7	0.001	0.001	0.001	0.001	0.001	0.002
ON.8	0.008	0.015	0.023	0.047	0.077	0.155
ON.9	0.018	0.036	0.054	0.107	0.177	0.355
ON	0.994	2.01	3.004	6.02	10.073	20.154

Quebec

Moderate tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
QU.1	0.002	0.005	0.007	0.015	0.025	0.053
QU.10	0.009	0.018	0.027	0.056	0.094	0.186
QU.11	0.007	0.014	0.019	0.039	0.065	0.129
QU.2	0.003	0.006	0.01	0.021	0.033	0.067
QU.3	0.01	0.02	0.03	0.062	0.103	0.207
QU.4	0	0.003	0.003	0.006	0.011	0.02
QU.5	0.006	0.011	0.016	0.033	0.055	0.112
QU.6	0.007	0.016	0.023	0.049	0.082	0.164
QU.7	0.005	0.01	0.016	0.035	0.057	0.117
QU.8	0.005	0.008	0.011	0.022	0.035	0.07
QU.9	0.017	0.032	0.048	0.096	0.161	0.323
QU	0.071	0.143	0.21	0.434	0.721	1.448

No tillage - ('000 t)

Region	$5	$10	$15	$30	$50	$100
QU.1	0.016	0.033	0.05	0.101	0.169	0.34
QU.10	0.035	0.072	0.108	0.214	0.357	0.715
QU.11	0.024	0.05	0.074	0.147	0.245	0.491
QU.2	0.011	0.024	0.036	0.073	0.122	0.244
QU.3	0.009	0.016	0.024	0.047	0.078	0.156
QU.4	0.002	0.004	0.006	0.014	0.022	0.046
QU.5	0	0	0	0	0	0.002
QU.6	0.001	0.003	0.004	0.009	0.013	0.026
QU.7	0	0.001	0.001	0.002	0.003	0.009
QU.8	0.024	0.047	0.071	0.142	0.238	0.475
QU.9	0.034	0.066	0.1	0.2	0.333	0.667
QU	0.156	0.316	0.474	0.949	1.58	3.171

Total CO2 - ('000 t)

Region	$5	$10	$15	$30	$50	$100
QU.1	0.018	0.038	0.057	0.116	0.194	0.393
QU.10	0.044	0.09	0.135	0.27	0.451	0.901
QU.11	0.031	0.064	0.093	0.186	0.31	0.62
QU.2	0.014	0.03	0.046	0.094	0.155	0.311
QU.3	0.019	0.036	0.054	0.109	0.181	0.363
QU.4	0.002	0.007	0.009	0.02	0.033	0.066
QU.5	0.006	0.011	0.016	0.033	0.055	0.114
QU.6	0.008	0.019	0.027	0.058	0.095	0.19
QU.7	0.005	0.011	0.017	0.037	0.06	0.126
QU.8	0.029	0.055	0.082	0.164	0.273	0.545
QU.9	0.051	0.098	0.148	0.296	0.494	0.99
QU	0.227	0.459	0.684	1.383	2.301	4.619

Total Carbon Revenues ('000 $) by by region and province technology - Policy All

ALBERTA

Moderate tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
AL.1	117.67	235.26	352.98	705.95	1175.22	2364.26
AL.2	403.51	809.69	1218.96	2461.83	4154.44	8651.8
AL.3	302.75	605.96	911.58	1834.53	3069.68	6164.75
AL.4	854.52	1700.8	2540.49	5011.32	8197.14	15719.42
AL.5	131.31	259.45	385.94	749.53	1169.81	2044.78
AL.6	138.03	272.19	403.89	778.93	1233.14	2176.28
AL.7	235.39	466.51	694.15	1351.36	2163.07	3982.74
AL	2183.18	4349.86	6507.99	12893.45	21162.5	41104.03

No tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
AL.1	265.68	533.17	803.11	1624.58	2746.41	5730.96
AL.2	796.5	1603.86	2422.78	4942.22	8448.61	18128.72
AL.3	364.31	734.29	1112.05	2283.36	3921.18	8377.86
AL.4	1476.04	2967.44	4477.52	9103.81	15500.55	32836.22
AL.5	265.62	530.83	798.81	1606.73	2640.53	5274.03
AL.6	199.09	396.7	595.01	1186.22	1966.01	3931.8
AL.7	446.68	897.14	1353.01	2743.75	4644.83	9839.02
AL	3813.92	7663.43	11562.29	23490.67	39868.12	84118.61

Perrenial - ('000 $)

Region	$5	$10	$15	$30	$50	$100
AL.1	874.42	1774.65	2693.8	5591.93	9810.85	21299.36
AL.2	649.58	1314.38	1991.54	4110.51	7155	15403.43
AL.3	2459.84	4994.28	7576.47	15713.36	27637.99	58439.92
AL.4	3960.2	8117.49	12438.89	26541.56	47977.28	111307.6
AL.5	5915.35	12175.28	18707.55	40198.64	71906.74	160588.8
AL.6	6477.81	13179.43	20059.68	41931.18	73939.55	161898.7
AL.7	4955.31	10093.54	15385.79	32363.29	57700.32	129149.3
AL	25292.51	51649.05	78853.72	166450.5	296127.7	658087.1

Total Carbon revenues - ('000 $)

Region	$5	$10	$15	$30	$50	$100
AL.1	1257.77	2543.08	3849.89	7922.46	13732.48	29394.58
AL.2	1849.59	3727.93	5633.28	11514.56	19758.05	42183.95
AL.3	3126.9	6334.53	9600.1	19831.25	34628.85	72982.53
AL.4	6290.76	12785.73	19456.9	40656.69	71674.97	159863.3
AL.5	6312.28	12965.56	19892.3	42554.9	75717.08	167907.7
AL.6	6814.93	13848.32	21058.58	43896.33	77138.7	168006.7
AL.7	5637.38	11457.19	17432.95	36458.4	64508.22	142971
AL	31289.61	63662.34	96924	202834.6	357158.4	783309.7

MANITOBA

Moderate tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
MA.1	690.55	1382.34	2073.24	4146.77	6958.58	13909.12
MA.2	225.69	450.22	672.73	1329.57	2206.56	4236.1
MA.3	0	0	0	0	0	0
MA.4	131.1	262.37	393.7	788.04	1320.67	2645.89
MA.5	13.6624	27.09475	40.227	78.13	127.02	226.69
MA.6	17.65313	34.94618	51.81907	100	162.17	282.51
MA	1078.656	2156.971	3231.716	6442.51	10775	21300.31

No tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
MA.1	932.64	1888.16	2864.31	5921.89	10359.38	22859.28
MA.2	286.65	580.15	879.09	1811.87	3171.33	6941.9
MA.3	71.76	145.58	221.26	460.13	811.45	1817
MA.4	93.11773	188.3	285.51	589.24	1026.7	2253.37
MA.5	46.37818	93.98	142.54	294.65	518.96	1138.55
MA.6	36.46651	73.58	111.14	226.87	396.26	841.43
MA	1467.012	2969.75	4503.85	9304.65	16284.08	35851.53

Perrenial - ('000 $)

Region	$5	$10	$15	$30	$50	$100
MA.1	1661.35	3345.86	5072.17	10461.24	17617.23	38853.54
MA.2	1926.33	3901.05	5943.41	12439.44	21439.48	49003.87
MA.3	743.14	1514.43	2324.52	4962.67	8663.1	20890
MA.4	549.7	1125.59	1737.56	3766.71	6660.7	16619.16
MA.5	966.41	1986.38	3072.06	6692.01	12000.94	30070.4
MA.6	1671.15	3391.01	5170.99	10845.26	18768.35	43254.48
MA	7518.08	15264.32	23320.71	49167.33	85149.8	198691.5

Total Carbon revenues - ('000 $)

Region	$5	$10	$15	$30	$50	$100
MA.1	3284.54	6616.36	10009.72	20529.9	34935.19	75621.94
MA.2	2438.67	4931.42	7495.23	15580.88	26817.37	60181.87
MA.3	814.9	1660.01	2545.78	5422.8	9474.55	22707
MA.4	773.9177	1576.26	2416.77	5143.99	9008.07	21518.42
MA.5	1026.451	2107.455	3254.827	7064.79	12646.92	31435.64
MA.6	1725.27	3499.536	5333.949	11172.13	19326.78	44378.42
MA	10063.75	20391.04	31056.28	64914.49	112208.9	255843.3

Total Carbon Revenues ('000 $) by by region and province technology - Policy All

ONTARIO

Moderate tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
ON.1	123.61	247.33	371.14	742.88	1238.54	2476.42
ON.10	0	0	0	0	0	0
ON.2	102.21	204.67	307.43	617.06	1032.49	2080.64
ON.3	74.59	149.04	223.41	445.21	737.03	1440.83
ON.4	35.36	70.74	106.17	212.42	353.7	702.84
ON.5	0	0	0	0	0	0
ON.6	25.23	50.22	74.99	147.49	239.21	439.35
ON.7	0	0	0	0	0	0
ON.8	0	0	0	0	0	0
ON.9	6.89	13.64	20.31	39.43	62.64	108.67
ON	367.89	735.64	1103.45	2204.49	3663.61	7248.75

QUEBEC

Moderate tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
QU.1	5.23	10.26	15.02	28.42	45.31	75.23
QU.10	45.31	90.38	135.23	269.09	448.58	887.5
QU.11	18.42	36.58	54.47	107.11	176.69	336.94
QU.2	5.74	11.33	16.75	32.28	52.05	92.15
QU.3	5.17	10.24	15.18	29.57	48.6	89.89
QU.4	2.83	5.61	8.33	16.34	26.83	50.42
QU.5	6.64	12.86	18.65	33.95	51.06	78.49
QU.6	12.66	25.23	37.73	74.88	124.47	244.28
QU.7	6.1	11.8	17.03	30.45	43.43	69.82
QU.8	2.64553	5.2	7.62	14.43	22.94	38.06
QU.9	11.96	23.85	35.64	71.22	121.21	244.68
QU	122.7055	243.34	361.65	707.74	1161.17	2207.46

No tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
ON.1	502.22	1008.17	1518.04	3068.48	5182.55	10695.05
ON.10	1.09	2.08	2.97	4.97	6.52	11.66
ON.2	211.75	424.92	639.6	1291.65	2178.82	4478.1
ON.3	245.59	493.32	743.38	1504.88	2543.77	5238.35
ON.4	89.85	180.02	270.5	543.34	909.51	1830.87
ON.5	45.33	90.34	135.13	267.1	436.66	822.44
ON.6	64.73	129.19	193.44	383.63	629.61	1194.84
ON.7	0.09	0.18	0.25	0.43	0.55	0.97
ON.8	10.29	19.94	28.94	51.43	71.8	117.43
ON.9	33.38	66.37	99.07	194.18	312.85	565.22
ON	1204.32	2414.53	3631.32	7310.09	12272.64	24954.93

No tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
QU.1	7.54	14.91	22.08	43	71.37	134.05
QU.10	36.15	72.43	108.8	219.11	370.9	762.45
QU.11	16.18	32.32	48.41	96.96	163.81	332.24
QU.2	4.07	8.16	12.23	24.68	42.13	87.32
QU.3	2.58	5.13	7.63	15.13	25.45	50
QU.4	2.09	4.15	6.21	12.31	20.56	40.36
QU.5	0.57	1.08	1.56	2.81	4.13	6.46
QU.6	1.66	3.32	4.96	9.87	16.45	32.5
QU.7	1	1.94	2.78	4.92	6.87	11.46
QU.8	4.429112	8.88	13.28	26.86	46.58	98.56
QU.9	10.64	21.41	32.27	66.21	116.36	253.78
QU	86.90911	173.73	260.21	521.86	884.61	1809.18

Perrenial - ('000 $)

Region	$5	$10	$15	$30	$50	$100
ON.1	188.87	373.99	554.66	1084.4	1777.3	3489.68
ON.10	2129.52	4318.48	6564.24	13641.89	23731.83	48234.91
ON.2	613.35	1230.61	1850.71	3742.87	6355.68	13450.22
ON.3	725.07	1465.01	2217.51	4579.62	8000	18107.56
ON.4	1625.31	3263.9	4914.32	9969.36	16993.78	36268.18
ON.5	2882.3	5818.33	8800.36	18096.91	31372.3	69390.39
ON.6	2257.73	4548.65	6869.56	14059.36	24233.29	52993.66
ON.7	191.36	383.88	577.52	1165.94	1969.19	3947.59
ON.8	2612.89	5308.46	8085.06	16966.15	29795.16	62738.94
ON.9	1828.02	3710.68	5643.19	11833.98	21093.07	49546.77
ON	15054.42	30421.99	46077.13	95140.48	165321.6	358167.9

Perrenial - ('000 $)

Region	$5	$10	$15	$30	$50	$100
QU.1	1694.83	3427.83	5207.97	10736.33	18343.57	39773.22
QU.10	1532.17	3115.31	4753.02	9889.77	16960.1	37549.75
QU.11	1574.06	3189.55	4849.27	10021.53	17191.25	37590.1
QU.2	713.59	1449.65	2210.44	4599.45	7956.75	17739.3
QU.3	441.58	895.46	1363.14	2827.4	4878.3	10797.31
QU.4	486.98	991.68	1515.15	3168.32	5498.6	12389.51
QU.5	1488.68	3014.32	4579.49	9471.27	16358.72	34746.09
QU.6	426.49	870.62	1333.03	2805.61	4898.4	11203.18
QU.7	1404.19	2868.72	4395.74	9320.82	16560.34	35153.32
QU.8	820.6	1653.25	2500.16	5099.53	8657.94	18308.99
QU.9	1723.65	3464.37	5225.88	10574.02	17726.7	36628.84
QU	12306.82	24940.76	37933.29	78514.05	135030.7	291879.6

Total Carbon revenues - ('000 $)

Region	$5	$10	$15	$30	$50	$100
ON.1	814.7	1629.49	2443.84	4895.76	8198.39	16661.15
ON.10	2130.61	4320.56	6567.21	13646.86	23738.35	48246.57
ON.2	927.31	1860.2	2797.74	5651.58	9566.99	20008.96
ON.3	1045.25	2107.37	3184.3	6529.71	11280.8	24786.74
ON.4	1750.52	3514.66	5290.99	10725.12	18256.99	38801.89
ON.5	2927.63	5908.67	8935.49	18364.01	31808.96	70212.83
ON.6	2347.69	4728.06	7137.99	14590.48	25102.11	54627.85
ON.7	191.45	384.06	577.77	1166.37	1969.74	3948.56
ON.8	2623.18	5328.4	8114	17017.58	29866.96	62856.37
ON.9	1868.29	3790.69	5762.57	12067.59	21468.56	50220.66
ON	16626.63	33572.16	50811.9	104655.1	181257.9	390371.6

Total Carbon revenues - ('000 $)

Region	$5	$10	$15	$30	$50	$100
QU.1	1707.6	3453	5245.07	10807.75	18460.25	39982.5
QU.10	1613.63	3278.12	4997.05	10377.97	17779.58	39199.7
QU.11	1608.66	3258.45	4952.15	10225.6	17531.75	38259.28
QU.2	723.4	1469.14	2239.42	4656.41	8050.93	17918.77
QU.3	449.33	910.83	1385.95	2872.1	4952.35	10937.2
QU.4	491.9	1001.44	1529.69	3196.97	5545.99	12480.29
QU.5	1495.89	3028.26	4599.7	9508.03	16413.91	34831.04
QU.6	440.81	899.17	1375.72	2890.36	5039.32	11479.96
QU.7	1411.29	2882.46	4415.55	9356.19	16610.64	35234.6
QU.8	827.6746	1667.33	2521.06	5140.82	8727.46	18445.61
QU.9	1746.25	3509.63	5293.79	10711.45	17964.27	37127.3
QU	12516.43	25357.83	38555.15	79743.65	137076.5	295896.3

Total Carbon Revenues ('000 $) by by region and province technology - Policy All

SASKATCHEWAN

Moderate tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
SA.1	382.9	763.66	1142.5	2269.09	3754.83	7370.19
SA.2	488.08	974.66	1459.65	2907.63	4824.01	9539.83
SA.3	175.95	350.02	522.21	1028.78	1681.75	3195.47
SA.4	24.44	48.73	72.89	144.65	239.02	470.94
SA.5	862.89	1726.14	2589.97	5191.8	8710.23	17677.69
SA.6	744.04	1485.15	2223.51	4424.81	7338.13	14472
SA.7	187.1	372.55	556.36	1098.6	1800.7	3450.18
SA.8	403.17	803.96	1202.85	2389.04	3955.66	7777.36
SA.9	399.47	793.48	1182.85	2327.28	3815.12	7295.86
SA	3668.04	7318.35	10952.79	21781.68	36119.45	71249.52

No tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
SA.1	1299.66	2618.85	3957.82	8102.9	13951.66	30101.13
SA.2	1597.54	3213.66	4849.48	9876.55	16875.51	35810.79
SA.3	1325.36	2651.21	3978.11	7974.14	13342.51	26924.21
SA.4	269.87	541.1	813.66	1640.97	2770.14	5752.53
SA.5	1630.61	3312.64	5046.56	10572.02	18733.58	43029.3
SA.6	2083.61	4194.25	6333.34	12926.4	22156.36	47312.3
SA.7	1315.17	2649.73	4004.87	8191.63	14069.04	30215.84
SA.8	941.41	1900.93	2879.57	5934.29	10299.05	22642.93
SA.9	1190.05	2403.26	3642.07	7525.88	13147.71	29255.12
SA	11653.28	23485.63	35505.48	72744.78	125345.6	271044.2

Perrenial - ('000 $)

Region	$5	$10	$15	$30	$50	$100
SA.1	1821.56	3726.55	5709.41	12060.13	21235.91	47573.98
SA.2	1227.4	2526.17	3893.42	8358.83	14992.89	34950.98
SA.3	2817.61	5911.68	9276.81	20875.08	39476.54	101195.4
SA.4	718.38	1485.63	2301.81	5014.13	9155.69	21919.57
SA.5	2180.13	4439.97	6770.66	14071.07	24088.61	50303.54
SA.6	2098.85	4258.2	6470.63	13367.5	22907.4	48413.97
SA.7	639.39	1301.31	1983	4126.06	7129.26	15339.88
SA.8	1204.77	2445.47	3713.99	7631	12889.25	26101.87
SA.9	3429.33	6995.51	10676.09	22253.88	38362.4	81347.13
SA	16137.42	33090.49	50795.82	107757.7	190238	427146.3

Total Carbon revenues - ('000 $)

Region	$5	$10	$15	$30	$50	$100
SA.1	3504.12	7109.06	10809.73	22432.12	38942.4	85045.3
SA.2	3313.02	6714.49	10202.55	21143.01	36692.41	80301.6
SA.3	4318.92	8912.91	13777.13	29878	54500.8	131315
SA.4	1012.69	2075.46	3188.36	6799.75	12164.85	28143.04
SA.5	4673.63	9478.75	14407.19	29834.89	51532.42	111010.5
SA.6	4926.5	9937.6	15027.48	30718.71	52401.89	110198.3
SA.7	2141.66	4323.59	6544.23	13416.29	22999	49005.9
SA.8	2549.35	5150.36	7796.41	15954.33	27143.96	56522.16
SA.9	5018.85	10192.25	15501.01	32107.04	55325.23	117898.1
SA	31458.74	63894.47	97254.09	202284.1	351703	769440

BRITISH COLUMBIA

Perrenial - ('000 $)

Region	$5	$10	$15	$30	$50	$100
BC.1	124.41	254.52	390.4	832.51	1498.63	3204.82
BC.2	258.53	527.29	806.52	1706.49	3043.06	6355.89
BC.3	97.2	196.76	298.82	619.6	1076.29	2373.45
BC.4	123.31	251.65	385.06	815.64	1457.71	3387.06
BC.5	464.59	938.99	1423.26	2935.04	5074.29	10732.27
BC.7	526.42	1063.11	1609.34	3291.97	5580.13	11485.35
BC.8	1906.8	3893.85	5956.65	12607.46	21829.19	46550.84
BC	3501.26	7126.17	10870.05	22808.71	39559.3	84089.68

OTHERS

Perrenial - ('000 $)

Region	$5	$10	$15	$30	$50	$100
NB	1014.35	2071.57	3171.17	6726.8	12001.36	24784.09
NF	81.61	163.47	245.55	492.8	822.99	1651.91
NS	928.28	1865.58	2811.61	5718.26	9821.65	20230.32
PE	702.86	1447.75	2232.33	4841.67	8900.81	21435.52

Total Carbon Revenues ('000 $) by by region and province technology - Policy Till

ALBERTA

Moderate tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
AL.1	118.05	236.05	354.02	707.79	1179.08	2355.47
AL.2	403.05	806.03	1208.91	2416.81	4026.12	8044.03
AL.3	304.58	609.98	916.11	1839.24	3079.7	6233.01
AL.4	860.74	1721.35	2581.81	5162.41	8600.57	17184.42
AL.5	134.32	268.84	403.37	808.34	1349.15	2709.39
AL.6	141.85	284.57	428.05	863.87	1456.17	2995.01
AL.7	238.91	477.95	717.18	1435.92	2395.93	4807.68
AL	2201.5	4404.77	6609.45	13234.38	22086.72	44329.01

No tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
AL.1	266.47	535.01	805.54	1629.18	2755.53	5712.76
AL.2	795.6	1596.29	2402.28	4850.05	8185.83	16883.7
AL.3	366.46	739.11	1117.71	2289.45	3933.98	8462.69
AL.4	1486.8	3003.26	4549.19	9366.72	16203.87	35376.52
AL.5	271.71	549.93	834.41	1726.93	3004.53	6643.86
AL.6	204.7	414.88	630.49	1310.6	2293.85	5135.19
AL.7	453.29	918.99	1397.05	2906.31	5092.05	11424.98
AL	3845.03	7757.47	11736.67	24079.24	41469.64	89639.7

Total Carbon revenues - ('000 $)

Region	$5	$10	$15	$30	$50	$100
AL.1	384.52	771.06	1159.56	2336.97	3934.61	8068.23
AL.2	1198.65	2402.32	3611.19	7266.86	12211.95	24927.73
AL.3	671.04	1349.09	2033.82	4128.69	7013.68	14695.7
AL.4	2347.54	4724.61	7131	14529.13	24804.44	52560.94
AL.5	406.03	818.77	1237.78	2535.27	4353.68	9353.25
AL.6	346.55	699.45	1058.54	2174.47	3750.02	8130.2
AL.7	692.2	1396.94	2114.23	4342.23	7487.98	16232.66
AL	6046.53	12162.24	18346.12	37313.62	63556.36	133968.7

MANITOBA

Moderate tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
MA.1	692.86	1388.6	2087.39	4200.5	7056.71	14401.88
MA.2	227.52	456.14	685.72	1380.51	2321.97	4747.47
MA.3	0	0	0	0	0	0
MA.4	131.54	263.72	396.59	798.83	1344.41	2753.36
MA.5	13.82244	27.64488	41.43731	82.77	137.81	274.61
MA.6	17.94321	35.82642	53.75962	107.38	178.7	356.06
MA	1083.686	2171.931	3264.897	6569.99	11039.6	22533.38

No tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
MA.1	935.68	1896.86	2882.99	5993.86	10496.72	23520.48
MA.2	288.99	587.38	895.31	1875.78	3315.98	7579.92
MA.3	72.07	146.61	223.57	468.91	830.07	1902.96
MA.4	93.42777	189.3	287.6	597.07	1043.92	2331.59
MA.5	46.95832	95.82	146.56	310.13	554.84	1299.1
MA.6	37.06666	75.5	115.28	242.71	431.74	999.24
MA	1474.193	2991.47	4551.31	9488.46	16673.27	37633.29

Total Carbon revenues - ('000 $)

Region	$5	$10	$15	$30	$50	$100
MA.1	1628.54	3285.46	4970.38	10194.36	17553.43	37922.36
MA.2	516.51	1043.52	1581.03	3256.29	5637.95	12327.39
MA.3	72.07	146.61	223.57	468.91	830.07	1902.96
MA.4	224.9678	453.02	684.19	1395.9	2388.33	5084.95
MA.5	60.78076	123.4649	187.9973	392.9	692.65	1573.71
MA.6	55.00987	111.3264	169.0396	350.09	610.44	1355.3
MA	2557.878	5163.401	7816.207	16058.45	27712.87	60166.67

SASKATCHEWAN

Moderate tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
SA.1	384.47	768.95	1153.51	2306.57	3843.03	7683.1
SA.2	489.36	978.84	1468.54	2938.13	4900.07	9813.15
SA.3	176.89	353.34	529.26	1053.97	1747.15	3445.87
SA.4	24.48	48.94	73.32	146.18	242.59	480.02
SA.5	866.4	1736.48	2610.44	5254.69	8832.81	18041.08
SA.6	745.61	1489.81	2232.56	4451.34	7387.82	14625.96
SA.7	187.34	373.17	557.65	1101.94	1807.45	3469.55
SA.8	404.35	807.35	1209.14	2406.12	3983.78	7834.53
SA.9	402.56	802.96	1201.32	2382.71	3927.44	7636.72
SA	3681.46	7359.84	11035.74	22041.65	36672.14	73029.98

No tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
SA.1	1304.95	2636.55	3994.4	8227.64	14246.26	31151.99
SA.2	1601.45	3227.65	4878.32	9979.03	17123.49	36714.49
SA.3	1332.63	2677.13	4032.29	8169.51	13848.53	28859.21
SA.4	270.24	543.23	818.65	1658.25	2810.26	5854.13
SA.5	1636.9	3331.7	5083.65	10685.86	18965.89	43700.77
SA.6	2088.04	4207.83	6358.94	13004.43	22310.63	47794.19
SA.7	1316.63	2654.77	4013.66	8218.67	14121.75	30367.05
SA.8	944.08	1908.6	2893.81	5971.68	10363.72	22779.67
SA.9	1199.14	2430.76	3696.05	7688.97	13477.84	30259.62
SA	11694.06	23618.22	35769.77	73604.04	127268.4	277481.1

Total Carbon revenues - ('000 $)

Region	$5	$10	$15	$30	$50	$100
SA.1	1689.42	3405.5	5147.91	10534.21	18089.29	38835.09
SA.2	2090.81	4206.49	6346.86	12917.16	22023.56	46527.64
SA.3	1509.52	3030.47	4561.55	9223.48	15595.68	32305.08

SA.4	294.72	592.17	891.97	1804.43	3052.85	6334.15
SA.5	2503.3	5068.18	7694.09	15940.55	27798.7	61741.85
SA.6	2833.65	5697.64	8591.5	17455.77	29698.45	62420.15
SA.7	1503.97	3027.94	4571.31	9320.61	15929.2	33836.6
SA.8	1348.43	2715.95	4102.95	8377.8	14347.5	30614.2
SA.9	1601.7	3233.72	4897.37	10071.68	17405.28	37896.34
SA	15375.52	30978.06	46805.51	95645.69	163940.5	350511.1

Total Carbon Revenues ('000 $) by by region and province technology - Policy Till

ONTARIO

Moderate tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
ON.1	123.61	247.15	370.64	740.79	1233.53	2461.47
ON.10	0	0	0	0	0	0
ON.2	102.32	204.92	307.77	617.88	1035.1	2096.47
ON.3	75.07	150.5	226.27	455.72	766.71	1568.81
ON.4	35.45	70.9	106.38	212.89	355.16	712
ON.5	0	0	0	0	0	0
ON.6	25.54	51.13	76.74	153.73	256.92	516.89
ON.7	0	0	0	0	0	0
ON.8	0	0	0	0	0	0
ON.9	6.98	13.93	20.9	41.78	69.57	138.92
ON	368.97	738.53	1108.7	2222.79	3716.99	7494.56

No tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
ON.1	502.19	1007.46	1515.77	3059.56	5161.42	10633.47
ON.10	1.17	2.35	3.53	7.09	11.93	24.44
ON.2	212	425.46	640.32	1293.34	2184.18	4510.39
ON.3	247.15	498.09	752.68	1539.1	2640.42	5655.25
ON.4	90.06	180.41	270.99	544.49	913.16	1854.11
ON.5	45.85	91.94	138.23	278.6	469.05	961.73
ON.6	65.52	131.47	197.82	399.4	674.31	1390.81
ON.7	0.1	0.2	0.29	0.59	1	2.05
ON.8	10.8	21.68	32.63	66	111.53	230.84
ON.9	33.77	67.74	101.87	205.39	345.87	709.8
ON	1208.61	2426.8	3654.13	7393.56	12512.87	25972.89

Total Carbon revenues - ('000 $)

Region	$5	$10	$15	$30	$50	$100
ON.1	625.8	1254.61	1886.41	3800.35	6394.95	13094.94
ON.10	1.17	2.35	3.53	7.09	11.93	24.44
ON.2	314.32	630.38	948.09	1911.22	3219.28	6606.86
ON.3	322.22	648.59	978.95	1994.82	3407.13	7224.06
ON.4	125.51	251.31	377.37	757.38	1268.32	2566.11
ON.5	45.85	91.94	138.23	278.6	469.05	961.73
ON.6	91.06	182.6	274.56	553.13	931.23	1907.7
ON.7	0.1	0.2	0.29	0.59	1	2.05
ON.8	10.8	21.68	32.63	66	111.53	230.84
ON.9	40.75	81.67	122.77	247.17	415.44	848.72
ON	1577.58	3165.33	4762.83	9616.35	16229.86	33467.45

QUEBEC

Moderate tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
QU.1	5.46	10.93	16.44	33.1	55.68	114.07
QU.10	45.64	91.36	137.16	275.21	460.56	930.42
QU.11	18.71	37.49	56.32	113.22	189.96	386.43
QU.2	5.9	11.85	17.83	35.98	60.62	124.58
QU.3	5.36	10.82	16.39	33.72	58.27	126.9
QU.4	2.88	5.78	8.67	17.43	29.25	59.5
QU.5	6.98	14.04	21.13	42.79	72.44	150.45
QU.6	12.8	25.69	38.67	78.06	131.74	271.73
QU.7	6.43	12.89	19.43	39.41	66.86	139.61
QU.8	2.765614	5.58	8.41	17.14	29.27	61.97
QU.9	12.26	24.7	37.3	76.04	129.99	276.22
QU	125.1856	251.13	377.75	762.1	1284.64	2641.88

No tillage - ('000 $)

Region	$5	$10	$15	$30	$50	$100
QU.1	7.86	15.87	24.08	49.66	86.17	189.46
QU.10	36.42	73.22	110.35	223.92	380.37	796.56
QU.11	16.43	33.12	50.02	102.26	175.37	375.36
QU.2	4.17	8.47	12.89	26.88	47.24	106.68
QU.3	2.67	5.41	8.23	17.15	30.17	68.11
QU.4	2.13	4.28	6.46	13.12	22.32	47
QU.5	0.59	1.18	1.78	3.55	5.94	11.96
QU.6	1.68	3.38	5.08	10.28	17.39	36.08
QU.7	1.05	2.11	3.16	6.38	10.71	21.82
QU.8	4.619245	9.48	14.57	31.3	56.94	137.65
QU.9	10.91	22.14	33.71	70.42	124.06	281.45
QU	88.52925	178.66	270.33	554.92	956.68	2072.13

Total Carbon revenues - ('000 $)

Region	$5	$10	$15	$30	$50	$100
QU.1	13.32	26.8	40.52	82.76	141.85	303.53
QU.10	82.06	164.58	247.51	499.13	840.93	1726.98
QU.11	35.14	70.61	106.34	215.48	365.33	761.79
QU.2	10.07	20.32	30.72	62.86	107.86	231.26
QU.3	8.03	16.23	24.62	50.87	88.44	195.01
QU.4	5.01	10.06	15.13	30.55	51.57	106.5
QU.5	7.57	15.22	22.91	46.34	78.38	162.41
QU.6	14.48	29.07	43.75	88.34	149.13	307.81
QU.7	7.48	15	22.59	45.79	77.57	161.43
QU.8	7.38486	15.06	22.98	48.44	86.21	199.62
QU.9	23.17	46.84	71.01	146.46	254.05	557.67
QU	213.7149	429.79	648.08	1317.02	2241.32	4714.01

Total CO2 sequestered by province ('000 t)-Policy All and Policy Till -Transaction Cost analysis

Policy Till

Base - Nil Transaction costs

Province	$5	$10	$15	$30	$50	$100
AL	6.815	13.723	20.567	41.289	68.628	137.19
MA	14.9013	19.063	23.0071	36.8516	63.1606	105.3519
ON	0.227	0.459	0.684	1.383	2.301	4.619
QU	0.994	2.01	3.004	6.02	10.073	20.154
SA	23.399	46.098	68.659	136.484	227.1	453.405
Canada	46.3363	81.353	115.9211	222.0276	371.2626	720.7199

Low Transaction costs ($0.24/t of CO2)

Province	$5	$10	$15	$30	$50	$100
AL	6.451	13.296	20.167	40.876	68.229	136.843
MA	4.482	9.234999	14.015	28.234	47.206	94.57399
QU	0.215	0.446	0.675	1.368	2.284	4.61
ON	0.944	1.949	2.955	5.975	10.013	20.108
SA	22.272	44.785	67.536	135.452	225.901	452.283
Canada	34.364	69.711	105.348	211.905	353.633	708.418

High Transaction costs ($5.84/t of CO2)

Province	$5	$10	$15	$30	$50	$100
AL	0	4.969	11.839	32.567	60.094	128.617
MA	0	3.562	8.292999	22.51	41.488	88.85799
QU	0	0.168	0.399	1.087	2.018	4.329
ON	0	0.731	1.756	4.761	8.811	18.887
SA	0	17.406	40.283	108.344	198.769	424.972
Canada	0	26.836	62.57	169.269	311.18	665.663

Policy All

Base - Nil Transaction costs

Province	$5	$10	$15	$30	$50	$100
AL	147.961	256.265	351.63	651.182	1033.203	1723.128
MA	40.18198	79.28907	109.154	197.7067	280.566	591.0257
QU	54.659	87.162	121.72	209.504	292.903	517.7239
ON	49.406	81.296	111.535	212.58	349.237	627.799
SA	134.305	231.989	326.146	585.349	876.605	1536.941
BC	12.371	24.734	36.786	72.407	103.303	153.014
NB.1	4.302	8.591	12.846	25.66	41.461	49.275
NF.1	0.048	0.074	0.097	0.154	0.186	0.246
NS.1	1.587	2.49	3.372	6.541	12.365	18.235
PE.1	4.285	8.488	12.535	25.102	41.729	78.068
Canada	449.106	780.3781	1085.821	1986.186	3031.558	5295.456

Low Transaction costs ($0.24/t of CO2)

Province	$5	$10	$15	$30	$50	$100
AL	142.159	251.796	347.409	645.843	1028.792	1720.85
MA	39.97898	59.64107	97.71394	191.1399	271.4408	585.7116
QU	51.349	86.634	119.411	208.204	291.35	509.216
ON	48.223	79.829	109.53	211.254	347.708	626.672
SA	129.74	227.776	321.634	581.779	873.741	1533.115
BC	11.696	24.204	36.239	71.841	102.953	152.834
NB.1	4.105	8.354	12.636	25.365	41.415	49.242
NF.1	0.047	0.073	0.096	0.153	0.187	0.246
NS.1	1.461	2.469	3.352	6.473	12.338	18.208
PE.1	4.092	8.195	12.295	24.799	41.632	78.014
Canada	432.851	848.9711	1060.316	1966.851	3011.557	5274.109

High Transaction costs ($5.84/t of CO2)

Province	$5	$10	$15	$30	$50	$100
AL	0	118.031	230.594	518.373	913.101	1659.04
MA	0	35.69098	58.64797	152.2959	240.1238	547.6206
QU	0	43.718	78.824	178.215	269.782	479.864
ON	0	42.307	73.36	168.326	308.11	595.824
SA	0	108.016	208.302	486.717	786.069	1430.83
BC	0	9.259	21.658	57.827	93.641	148.342
NB.1	0	3.201	7.522	20.253	37.413	48.474
NF.1	0	0.042	0.068	0.137	0.178	0.22
NS.1	0	1.278	2.27	5.185	10.387	17.919
PE.1	0	3.234	7.394	19.853	36.576	76.249
Canada	0	364.777	688.64	1607.182	2695.381	5004.383