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Women of Rice, Women of Millet:
a comparison of female participation in wet and dry cultivation in Tamil Nadu, South India

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Contents

Abstract

Women's status in Indian agrarian communities has been discussed in terms of cultural and agricultural practices, which affect women adversely in the northwestern wheat region and favourably in the southern rice region. The correlation is tested by the female farm labour participation (FLP) rate and the juvenile sex ratio (JSR).

I examine the correlation between women's contribution to agriculture and their status in wet paddy and dry millet regions in Tamil Nadu. Compared to northwestern India, the JSRs are more balanced and FLPs are high in both regions, yet the implications of high FLPs differ. Thanjavur shows a high female labour participation in peak seasons, but a year-round underemployment. In Kongu, the cultivation of garden crops require both male and female labour throughout the year.

The contrasts originate from varied factors such as ecology and irrigation, cropping system, the distribution of land wealth, and on- and off-farm employment opportunities.

Résumé

Le statut des femmes des communautés indiennes agraires a été discuté selon les habitudes culturelles et agricoles qui influencent les femmes défavorablement dans les régions de blé du nord-ouest et avantageusement dans les régions de riz du sud. La corrélation est déterminée par le taux de participation des femmes au travail de la terre et l'échelle de proportion juvénile entre les sexes.

Je vérifie la corrélation entre la contribution des femmes à l'agriculture dans les rizières humides et dans les terres sèches de millet du Tamil Nadu. Lorsque l'on compare ces régions à l'Inde du nord-ouest, l'échelle de proportion juvénile entre les sexes est mieux équilibrée et la participation des femmes au travail de la terre est élevée dans les deux régions. Cependant, le degré d'implication de la participation des femmes au travail de la terre diffère dans ces régions. On note un taux élevé de participation des femmes à Thanjavur durant les saisons de pointe, mais un sous-emploi toute l'année. Par contre, le défrichage des champs de moisson à Kongu nécessite la main d'œvre des hommes et des femmes toute l'année.

Les contrastes proviennent de facteurs aussi variés que l'écologie et l'irrigation, les systèmes de culture et de défrichage, la distribution de l'abondance des terres et les oppportunités d'emploi sur les femmes et en dehors de terres.

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Chapter 1

Introduction

In India, the extent to which women work in agriculture differs from one region to another, depending on the type of agriculture (broadly defined by the major grains of wheat, rice, and millet), the gender division of labour in each region, and the social classes. In this thesis, I will discuss how these factors condition the on-farm employment opportunities for women. My focus is Tamil Nadu, the southeastern state in India, where two types of agriculture, wet rice and dry millet patterns, are found.

I have chosen the Thanjavur (eastern coast of Tamil Nadu) and Kongu (western uplands of Tamil Nadu) regions for case studies of the rice and millet patterns, respectively. I will compare the regional social and agro-economic structures, focusing on the way women participate in agricultural work. My data come from the literature -- ethnographies, agro-economic studies, and censuses of Tamil Nadu -- and from my interviews conducted from late in December 1994 to early January 1995, when I visited India on the occasion of the Eighth International Conference-Seminar of Tamil Studies held in Thanjavur, Tamil Nadu. At that time, I interviewed agricultural workers in a few villages near Tiruvarur (in Thanjavur) and in Kodumanal village (in Kongu) on the gender division of labour and agricultural practices.

My first visit to Kodumanal village goes back to 1989, when I stayed with a hospitable Gounder family for two months (from the end of March to the beginning of April, and again from the end of May to the middle of July), after which I wrote my B.A. thesis on Gounder's life-cycle ceremonies. At that time in the village, Tamil archaeologists and a Japanese archaeologist were excavating ancient megaliths, dating back as far as 300 B.C. to 100 A.D. The excavation was urgent: the site was soon to be submerged under water because

of nearby dam construction. My observations during that period, together with the three-day interviews in 1995, make up of my account of agricultural work in Kodumanal.

Visiting wet Thanjavur and dry Kongu, one immediately sees the vivid contrast of landscapes. Thanjavur is very flat and the scenery is completely green -- an endless sea of paddy fields. Lotus flowers bloom on small ponds created here and there by the Northeast monsoon. In Kodumanal, a village in Kongu, thorny shrubs stand on the dry, reddish, sandy land. A couple of distinct hills -- the Shivanmalai in the south and the Chennimalai in the east -- are visible. Yet the landscape is not completely dry: there are tall palmyra palms, Veppamalam (Neem tree), Black Babul, Linden, and bright pink flowers of bougainvillea. On the *tôttams*,[1] or garden lands, crops such as tobacco and cotton are raised. In the case study chapters, I will examine how women of these two distinct regions work differently and what factors create that difference.

Chapter 2 reviews the literature on women's role in Indian agriculture. I focus on the correlations between women's participation in agriculture and their status, which is measured by the female farm labour participation rate (FLP) and the juvenile sex ratio (JSR). In an India-wide comparison, a correlation has been noted between the FLP (an indicator of the degree of women's contribution to agricultural work) and the JSR (a variable which shows if there is any discriminatory treatment of children by gender). In north India, in the wheat regions, FLPs are low. Unnaturally high JSRs suggest neglect or mistreatment of female children in the north. In south India, in the rice regions, FLPs are high and JSRs are low, which implies that women's greater employment opportunities may be positively affecting the treatment of girls. However, I show that these two variables do not directly correlate with each other in the comparison of agro-economic regions within Tamil Nadu. In the

subsequent chapters, I examine women's role in the two contrasting regions.

In Chapter 3, I will discuss the physical conditions, cropping patterns, and labour demand which underlie the wet and dry cultivation in Tamil Nadu. The details of such factors are significant for an understanding of the differences in women's on-farm employment opportunities between the two patterns.

Chapter 4 focuses on the Thanjavur district, an intensive wet-paddy district of Tamil Nadu, in order to verify the characteristics of the social structure and agricultural practices -- the framework that conditions women's participation in agricultural work.

Chapter 5 analyses the nature of dry cultivation in Kongu, how so-called garden cultivation on the well-irrigated lands developed, and how it created on-farm work opportunities for women.

Throughout these chapters, I will discuss how agricultural tasks are differently assigned, even in areas where the same main-cereal crop is cultivated.

Chapter 6 argues that the correlation found in the macro-level analysis is not applicable to my micro-level comparison: in Tamil Nadu, we cannot establish a neat correlation between FLP, JSR, chief-grain areas, and status of women. FLP varies within a same chief-grain area, either millet or rice. The way women work differs according to their social class. The interpretation of statistical data about women's life requires understanding of the socio-economic milieux in which they live.

Note 1 For transliteration of Tamil terms, especially geographic names, I will use the conventional forms throughout this thesis, and will not necessarily follow the transliteration system defined by the *Tamil Lexicon*. In citations, the spellings of Tamil words remain as the same as the authors' original transliterations.

Map 1.1 INDIA

(Source: Sopher ed 1980:18)

Map 1.2. Tamil Nadu

(Source: Baker 1984: 20)

Chapter 2

Women agricultural workers in India

Women's roles in agriculture in developing countries have been underestimated until recently. In previous agrarian studies, women were confined to the domestic sphere as housewives and mothers, "who might occasionally 'help' with agriculture" (Cloud, 1994:126). This type of view has generated national agricultural development policies that targeted only male farmers and reinforced the female role as nothing but family nurturer. With the advent of a more gender-sensitive approach, women's work and their decision-making within agriculture are now seen as much more significant and diverse than was once the case. Yet current methodologies of data collection on the subject still run into many problems when trying to assess more accurately female participation in the agricultural economy. Major difficulties of measurement stem from the complex nature of women's tasks in agriculture and in the household economy. As seen in previous census-takings, underenumeration of their contribution occurs when a male head of the household is regarded as the sole worker. This prevents us from understanding properly the dynamics of the household economy. In fact,women actively make decisions concerning agricultural work and its management, as well as fertility, nutrition and education of household members (Cloud 1994; Caldwell et al.1988). In this light, women can be seen not as dependents, but rather as "co-managers" of the household economy (Cloud 1994:143).

Decision making processes and gender roles vary from one agricultural system to another. What factors shape gender patterns of work and responsibility? In this thesis, I will examine women's farm work in two different agro-economic regions in Tamil Nadu, southeastern India. One is Thanjavur, a wet-rice producing area; the other is Kongu, where dry millet was

formerly the major crop. I will also consider if there is a correlation between women's farm labour participation and the treatment of women and female children by comparing districts of Tamil Nadu.

Female Farm Labour Participation (FLP) and the Juvenile Sex Ratio (JSR)

In the case of India, regional differences in participation in agriculture by gender have been generally presented in the dichotomous framework of North (where wheat is the main crop) *versus* South (where rice is the main crop) --for example, by Barbara Miller (1981), and Dyson and Moore (1983). These authors have argued that the gender division of labour and degree of women's participation in agriculture differ between these two cropping systems, northern and southern.

In the agrarian population, the ratio of females who work in the fields is low in the wheat areas and high in the rice areas. This is because wheat cultivation in the northern and northwestern regions of India does not require much women's labour but is carried out mostly by men using the plough. In wet rice cultivation in the south, in contrast, women's labour contribution is considered high because women engage in major tasks such as transplanting rice, weeding fields, and harvesting (which is done with men). It is assumed that the more the rural population relies on agriculture for its livelihood, the more precisely FLP can be predicted by the type of crop (wheat or rice). In these analysis, only the rural population (defined as inhabitants of villages with less than 5,000 people, according to the 1961 and 1981 censuses) is analyzed.[1]

The difference in the degree of female farm labour participation seems to affect women's economic value, and ultimately their chances for survival. The maltreatment of female children is said to be reflected in the unnaturally high masculine sex ratio in northern India. This means that the chances for survival of female children is much less than that of male children. For

example, the juvenile sex ratio (the number of male children per 100 female children under ten years old) in some parts of northwestern India, ranges from 111 to 119 male children per 100 female children, showing a strong son preference. The juvenile sex ratio, not the sex ratio of the entire population, is used in order to reduce the effects of labour migration, especially of male adults (Miller 1981). Miller, and Dyson and Moore hold that higher sex ratios (adverse to female children) are found in north Indian wheat regions (such as Punjab, Rajasthan, and Uttar Pradesh) and more balanced ratios in south Indian rice regions (Tamil Nadu, Kerala, Andhra Pradesh, and part of Karnataka).

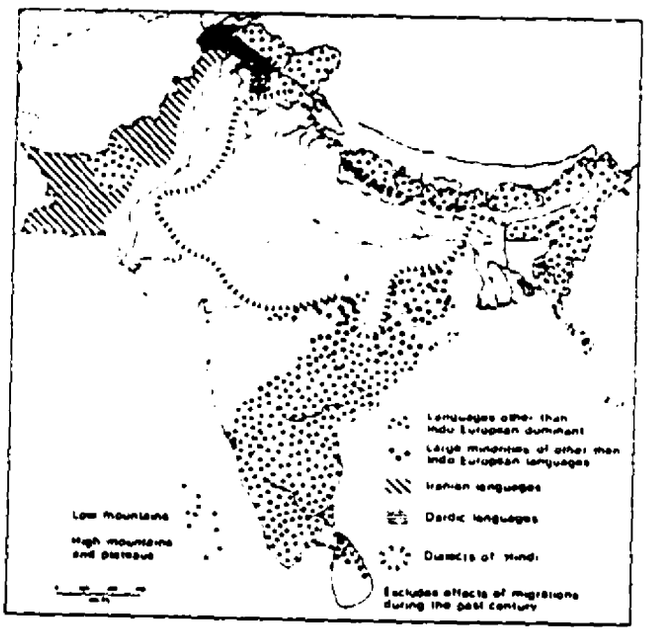
In addition to agriculture, they also suggest that cultural practices (especially marriage customs and inheritance rules) work against women in the wheat regions of northern and northwestern India. Specifically: marriage between non-kin (within the same caste but between strangers); patrilocal residence (couples live with the husband's family); village exogamy (a woman must marry someone outside her village, usually a stranger); great distance between natal and marital villages; few opportunities for a woman to visit her natal family; the custom of a woman giving birth to her first child (a time when she needs the most care and support) at the husband's home, not at her parents' home; the strong and continual pressure from the husband's family to have a son; hypergamous marriage (where the bridegroom's family is considered to be of higher social status than the bride's family); the need for a large dowry to arrange such a marriage (which is her family's economic burden and from which she derives little individual benefit since it becomes mainly her husband's and his family's property); and no rights to land inheritance for women.

In sum, in north-west India, these cultural and agricultural practices have rendered female children unwanted, neglected and endangered. Parents'

unhappiness over having a daughter instead of a son affects the daughter in a subtle way, even if it is not that they do not love their daughter. Much more love, care, and food are overtly and covertly allocated to a son and less to a daughter, to the degree that may threaten the daughter's health and life (Miller 1981; Dyson and Moore 1983).

Miller's or Dyson and Moore's approach has several problems. First, it relates patterns of agriculture and culture too broadly and too closely, identifying the north Indian pattern of cultural practices with the wheat areas, and the south Indian cultural practices with the rice areas. This identification is too loose. Miller (1981) tested the connection between cultural and agricultural factors. However, the actual geographical boundaries of cultural patterns according to various categories such as marriage customs, rules of property inheritance, languages, etc., do not neatly overlap with one another, nor with the boundaries of different agricultural systems. Northern and southern cultural systems have been discussed mostly in terms of marriage customs and kinship systems on a linguistic basis. The boundary between Indo-Aryan languages and Dravidian languages commonly used to distinguish North and South, does not apparently correspond to the boundaries of crop areas. Neither is it the same as the Vindhya-Narmada line, which Miller and Dyson and Moore used to divide the subcontinent into North and South (see map 2.1.). Moreover, the areas of highly masculine JSRs are not as extensive as the northern cultural area in terms of the Indo-Aryan languages (map 2.2.).

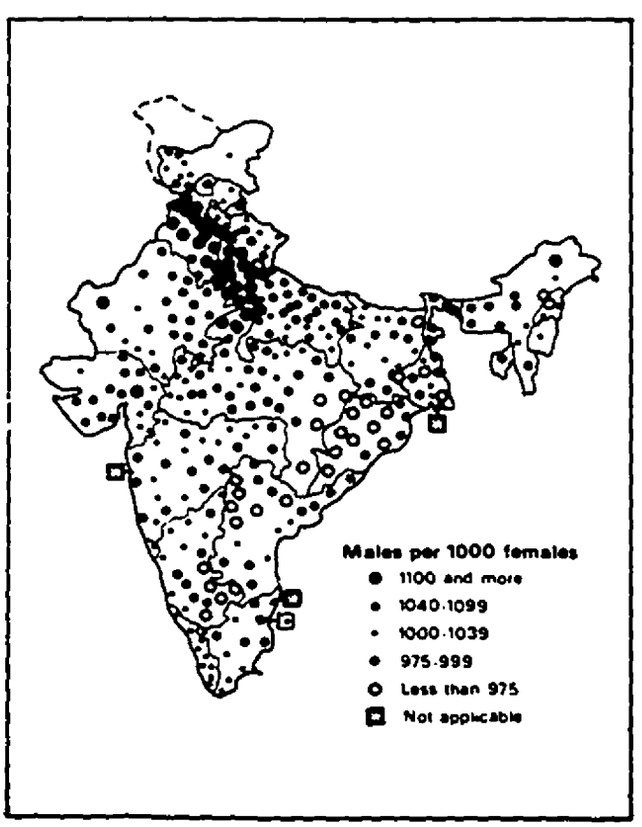
Second, the model offered by Miller (1981) and Dyson and Moore (1984) oversimplifies India's regional patterns of agriculture. As Maclachlan (1993) has argued, India's regions, (except forests, mountains and deserts), can be grouped into three main grain areas, not two: wheat in the northwestern plains; rice in the eastern Indian and coastal zones of the south; and millet in the north central to south central inlands. In addition to these three basic grain



Map 2.1.

Language distribution

(source Sopher, ed. 1980: 301)



Map 2.2.

Rural Sex Ratio, 1961 children under 10

(source. Sopher ed. 1980: 297)

areas, there are three transitional ones: "a western transitional zone" (millet and wheat); "an eastern transitional zone" (wheat and rice); and "a southern transitional zone" (millet and rice) (Maclachlan 1993:19). The northern and southern zones identified by Miller (1981) and Dyson and Moore (1983) contained these various cropping systems in each zone (Maclachlan 1993:20). An analysis of India-wide patterns of female farm work participation, then, needs to look at these agricultural regions more precisely.

Third, all these analyses, focusing on agricultural systems based on the main grains, overlook the possibility of various patterns of gender responsibility under the same crop. The cultivation of the same crop does not ensure the same pattern of sexual division of labour. For rice cultivation, labour is organized quite differently from one country to another. Comparing India, Japan, and the United States, Cloud (1994) explains:

> In both India and Japan, farms are small, but while Indian farms depend on the ox-drawn plow, and only the poorer women work in the fields, in Japan production is done predominantly by the women of the household with small, mechanized equipment. In the United States, rice production is done by men on large, highly mechanized farms (Cloud 1994: 130).

Within India itself, rice is grown differently between states. Riziculture in some eastern districts of Madhya Pradesh and interior Orissa, for example, employs the broadcasting method, while in Tamil Nadu and in Kerala, the transplanting technique is used. Miller (1981) explains that, in West Bengal, seeds are sown by broadcasting and that requires less female labour than the transplanting methods. She also explains that for half the rice cultivation in West Bengal, transplanting is employed, and it is a male task (89-90).[2] However, it is not only between states in India that the gender division of labour for rice cultivation is organized diversely. Saradamoni

(1991) found that, even within the state of Tamil Nadu, there was considerable variation in the sexual division of labour between regions and villages, indicating that it should not be treated as a single pattern on a regional basis.

These analytical problems considered, Miller's (1981) finding is still important: the higher FLP rate and more balanced JSR in south India, compared to the lower FLP and more masculine JSR in north India, might indicate the better social position of south Indian women. How can we, then, better explain these correlations between agro-economy, the FLP rate, and the JSR?

The factors that might influence a region's fertility behaviour, such as preference for having more sons and less daughters, are really complex. It is not possible to test all factors at the same time. A more viable approach is to probe economic, cultural, or agricultural influences separately. For example, Basu (1993) tested cultural influences on demographic behaviour of city dwellers in Delhi. He studied two groups of migrants, one from Tamil Nadu (south India), and another from Uttar Pradesh (north India). Both migrant groups were of similar social status (low-wage workers), each forming its own community, living in a cluster in a similar area under similar socio-economic conditions. Basu found fewer children per family and a more balanced sex ratio among the Tamils, and concluded that cultural factors significantly affect their fertility decision making. Needless to say, FLP in agriculture did not have any direct effect on these results.

On the other hand, Maclachlan's (1993) approach was to verify agro-economic influences on women's status, leaving cultural factors aside. Comparing districts, he tested correlations between agricultural and demographic data such as FLP rate, JSR, and dependency ratio. He clarified the following patterns according to the chief grain areas (16-19):

1) **The wheat pattern (the northwest plains)**: FLP is low and JSR is

masculine (more boys per girls), due to unfavourable conditions for female farm employment and high demands for male family labour. This labour pattern comes from the region's fertile soils and reliance on wheat, 'which are indicators of intensive ploughing and harrowing and strong demand for adult male labour' (ibid.17). The reason for reliance on male family labour rather than agricultural labourers is because most farmers in this region are owner-cultivators.

2) The millet pattern (central highlands from Maharashtra through Andhra Pradesh and Karnataka): FLP is high and JSR is balanced, at 100 or slightly above 100. High FLP is attributed to poor soils, which require intensive weeding and therefore increased FLP, since women are often needed for weeding. The JSR is balanced because high FLP 'reduces bias against girls' but 'does not induce bias against boys' as sons are 'still valuable workers' (ibid.18).

3) The rice pattern (eastern and southern coastal India): JSR is balanced but FLP varies, because: a) The task composition of rice cultivation is favourable for female labour, but the high population density characteristic of the rice regions tends to depress FLP because work is first assigned to men; b) In some areas, off-farm work availability for men increases the FLP rate; and c) Heavy reliance on wage labour due to high concentration of land wealth. For landholders, family labour is not important because of the abundant supply of cheap hired labour, and too many sons is a problem as it parcels out t heir lands through inheritance. Therefore they have no strong preference for sons.

Focusing on agricultural patterns, Maclachlan's correlation between FLP and JSR is more statistically sophisticated than the previous ones by Miller, and Dyson and Moore. Maclachlan's account, however, is not sufficient in several points: 1) If the FLP is depressed by population density of rice regions which is higher than in wheat or millet regions, does he find the

co-variation within the rice regions: lower FLPs in more populated regions and higher FLPs in regions of lower population density? 2) While it is true that off-farm work availability for men influences FLP, why is this factor only considered for the rice pattern, and not relevant to the other two patterns? 3) He explained the inconvenience of having too many sons among landholding households in rice areas. What about sons among the families of agricultural labourer that are numerous in the rice areas? How important is male labour for them?

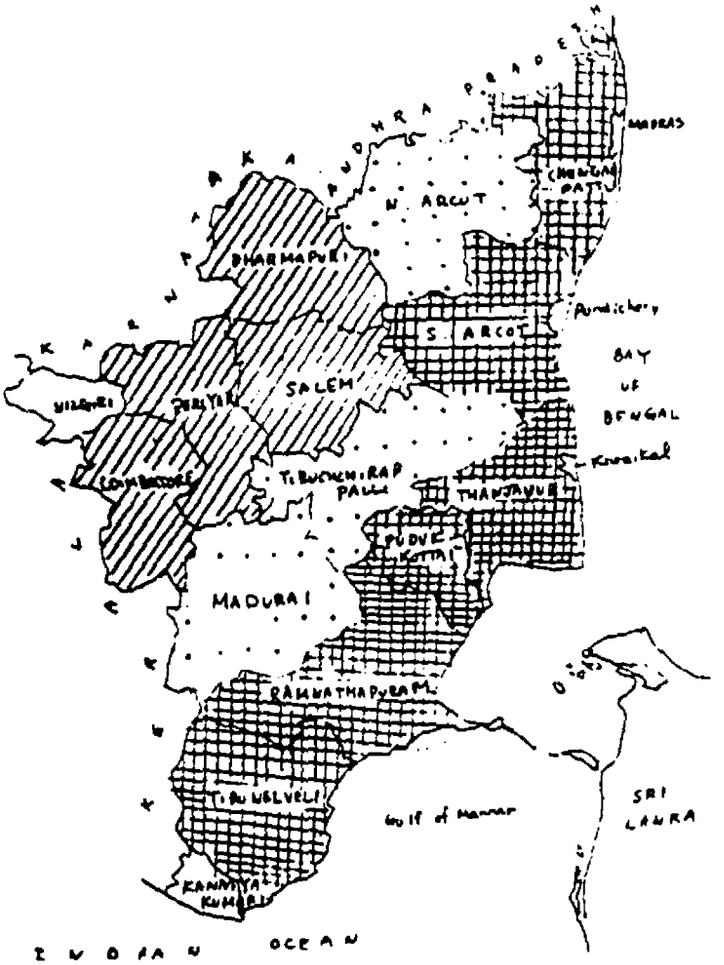
To verify factors which might influence FLP and the implications of FLP on women's status, we need to refine our analysis by comparing other aspects of these agricultural systems: differences in social class among women and variations of FLP rate under the same crop system.

Agriculture, FLP and JSR in Tamil Nadu

In Tamil Nadu, paddy is cultivated in the wet areas, contrasted with the dry areas where little paddy can be raised and coarser grains are usually grown. For the purpose of inter-district analysis within Tamil Nadu, I define wet and dry districts as follows: 1) a **wet district** is one where the percentage of the area under paddy to the total area sown exceeds thirty percent; 2) a **dry district** is one where the percentage of the area under paddy cultivation is less than fifteen percent of the total area sown and various millets (Cholam, Cumbu, Ragi, etc.) cover more than twenty percent[3]; and 3) a **mixed district** is one where, both paddy and millet are cultivated to a similar extent. In addition to these definitions, average rainfall of a wet region generally exceeds 1,000 mm per year and/or irrigation covers over 40% of the total cropped area.[4]

Two problems arise in the definition of wet and dry districts. As in the all-India inter-state analysis, there is not a pure wet region or a pure dry

Map 2.3. Rice, mixed and millet districts, Tamil Nadu, 1987/88



region at the level of inter-district analysis. Each district contains wet, dry, and mixed areas to some extent. This is also true at the village level, and even at the household level. Therefore, the operative definition is used to examine each district's overall orientation to one pattern of cultivation or another. Another problem derives from the creation of a few new districts. Between the years 1961 and 1981, some districts were created by splitting one district or combining parts of two districts together. While the halved pairs of Salem and Dharmapuri (from the former Salem district) and Coimbatore and Periyar (from Coimbatore) are less problematic, the newly created Pudukottai district from the western dry area of Thanjore and southeastern Thiruchy obscures a chronological comparison of JSR and FLP.

Comparison of JSR

I calculated each district's JSR of children under ten years of age as well as of those under fifteen years, and then its FLP, from the census in the years 1961 and 1981 (see tables 2.1. to 2.4.).[5] In the 1961 and 1981 censuses, female cultivators and female agricultural labourers are enumerated under separate categories. The same definitions of cultivators and agricultural labourers were employed in 1961 and 1981. Cultivators include both landowners and tenants, who engage in cultivation or supervision of cultivation as either 'employer', 'single worker' or 'family worker'. An agricultural labourer was defined as a person who works on somebody else's land for wages in cash or in kind, who does not supervise nor direct cultivation, and does not have any right to lease the land, nor take any risk of cultivation (*1961 Census* pt. IIB (1):9-12; *1981 Census* pt. XIIIA:1-2).

Although the definitions were the same, they were counted differently. In 1961, the major classification was between workers and non-workers. A worker was defined as a person who worked for 'more than an hour per day throughout the greater part of the working season'. The rest were considered as

Table 2.1. Juvenile Sex Ratio (# of males per 100 females), Tamil Nadu

	1961				1981			
	0-9 yrs		0-14 yrs		0-9 yrs		0-14 yrs	
	N[1]	JSR	N[2]	JSR	N[3]	JSR	N[4]	JSR
T.N. state	6,549	100.2	9,257	101.3	7,621	103.1	11,509	103.3
(Madras state 1961)								
rice districts								
Chengalupattu	437	98.4	645	100.8	542	101.5	809	102.2
Thanjavur	669	99.5	941	101.0	707	101.3	1,070	102.6
Pudukkottai	---	---	---	---	251	100.0	376	102.8
S. Arcot	719	99.8	996	100.7	902	103.0	1,326	103.2
Kanniyakumari	131	103.8	243	103.0	273	100.6	417	102.2
Tirunelveli	484	101.6	699	101.1	557	104.4	843	103.4
Ramanathapuram	482	100.1	679	101.1	598	104.1	880	103.2
mixed districts								
N. Arcot	713	99.2	982	100.9	869	100.1	1,275	101.1
Tiruchilappali	620	99.7	888	100.7	739	103.4	1,046	103.4
Madurai	583	100.4	820	102.0	689	104.0	1,041	103.8
dry crop districts								
Salem	880	100.8	1,239	101.9	502	111.7	789	109.7
Dharmapuri	---	---	---	---	483	103.1	713	103.0
Coimbatore	615	102.2	910	101.9	287	102.2	460	102.5
Periyar	---	---	---	---	299	105.2	473	103.6

Source: Census of India 1961; Census of India 1981.
* N1-N4: the total population of each category (unit: thousand)

Table 2.2. 1961 FLP (of working age 15-59 yrs), Tamil Nadu

	MLP	FLP	FCL	FAL	FAL/FLP
T.N. state	66.9	43.6	27.3	16.3	37.4
rice-districts					
Chengalupattu	62.1	35.0	14.9	20.2	57.7
Thanjavur	70.4	38.2	15.6	22.6	59.1
Pudukkottai	----	----	----	----	----
S. Arcot	78.2	45.2	22.8	17.4	49.6
Kanniyakumari	32.9	4.8	1.9	2.9	60.4
Tirunelveli	57.3	38.6	23.3	15.3	39.6
Ramanathapuram	72.1	55.4	41.5	13.8	24.9
mixed districts					
N. Arcot	71.8	51.0	33.6	17.4	34.1
Tiruchilappali	74.0	53.9	38.9	15.0	27.8
Madurai	68.3	44.1	26.2	18.0	40.8
dry-crop districts					
Salem	70.5	38.6	40.3	11.3	21.9
Dharmapuri	----	----	----	----	----
Coimbatore	54.6	32.3	20.0	12.3	38.1
Periyar	----	----	----	----	----

Source: *Census of India 1961*

MLP: # of male cultivators & agri. labourers as % of total male population

FLP: # of female cultivators & agri. labourers as % of total female population

FCL: # of female cultivators as % of total female population

FAL: # of female agri. labourers as % of total female population

FAL/FLP: # of AL/ # of AL+ CL

Table 2.3. 1981 FLP (of working age 15-59 yrs), Tamil Nadu

	MLP	FLP	FCL	FAL	FAL/FLP
T.N. state	66.0	36.4	11.2	25.2	69.2
rice-districts					
Chengalupattu	60.3	30.3	6.1	24.2	79.9
Thanjavur	67.9	28.6	3.9	24.7	86.2
Pudukkottai	71.5	28.5	15.4	13.1	45.9
S. Arcot	73.1	34.8	9.0	25.8	74.1
Kanniyakumari	39.2	3.8	0.3	3.5	91.4
Tirunelveli	59.4	35.7	11.1	24.6	69.0
Ramanathapuram	66.8	38.8	17.9	20.9	53.9
mixed districts					
N. Arcot	67.0	36.6	9.8	26.9	73.4
Tiruchilappali	70.4	40.5	14.9	25.6	63.1
Madurai	69.7	50.1	14.6	35.6	70.9
dry-crop districts					
Salem	64.1	42.3	15.8	26.5	62.7
Dharmapuri	78.5	36.8	17.5	19.2	52.2
Coimbatore	59.1	45.7	10.4	35.4	79.9
Periyar	66.3	43.7	12.9	30.8	70.6

MLP: # of male cultivators & agri. labourers as % of total male population

FLP: # of female cultivators & agri. labourers as % of total female population

FCL: # of female cultivators as % of total female population

FAL: # of female agri. labourers as % of total female population

FAL/FLP: # of AL/ # of AL+ CL

Source: Census of India 1981

Table 2.4. JSR (0-14 yrs), FLP and FAL/FLP, Tamil Nadu

	1961			1981		
	JSR	FLP	FAL/FLP	JSR	FLP	FAL/FLP
T.N. state	101.3	43.6	37.4	103.3	36.4	69.2
rice-districts						
Chengalupattu	100.8	35.0	57.7	102.2	30.3	79.9
Thanjavur	101.0	38.2	59.1	102.6	28.6	86.2
Pudukkottai	---	---	---	102.8	28.5	45.9
S. Arcot	100.7	45.2	49.6	103.2	34.8	74.1
Kanniyakumari	103.0	4.8	60.4	102.2	3.8	92.4
Tirunelveli	101.1	38.6	39.6	103.4	35.7	69.0
Ramanathapuram	101.1	55.4	24.9	103.2	38.8	53.9
mixed districts						
N. Arcot	100.9	51.0	34.1	101.1	36.6	73.4
Tiruchilappali	100.7	53.9	27.8	103.4	40.5	63.1
Madurai	102.0	44.1	40.8	103.8	50.1	70.9
dry-crop districts						
Salem	101.9	38.6	21.9	109.7	42.3	62.7
Dharmapuri	---	---	---	103.0	36.8	52.2
Coimbatore	101.9	32.3	38.1	102.5	45.7	79.9
Periyar	---	---	---	103.6	43.7	70.6

Source: Census of India 1961 and 1981

non-workers. In 1981, workers were further classified into 'main workers' and 'marginal workers'. A person who worked 183 days or more in the previous year was regarded as a main worker, and one who worked less was considered as a marginal worker. From the 1981 census, I obtained detailed data only for main workers. In my comparison, the FLP rate is the total number of female farmers from both categories (cultivators and agricultural labourers) at working age from 14 to 59 divided by the total population of women at working age, 14-59.

There are two possible results of this comparison, either, 1) a clear pattern for each agro-economic system exists, and therefore the agricultural framework of wet or dry cultivation influences FLP and JSR to some degree; or 2) within the same cultural framework (Tamil), no clear patterns in the association between FLP and JSR can be found, and consequently, the agricultural system alone cannot predict the FLP rate and/or the JSR.

The result of the comparisons is interesting. First, one might notice from the 1961 data that in all districts, the JSR is well balanced, showing no signs of gender discrimination of the type that affects mortality (Table 2.1.). The rural JSR calculated from the 1961 census of Tamil Nadu ranges from 100.7 to 102.6 for the ages between 0 to 14 years old. These figures are slightly masculine in half the districts for the 0-9 year range, while the JSR was balanced or slightly feminine in the other districts. Second, the variations of the JSR between the districts within Tamil Nadu state are not great. The 1961 census can be assumed to reflect the regional agricultural practices before the onset of recent technological changes promoted by electrification and adoption of hybrid seeds. A similar juvenile sex ratio between districts suggests that, within Tamil Nadu, the differences in agricultural systems and FLP were not directly related to JSR.

From 1961 to 1981, the JSR in all districts has increased slightly, with the state average from 100.2 (1961) to 103.1 (1981) for age 0 to 9, or from

101.3 (1981) to 103.3 (1981) for ages 0 to 14. In 1981, the district average of JSR between 0 to 14 years old range from 101.1 (North Arcot district) to 103.8 (Madurai district). Only the Salem district recorded a relatively high masculine ratio of 109.7.

Tamil Nadu's higher sex ratio in 1981, compared to 1961, might indicate either that girls' survival chances versus boys' somehow declined, or that boys' chances improved. The JSR augmented across the districts to a different degree and in one case even declined. This change does not seem to be related to the contrast between dry and wet cultivation. The 1981 data may reflect the effects of the changes in agriculture since the 1960s. However, dry and wet cultivation are still quite differently organized (see Chapter 3). From the comparison between the 1961 and 1981 censuses, there is no clear pattern which would link greater masculinization of the sex ratio to dry or wet regions. While the two most masculine sex ratios are both found in dry areas (Salem and Madurai districts), some wet districts have a slightly more masculine ratio than some dry ones (compare South Arcot with Dharmapuri and Coimbatore, for example).

More importantly, inter-district variations of JSR within Tamil Nadu are relatively trivial, compared to inter-state variations in India. In 1981, the state average JSRs under ten years old in north India record 114 in Hariyana, 113 in both Uttar Pradesh and Punjab, in contrast to 102 in Tamil Nadu (Dyson and Moore 1983:8).[6] Within Tamil Nadu, Salem district alone has a high ratio of 109.7 (111.7 for 0-9 years old). I have not found out why.

Though better balanced than in North India, the juvenile sex ratio in Tamil Nadu shows increased masculinity. How can this be explained? Some have suggested that complex socio-cultural changes have occurred in South India to the disadvantage of female children. One example often cited is the recent shift in marriage payments to dowry, even in Kerala. Caldwell *et al*'s (1988)

empirical research on the causes of demographic change in a dry area of Karnataka (in south India) points out the increasing costs of raising children, both sons and daughters, due to schooling and the prolonged period of childhood; but they mention rising costs of daughters in particular as dowry becomes more prevalent in south India. The authors also found a trend toward greater marriage distance (removing brides farther from natal kin) and decrease in marriage to close kin (usually cross-cousins). They found that the payment of dowry was not because of *Sanskritization* (the emulation of high caste customs by lower castes) as generally believed. Rather, it results from economic diversification within a peasant caste group, so that parents of a son try to find a bride from a family of a similar sociocconomic status, from a wider range outside of their kin. In non-kin marriage, the bridegroom's family can fetch more dowry compared to traditional close-kin marriage, in which the amount of dowry was minimal. Parents of daughters, on the other hand, try to marry their daughter to a boy who has an urban occupation. They do so in order that their daughter might live without doing agricultural drudgery or might not suffer from the precarious conditions of dry cultivation, where crop failure is frequent and economically devastating. Caldwell *et al.* further discovered that marriage with a husband working in town is desired, for it secures connection to urban job market in case agricultural prospects deteriorate, and it also secures better education and jobs for the children.

It is uncertain, at this time, to what extent bridewealth was once predominant in south India, as some argue (e.g.Tambiah 1973). The literature suggests that among the majority of south Indians, marriage costs were once shared on more equal terms between the bride's and bridegroom's families. If this was the case, the recent dowry or groomprice trend might make southerners less willing to have daughters.[7] Still, it is difficult to measure the impact of complex socio-cultural transformations in south India on parents' treatment

of female children. After all, the degree of masculinization of juvenile sex ratio in south India might not yet be so significant as to be considered as a result of daughter neglect and son preference. The JSRs found in Tamil Nadu with average 103 in 1981 are in fact relatively balanced ratios.[8]

It has been suggested that the slight increase in the Juvenile Sex Ratio in Tamil Nadu might be due to an improved health care system and declining infant mortality. One might expect then survival chances of males, who are biologically weaker, to be improved.[9] However, this is not clearly found in the inter-district comparison of access to health care system. In Tamil Nadu, higher sex ratios are found in a few regions where rural health care facilities are relatively poor.

Comparison of FLP

In the 1961 data, the ratio of female cultivators and agricultural labourers to the total female population at working age (i.e. the FLP rate) varies from 32 to 55 per cent (Table 2.2). Higher FLPs are found in mixed districts. The highest ratio is found in the Ramanathapuram district, which is a rice-producing district without good rainfall and irrigation, and its rice cultivation is therefore not intensive. The FLPs are similar for both rice districts and dry-crop districts. The FLP of Coimbatore is slightly lower, but its MLP (Male farm labour participation) is also much lower. In this district, plantations and orchards are an important part of its economy, and workers in this category are not considered to be cultivators or agricultural labourers. Coimbatore is also an industrial centre, and more than one quarter of the main workers are engaged in non-agricultural industries. The 32.3 % FLP of the Coimbatore district is not low compared to other districts where agriculture is the sole important economic activity, but indicates a relatively high percentage of women among the agricultural population actually participate in work in Coimbatore.

Second, the number of female agricultural labourers as percentage of total female farmers is calculated as FAL/FLP. This shows the significance of or dependency on hired agricultural labourers of each district. It is noted that ratios of hired agricultural labourers are much higher (about 50% and above) in three districts of intensive rice cultivation (Chengalpattu, Thanjavur, and South Arcot). Female cultivators are more important in the rest of the districts. Many women work on their family lands or leased lands in Salem, Ramanathapuram and Tiruchchilappalli districts. Neither FLPs nor the ratios of agricultural labourers seem to be correlated to the variations of JSRs.

The 1981 data show that the FLP is higher in dry-crop districts. The ratios of agricultural labourers (FAL/FLP) are the highest in Thanjavur (86.2 per cent), but the percentage of agricultural labourers is uniformly high in most of the districts. Yet no correlation seems to emerge between those figures and the JSRs. If compared to 1961 data, the state average of FLP decreased from 43.6 % to 36.4 %, while that of FAL/FLP augmented from 37.4 % to 69 %. In 1961, there is not a great variation between districts, but in 1981, the FLPs are slightly lower in intensive paddy districts.

The differences are great, but not because of the agricultural transformations which occurred over the two decades. Apparently, it is because different concepts of worker were used in the two censuses. As previously explained, workers were classified as either main or marginal in 1981. According to the definition given, a person needs to work at least 183 days in order to be enumerated as a main worker. 183 days are about half the year, but if six working days are calculated as one week, this is about 7.6 months per year. Thus, it is highly possible that many women who actually worked in fields were excluded from the figure. Another problem is that female cultivator was poorly defined for the census enumeration. Reading the operative directions

given for the census takers, one finds no example as to how women cultivators should be counted. The judgment is entirely up to census enumerators. (The definition of housewives who should be considered as non-workers was clear in both censuses; *1961 Census* pt. IIB(1):9-12; *1981 Census* pt. XIIIA:1-2). Perhaps most of the women who were counted as cultivators were widows. On the other hand, the definition of worker employed in the 1961 census was someone who worked at least one hour per day 'throughout the greater part of the working season'. This is much more ambiguous as compared to the 1981 definition of a main worker. It is not clear how long a period *the working season* encompasses. The judgment to determine if a woman is considered to be a worker or not was also left to census takers in the 1961 census. Yet the ambiguity of the working period made it possible to count women agricultural workers, of the cultivator category in particular, better than in the 1981 census (though underenumeration of working women exists for the 1961 census as well). Therefore I believe that decline of female farm labour participation is rather artificial, produced by the change in definition, and that the decline did not actually occur on such a scale as implied in the census.

From the comparisons within Tamil Nadu arises no clear pattern linking FLP rate with agro-economic systems (paddy-oriented, millet-oriented, or paddy and millet mixed). Second, no distinct correlation between FLP and JSR emerges. Thus, it seems that the two-decade changes in the JSR are not directly related to the agricultural system. The all-India analysis which found the lesser degree of female contribution to farm income in the northern wheat areas leading to a more masculine sex ratio does not seem to hold in the state-level analysis of Tamil Nadu.

This result compels us to reconsider the assumption that the FLP rate is uniform in the same crop system. The conditions which increase or decrease

female participation in agriculture need to be more precisely examined. The fact that variable degrees of women's involvement are found in the rice areas provides a good example of this. Maclachlan's assumption (1993:19) that the rice pattern is an exception because FLP varies is probably not correct. The case of the rice pattern may instead suggest how various factors, ranging from agronomic to socio-structural, affect the scope for female on-farm employment in other cropping systems as well.

The point that FLP and JSR seem to be unrelated in the comparison within Tamil Nadu also calls for reflection. It is possible that FLP does influence the JSR, but in a more subtle and complex way. The content of FLP needs to be more focused in order to examine how it might influence women's position in the households and the community. Even if the FLP looks statistically similar, how women actually work, which women work, and in what way their economic contribution affects their status, all differ between and within regions. In some cases, working in the field is unfavourable for a woman's status. At the same time, many studies have showed that working women have a stronger say in household decision making in general and in the intra-household allocation of food in particular (Walker and Ryan 1990:296; Mencher 1988, 1989?; and Mencher and Saradamoni 1982).

Furthermore, although a strong indicator of different treatment of children by gender, the JSR does not indicate gender status *per se*. There is no single indicator to measure multi-faceted gender status. A low JSR does not automatically assure high status of women. In my opinion, there is a tendency among social scientists to portray south Indian women in too rosy a picture in contrast to 'endangered' north Indian women. It is often forgotten that patriarchal principles similar to that of north India are working in south Indian society. Similarly, it is not only in the south but also in the north that the same philosophy, which praises women as a powerful source of energy

(*Sakti*) in the universe, is cherished among the people.

In summary, the agro-economic structure of rural India is worth careful examination for discussing female farm labour participation and its influence on women's status as a whole. Agriculture continues to be the most important economic activity for the majority of people in rural India. Employment opportunities and the mobility they would provide are still very limited, for women, in particular. More detailed data on women's agricultural work and their economic contribution are needed to allow more meaningful comparisons.

Factors influencing FLP

What factors, then, regulate the gender responsibility for agricultural work in a certain way in a certain region? Mencher (1988) and Cloud (1994) point out several factors which are considered to affect the degree of women's participation in agricultural work: cropping systems; agronomic practices and technological adoption; landholding patterns; market orientation of agricultural production; employment opportunities for men and women in the rest of the economy; the social relations of production; and the question of prestige (Cloud 1994:130-132; Mencher 1988:107). I will explain the implications of these factors as follows.

Cropping systems: As already discussed, gender roles are partly shaped by the labour demands which are created by the various crops. The choice of crops to be grown are constrained first of all by the environment, including climatic and topographic features of a region such as rainfall, temperature, sunshine, quality of soil, and also availability of irrigation. Gough (1981) argued that in south India, rice is planted wherever water is available, because rice can produce higher yields and more nutrition than millet and therefore can support a larger population (Gough 1981:67). Meanwhile, millet is the main crop in dry areas because not enough water is available to raise

rice. Cultivation of rice or millet generates its own form of labour demand, which influences the assignment of tasks according to gender.

One thing needs to be emphasized here: it is not the main crop itself but the cropping mix that creates a given region's demand for agricultural labour. Seasonal rhythms in farm work are formed according to the cropping pattern, with each crop requiring different intensities of care at different times. The cropping mix should also be seen to include cattle or poultry raising.

Market orientation: Climate and topographic features have not been the sole determinants of main crops. Cash crops increasingly gained value as 1) transport improved; 2) prices rose; and 3) more lands were irrigated. As the price ratio of cotton, tobacco and various oilseeds vis-à-vis coarse grains rose, farmers grew more cash crops to increase their income. Irrigation facilities necessary for raising these crops have expanded along with the electrification of Indian villages, which has accelerated since the 1970s. Many electric pump-sets were built and irrigated the fields. In the drought-prone dry area of southern Karnataka (a millet area), cash crops are now raised as a means of diversifying the agricultural economy (Epstein 1962; Caldwell *et al.* 1988). Similarly, the dry region of Kongu has also seen an increase in cash crops, such as tobacco and cotton (Ramaswami 1965; Baker 1984).

In Thanjavur, a wet rice area, the cultivation of rice was intensified, rising to 81.6 % of Thanjavur's gross cultivated field acreage in 1951 (Gough 1981:10;71). It seems that the combination of crops in Thanjavur used to be more diverse than it was in the 1950s, and more lands were covered by forest, although rice has always been the most important crop. The intensification of rice cultivation in Thanjavur occurred due to several factors: 1) rice itself gained in monetary value since the nineteenth century; 2) Thanjavur's rice was exported, first to plantations in Southeast Asian countries under the colonial regime, then to rice-deficit states within India; and 3) as a response to the

grow-more-food campaign during the World War II (Gough 1981:11-14).

Today the proportion of rice production in Thanjavur's agriculture, which was once almost mono-crop oriented, is gradually decreasing again. In the agricultural year 1987-88, the percentage of area under paddy to the total sown dropped to 62% (The Government of Tamil Nadu 1993). The decrease in paddy resulted from the increase in other cash crops: gingelly [sesame], groundnut and sugarcane.

Some scholars have argued that an increase in market-oriented crops tends to deprive women of farm work (cf. Boserup 1970), and that the more a region's agriculture is subsistence oriented, the more women participate in agricultural work. Yet this does not seem to be always the case. On the contrary, in Tamil Nadu, some cash crops have actually increased female (and also male) labour demand. For example, cotton, an important source of cash income in the Kongu region, is a labour-intensive crop, and mostly women pick and card cotton gins. The example of cotton production indicates that female labour participation is not necessarily reduced by an increased market orientation. Rather, female on-farm employment may be reduced by a combination of other factors.

Levels of technology: Levels of technology also influence the gender division of labour. Boserup suggested that women participate more in agricultural work in places where simple tools such as hoes are utilized (1970). later researchers found that "there is a *U* shaped curve with higher involvement of women in low and high technology systems, and lower involvement of women in field crop production dependent on animal traction" (Cloud 1994: 131). However, this is not absolute. Saradamoni (1991) extensively examined rice cultivating areas in India, and discovered that there is no fixed gender division of labour, except that ploughing with cattle is always done by men.

This implies that, even if people employ a technology depending on animal traction for field cultivation, it does not automatically mean a low rate of female farm work participation. The assumption that low female participation in the wheat area in northwestern India is due to the use of plough is misleading. True, work using animal traction tends to be assigned to men. But the use of plough is not the only reason, as women's involvement in cultivation is high in both the dry and wet areas in south India where the plough is also employed. The low female participation in agriculture in northwestern India could be because wheat does not require as much work --especially weeding (Maclachlan 1993)-- as rice. Other than ploughing which is carried out by men, relatively little other work is needed until harvest. Perhaps for this reason there is less work available for women.

With the introduction of hybrid crops, new implements and chemicals were also widely adopted. It is often said that the mechanization and the use of herbicide might decrease female agricultural labour opportunities in the current social context of Indian agriculture (Mencher 1988:99). First, if herbicide displaces hand weeding, it may decrease already limited sources for income of agricultural labourers, both men and women. There are several methods of weeding (hand-weeding, weeding by hoe, or intercultivation by plough), depending on the requirement of a particular crop and how the crop is cultivated (sown mixed or raised as a pure crop). Hand-weeding is often done by women. As women are usually paid little, hand-weeding may cost less than herbicides. However, the use of herbicide has become increasingly popular among farmers. Similarly, the introduction of transplanters, winnowers and threshers will decrease labour demand for hired workers. Such mechanization may affect incomes of hired female labourers in particular, as transplanting and winnowing are female labour intensive tasks.

Mechanization itself may not necessarily deprive women of employment.

However, in the Indian social context, operating such machines is limited to men, and alternative tasks for women participating in weeding may be difficult to find.

Landholding patterns: Population density, availability of land, and concentration of land wealth, also affect female participation in farm work. With low population density and an abundance of productive land, rights to use land are more evenly available to all members of the society. Women in such systems have more agricultural responsibilities, and also have rights to land use. When population density is high and land is scarce, women might be squeezed out of the agricultural labour market and deprived of rights to land. Or, if off-farm work is available for the men, the women might take over the agricultural responsibilities on their family farms; they also might be hired out as agricultural labourers. Again, this is not simple. If land is distributed unevenly, where a few people hold large amount of lands while the majority are landless (which is the case of Thanjavur, a wet-rice area), whether women work in the fields or not depends largely on one's landholding situation. Women of landless households and smallholders work more in the fields than those of big landholding households.

In areas of extremely uneven concentration of land wealth, it is the landless agricultural labourers and marginal holders, both men and women, who work in the fields for long hours. In deltaic rice-growing region of Tamil Nadu which developed in earlier days as core regions, population density has become higher, distribution of land is less equal, and a steep hierarchy of social classes has developed (Stein 1980; Gough 1981; Bouton 1985; and Ludden 1985[1989]). In wet areas of Tamil Nadu, hired labour provides the majority of labour input.

The social relations of production are particularly relevant to the case of India, where caste and class have crucial effects in labour allocation. In

the current stratified society, tasks and responsibilities in farming differ depending on one's class and caste. Gita Sen (1985) found higher proportions of paid women labourers in Indian regions in which landholding patterns show more unequal distribution. This model fits the situation of Thanjavur, where women's tasks in rice cultivations are carried out mostly by hired female agricultural labourers. Any analysis of women's farm labour participation in India is not sufficient without asking which women, whether those of big/small landowning or landless households, are being studied. As Saradamoni (1991) emphasized, women in the agricultural sector are not homogeneous.

Prestige: This is related to social class structure. In some areas, certain kinds of work, such as ploughing and transplanting have come to be associated with the ex-Untouchables. In order to avoid undesirable reputations, some caste Hindus try to abstain from such operations. There is also a tendency to withdraw women form agricultural work in the field, especially in somebody else's field, when a household has just attained an economic situation which allows it at all. Papanek (1989?) discusses that a woman withdrawn is then pressured to use more time in prestige-production work within the household, that is, to do house-maintenance work in order that other family members can concentrate more on their work and children can get better educated (87-116).

A note on the interpretation of the gender division of labour

Maclachlan (1983, 1993) and others (Walker and Ryan 1990:139-140) consider that the gender division of labour in India's agricultural communities is a 'cultural amplification of sex differences in body mass and composition' (Maclachlan 1993:6). Men do heavy manual tasks and use animal traction power.

> if there is any work to do and men available to do it, they do it, which means that demand for female labour tends to be a function of the

> deficit between the supply of male labour and the prevailing demand (Maclachlan 1993:6).

Second, Maclachlan, Walker and Ryan also explain that men are employed first as *the* full-time breadwinners. This may be seen as "a practice that frees women for work in the home and one that enhances the productivity and familial power of men" (Maclachlan 1993:7). The explanation that the labour division by gender is a result of male strength and of task allocation first to men, is prevalent in many development theories. This may partially describe the situation of agricultural labour market for men and women in India, yet the rationalization is difficult to support for the following reasons.

First, a rationale provided by the locals for segregating work by gender, does not always reflect actual physical demand of each task. In a south Indian village (Karnataka), Maclachlan (1983) was told that *kashta* work --difficult work, or physically demanding work, but also denoting a more complicated, skilled task-- is done by the men. The villagers also explained that women do the women's work, and men do the men's, that is *dharma*, which is a Hindu concept of "duty" employed widely.

In another case, Mencher, who has examined intensively South Asian women's role in rice cultivation seeking reasons for the differences in task allocation, noticed:

> Wherever a task is done by women it is considered easy, and wherever it is done by males it is considered difficult (Mencher 1988:104).

In a village in the Kongu region, I received a similar response. Asked why certain tasks were only done by men or women, both male and female owner-cultivators (the Gounders) and the agricultural labourers (Harijans, or formerly known as Untouchables) explained to me: "If a task is a little bit *perusa* [Tml. big], or somehow *kashtam* [Skt. difficult], then it is done by the males" (from interviews in January, 1995).

However, the fact is that those women also do difficult and or physically demanding tasks. The threshing of rice, for example:

> In much of Kerala, where threshing is only done manually, women do all the threshing, beating the straw for hours on end. In Tamil Nadu, where threshing is often carried out with bullocks walking in a circle around a pile of paddy, it is men's work. This is justified by the argument that only men have the strength to control animals; it is also true, however, that driving the bullocks involves less expenditure of energy than hand threshing. When threshing was done manually in Tamil Nadu, women helped the men by bending to pick up the bundles and handing them to the men to beat against a stone. Interestingly, in Tamil Nadu it is said that women are not strong enough to beat the bundles, but Kerala women manage to do it (Mencher 1988:104, my emphasis).

As Mencher (1988) suggests, the women themselves seem to consider that their work is less difficult, even if the actual task is a difficult one.

Second, the principle that heavy tasks are allocated first to men, is not always true. For example, major tasks in rice cultivation such as transplanting and hand weeding continue to be carried out by women despite abundance of male labourers. Another example is cotton picking which involves significant women's labour, both that of female owner-cultivators and landless agricultural labourers. The agricultural labourers in Kongu explained to me that their men might also pick cotton, but usually the men did not do it. The male agricultural labourers considered it was not worth working because the wage was too low. Therefore, it is not only the principle of task allocation first to men as Maclachlan argued, that defines the sexual division of labour and degree of female labour participation in agricultural work.[10]

Third, this rationalization that heavier tasks are reserved for men, may well reinforce already existing gender inequalities in wages and in access to

resources. The different tasks by sex may not actually form a hierarchy, and could be simply different and complementary with each other. However, in south India, people do rank farm operations, from supervisory work to drudgery, and further by gender between 'heavier and/or skilled' tasks for men and 'light' tasks for women. Wage discrimination is very much supported by the ideological justification of gender segregation. We need, then, to be more sensitive to these factors when interpreting the locals' rationale of the gender division of labour.

Walker and Ryan (1990) illustrated wage differences between the sexes across India's semi-arid regions. The case of one of the villages studied is worth noting. In a Maharashtrian village (in the Bombay Deccan), wages for female agricultural labourers were raised because of the increased demand for off-farm employment provided by 'the Employment Guarantee Scheme and other government-financed local projects'. The state's Employment Guarantee Scheme paid women the same wages as men, and this fact had a major impact on attaining wage parity in the village (129-131).

Comparison of FLP in wet and dry cultivation in Tamil Nadu

Although the FLP rate is high both in wet and dry regions in Tamil Nadu, the structure of gender participation in agriculture differs significantly from one region to another. Differences include the kinds of farm work available for men and women, the proportion of family and hired labour, intensity and seasonal fluctuation of labour demand, and the degree of under-employment. It is a salient task to examine the wet and dry cultivation in Tamil Nadu to clarify 1) the factors which influence women's participation in farm labour; 2) the degree of their contribution which is often underestimated and uncounted; and 3) how their labour participation contributes to their overall well-being in the current socioeconomic conditions.

The goal of the comparison between dry and wet areas in Tamil Nadu in the subsequent chapters, then, is to understand the different forms of farm work available to women, and to compare the importance of women's contribution to agriculture between the dry and wet areas. My goal is also to explore how these differences are created, by comparing factors such as ecology and irrigation, cropping system and agronomic practices, the distribution of land wealth, the division of labour by gender and class, and on- and off-farm employment opportunities for both men and women. This is an attempt to understand which courses of life are open to agrarian Tamil women, and what choices are available in that agrarian social framework in terms of agricultural work.

Note

1 I will draw data from the 1961 and 1981 censuses for the comparison of FLPs and JSRs.

2 It is in East Bengal, or today's Bangladesh, that rice is grown more commonly by broadcasting (Sen 1985).

3 The state average of the area under paddy is 29.1%, the area under various millets is 17%, in the year 1987/88.

4 It should also be noted that each year, the acreage of a particular crop changes significantly, depending on the amount of rain.

5 The 1991 census is not available yet.

6 The JSRs in other southern states are also low: 97 in Kerala; 103 in Andhra Pradesh; and 104 in Karnataka (Dyson and Moore 1983:8).

7 Mencher (1978) explains that in Chingleput, family land often consists of a daughter's share which might be kept as a marriage payment, either dowry or bridewealth (99-103). Bossen (1988) discusses the recent uses of groomprice in India, which may diminish women's inheritance rights (140-141).

8 One study of sex ratios at birth from 76 countries shows a range from 104 to 107 (Visaria 1967b:113, cited in Miller 1981:40). The sex ratio at birth, however, is different from the JSR, which is the sex ratio of children under ten years.

9 It seems that the sex ratio is the highest at the prenatal stage, lower at birth, and further decreases in later stages. This, however, is still not definitely proven (Miller 1981:38-48).

10 A factor that needs to be considered here is that in the area where this village is located, alternative sources of cash income as, *coolie* workers in the textile industry are available for the men in a rapidly expanding nearby town, Tiruppur.

Chapter 3

Dry and wet cultivation in south India

Agricultural practices in south India are broadly grouped into wet and dry cultivation, marked by main crops of paddy (wet) and various millets (dry). Choices of crops are constrained first by environmental factors such as water availability (rainfall pattern and irrigation system), soil quality (composition, moisture and drainage), sunshine and temperature. Farmers make decisions on cropping in a way that may optimize available resources. They select better suited kinds of crops, rotations, methods for retaining soil moisture and nutrients, which are the strategies to reduce the risk of insect attack, increase yields, and spread labour demand and use of available implements over the year. Decisions are also made based on their perceptions of risks of price and crop failure, and the return per input. As a result, distinct patterns of wet and dry cultivation in south India have developed, in terms of crops grown, necessary operations for them, and the way labour is organized. In this chapter, I will discuss Tamil Nadu's environment (climate, soils, and irrigation), and the characteristics of dry and wet cultivation. This will set the context for the case studies in later chapters on regional agro-economic conditions.

Climate: Average annual rainfall in Tamil Nadu is 945 mm. About eighty percent of the annual rainfall comes from two monsoons. The southwest (SW) monsoon, coming around the June to September, is brought by the wind from southwest, which contains moisture evaporated from the Arabian Sea. The wind crashes against the ranges called the Western Ghats, and rain falls heavily in its western side. Thus the Western Ghats separates south India into the western narrow tracts of humid tropics (Kerala) and the eastern side of semi-arid tropics (Tamil Nadu). The western portion of Tamil Nadu, located just east of

the Western Ghats, benefits from a moderate precipitation of the SW monsoon. By the time the air reaches the eastern coast of Tamil Nadu, however, it dries up and brings little rain. In turn, the northeast (NE) monsoon brings rain from the Indian Ocean to eastern coastal regions around October to December. The tanks [open-air reservoir] and rivers in the eastern regions in Tamil Nadu are mostly filled by the NE monsoon. During December and February the temperature drops, then it gradually rises again up to the highest in April to May. It becomes windy in June. The northeastern coastal districts (Chengalpattu, South Arcot, and Thanjavur) and the southern tip of Indian subcontinent (Kanniyakumari) receive more rain (over 1,150 mm/ year) than other districts (except Nilgiri, a hilly district located at the W.Ghats, receiving 1,921 mm of rain per year). Deltaic regions of Tamil Nadu are located in the zone of better rainfall. In this area, irrigation systems are also more developed.

Irrigation: In Tamil Nadu, there are only two perennial rivers, the Kaveri and the Tambraparni. Originating in the Western Ghats, the Kaveri river flows along mild slope eastwards from Mysore, Salem, Tiruchchirappalli through eastern coast of Thanjavur where it forms the famous Kaveri delta. The Tambraparni river in Tirunelveli, a southern region of Tamil Nadu, flows similarly eastwards into the Indian Ocean. Along these rivers, numerous canals, and river divergent systems with permanent stone dams called *anicut*, were developed as early as the first century A.D. These canals and dams were gradually built and improved over a long period of time (Ludden 1979). Other irrigation facilities found in south India are tanks and wells. A tank is an open-air reservoir built of earth or stones, often linked together with other tanks. Water is usually supplied by rain, and drawn to fields through canals from a tank. Also rainfed, wells are important in the areas where river irrigation is poor. Well irrigation first rapidly increased in the nineteenth century. This was related to the growth of commercial crop cultivation such as

cotton and tobacco (Ludden 1979:353). A more recent increase in well construction is due to electrification and the spread of electrified pump-sets. The increased well-irrigation promoted cultivation of garden crops, such as cotton, tobacco, oilseeds, and to a lesser extent, rice.

Since the nineteenth century, large and medium irrigation facilities were repaired and newly constructed, first by the British and then by the Indian government. One example is the Mettur dam, which was built in Salem (the upper Kaveri) in the 1930s to regulate the flow of the Kaveri river. Consequently the rice transplanting in Thanjavur is subject to the amount and the date of the discharge of water from the dam. During the dry period from early March to late June, water is conserved at the Mettur reservoir and the Kaveri river dries up in Thanjavur (M.Srinivasan 1978:6-12; Gough 1981:5).

Sources of irrigation (canals, tanks, wells, and others) and the percentage of area covered by irrigation, vary from district to district. In the agricultural year 1970-71, Thanjavur district had the highest percentage of net irrigated acres to net acres sown (83 %), of which about 90 % was irrigated by canals. The second most irrigated district was Chingleput (74 %), and about 80 % of irrigation was by means of tanks. In the South Arcot and North Arcot districts irrigated about 50% of the net area sown, tanks and wells had similar importance (also canals in South Arcot). In other districts, approximately 30 % of the total area sown was irrigated with various irrigation sources (Ludden 1979:348, originally from *Season and Crop Report, 1970/1*, Tamil Nadu Director of Statistics, Madras, 1973). In Tamil Nadu, a district with better rainfall and irrigation systems traditionally had a greater percentage of area under paddy cultivation (except Ramanathapuram district: Table 3.1).

Table 3.1. Rainfall, irrigation and rice cultivation, Tamil Nadu, 1951

districts	*R*1*	*GI*2*	*GP*3*
Thanjavur	1.168	79.8	81.6
Chengalupattu	1.286	64.9	65.2
S. Arcot	1.189	47.2	35.7
N. Arcot	971	42.6	32.4
Tirunelveli	941	38.8	24.1
Madurai	868	43.5	21.9
Tiruchilapalli	843	33.8	30.7
Salem	842	21.2	11.6
Ramanathapuram	819	40.6	47.0
Coimbatore	711	32.4	5.8

1) R: average rainfall (mm) between 1900-1950

2) GI: Gross irrigated acreage as % of gross sown acreage

3) GP: Gross paddy acreage as % of gross sown acreage

Source: Season and Crop Report 1987/1988; Gough (1981:71)

As noted in the previous chapter, there are various types of soils and various degrees of irrigation in both wet and dry areas. In the wet regions, the productivity of rice, sources of irrigation, crop rotation (single, double, or triple-cropped paddies, or single paddy rotated with other crops), and crops grown in other than paddy fields, differ according to each area's physical conditions. Location (accessibility) of the market for a particular product also matters in farmers' choice of crops. This is the same for the dry regions.

Before going into case studies, it is useful to review characteristics of the wet and dry cultivations (in Tamil Nadu), such as ecological conditions, farm cycles, agronomy, and implications for the way labour is organized.

1. wet cultivation

Whenever water is available and more dependable, farmers in south India tend to plant rice. Despite the fact that nutrient value of millet is also

high, rice is the most important staple diet in east and south India. Rice has higher cultural and monetary values compared to millet, which is consumed mostly by the rural poor. For the locals, rice *tastes better* than millet.

It has been said that rice can support more population per acre than dry crops. A higher population density in the wet rice cultivation areas is noted by numerous authors (e.g. Gough 1981, Mencher 1988). In the rice regions, the rural population per square kilometer ranges from 1,013 in the Alleppey District (Kerala) to 203 in Tirunelveli (Tamil Nadu), compared with an India-wide average of 148 in 1971 (Mencher 1988:101). In the following tables, 'the gross paddy acreage as percent of gross sown acreage' and 'the rural population density' in 1951 are compared for (1) the districts of Tamil Nadu, and (2) the taluks (administrative subdistricts) of the Thanjavur district (a wet-rice region):

Table 3.2. *The gross paddy acreage (GP) and rural population density (RD) in Tamil Nadu, 1951*

Districts	*GP*	*RD*	*Districts*	*GP*	*RD*
Thanjavur	81.6	663	North Arcot	32.4	507
Chingleput	65.2	520	Tirunelveli	24.1	416
Ramanathapuram	47.0	327	Madurai	21.9	447
South Arcot	35.2	594	Salem	11.6	416
Tiruchirappalli	33.8	447	Coimbatore	5.8	380

Source: Gough (1981:71)

Table 3.3. *The gross paddy acreage (GP) and rural population density (RD) of taluks in Thanjavur, 1951*

Taluks	*GP*	*RD*	*Taluks*	*GP*	*RD*
Kumbakonam	82.6	1,187	Nagapattanam	54.2	762
Papanasam	82.5	855	Thanjavur	52.0	663
Nannilam	76.4	818	Tirutturaipundi	46.2	442
Mannargudi	75.2	703	Pattukkottai	40.2	532
Mayuram	72.6	953	Arantangi	24.8	336
Sirkali	62.4	865			

Souce: Gough (1981:85)

It appears from the above tables that the higher the percentage of paddy cultivation, the higher the population density. The correlation is not perfectly linear because productivity of rice and other crops, and viability of non-cultivation economic activities, are not the same for all the regions. In other words, infertile lands without adequate rainfall or irrigation can barely support a large population. In dry regions where farming is extensive and water is inadequate for crops, the population has always been scarce, unless there is an alternative rural industry.

In India, rice is cultivated in various ways depending on environmental conditions of each region. Three major methods are employed: 1) paddy cultivation under irrigation; 2) semi-dry cultivation; and 3) dry cultivation. Sowing and planting vary accordingly, either by transplanting, sowing by seed-drills, or broadcasting. Generally, seeds are broadcast in the nursery. Rice seedlings, then, are transplanted to the field, which is then flooded with water. Under semi-dried conditions, seeds are directly sown in line on the ground by seed-drill. The type used in Tamil Nadu is pulled by a pair of bullocks, opens furrows and places seeds into the ground. A woman (or man) follows it and feeds the hopper with seeds at a regular interval. The third method, broadcasting, is utilized more commonly in the fields naturally flooded by monsoons. Of the these methods, transplanting yields the highest. Transplantation is only possible when either rainfall is high, or there is sufficient irrigation.

Of all rice-producing states of India, the yields are the highest in four southern states (Andhra Pradesh, Tamil Nadu, Kerala, and parts of Karnataka) followed by some coastal and interior districts of Maharashtra. In the northern and northeastern states (Orissa, West Bengal, Assam, Bihar, eastern part of both Uttar Pradesh and Madhiya Pradesh), paddy acreage is the largest, yet the

yields are quite low. Sen (1985) noted that such differences arise from the degree of irrigation, and that paddy fields in southern states have been historically better irrigated compared to other states. In 1918/19, 70 % of the paddy acreage was irrigated in Madras Province (today's Tamil Nadu state), compared to 10 % in the north. Today in Tamil Nadu and Andhra Pradesh, irrigation extends to over 90 % of the rice area (387).

By looking at irrigation source and sowing method, Sen (1985) classified India's rice-growing regions into four groups: *a) high ratios of irrigation and transplanting* (Andhra Pradesh, Tamil Nadu, Kerala, parts of Karnataka); *b) rainfed transplanting* (the coastal districts of Maharashtra, Karnataka, and Kerala); *c) rainfed broadcasting* (Eastern parts of both Madhiya Pradesh and Uttar Pradesh, interior Orissa, and northern Bihar); and *d) rainfed and irrigated transplanting* (West Bengal, Assam, coastal Orissa, and irrigated central Bihar). She suggested that among the above four patterns, the demand for female agricultural labourers is the lowest in the rainfed broadcasting pattern (*c*) (391). Under condition (*c*), transplanting is unnecessary and the yields will be low. As transplanting and harvest are operations carried out very often by women in India, no transplanting and lesser yields indicate less women's involvement in rice cultivation.

Regional variations in rice cultivation also appear distinct between districts of Tamil Nadu where paddy is cultivated to various degrees. For analysis, I define a rice-growing district as having a ratio of over 30 % acreage under paddy relative to the total area sown (Chapter 2). Meanwhile, the districts with paddy acreage under 15 % (Salem, Dharmapuri, Coimbatore and Periyar) are dry areas *par excellence*. In those districts (which overlaps in the Kongu region), both rainfall and irrigation are poor, and the cultivation of coarse cereals including millets is quite significant. Third, the mixed districts are the ones where paddy acreage ranges from 15 to 30 %. In mixed

areas, both paddy and millets are grown to some extent (North Arcot with more paddy cultivation, Madurai with similar acreage under millets and rice, and Tiruchchilappalli with more millet cultivation).

In Tamil Nadu, all wet districts with paddy acreage over 30 % are located in the eastern coastal regions (Chengalupattu [Chingleput when Anglicized], Thanjavur [Thanjore], South Arcot, Kanniyakumari, Tirunelveli [Tinneveli], and Ramnathapuram [Ramnad]). Between these wet districts, the intensity of paddy cultivation differs for variable soils, rainfall and irrigation. Paddy acreage is directly related to rainfall. Where rainfall is low, paddy cultivation decreases. Quality of irrigation changes according to sources (canals, tanks or wells), adequacy of the amount and timing, and duration of irrigation (whether the field is inundated for only a short period or longer). The timing of transplanting depends on the source of irrigation: the period when tanks and wells are filled by monsoons, or when the water is discharged from upper dams. From the same source of irrigation, the date of receiving water also differs according to the location of paddy fields in relation to irrigation source.

In areas where water supply is abundant, two and even three crops of paddy can be cultivated. If there is less water, only single paddy may be grown. When moisture of the soil is more than enough to raise single crop but not enough for double-cropping, other crops might be cultivated as the second crop. At the time of harvest of Samba paddy, for example, a pulse crop is sown in the fields (Thanjavur area). Further, paddy can be differently rotated. It is also popular to grow groundnut or cotton between two paddy seasons if water and soil quality are suitable. Another possibility is to grow sugarcane for two years and go back to paddy cultivation later.

Examining data from the *Season and Crop Report of Tamil Nadu 1987/88*, we can find some characteristics of each district's rice cultivation. In

Kanniyakumari district which receives the highest rainfall (average 1,470 mm per year), the net irrigated area as a percentage of net area sown is medium-low at 34 %. Out of the irrigated area, 45 % is irrigated more than once, which suggests the acreage of irrigated double-cropped paddy is about 15 % of the total cropped area. Both in Chengalpattu and Thanjavur districts, rainfall is high (1,211 and 1,189 mm respectively), and the area covered by irrigation is quite extensive (77 % and 82 % each), and rice acreage is the highest within Tamil Nadu (65 % and 62 %). Yet the major irrigation source differs, with canals in Thanjavur and tanks in Chengalpattu. The area irrigated more than once is low in either district, but much lower in Thanjavur. The lower rate of double-cropped rice acreage under irrigation in Thanjavur is probably because water discharge of the Mettur dam in Salem is uncertain. It is possible to grow the second paddy under less irrigated conditions. In Ramanathapuram, the percentage of rice acreage is as high as 64 %. This district, however, receives little rainfall and has a low ratio of irrigated area (30 %). Besides, paddy is uniformly all single-cropped, and the yields are very low.

The following tables (3.4. and 3.5.) summarize the characteristics of rice cultivation of each district:

Table 3.4. *District-wise characteristics of paddy cultivation in Tamil Nadu, 1987/1988*

district	*rainfall*	*% of area irrigated*	*paddy acreage*	*area irrigated more than once*	*irrigation source*[*1]
Chingleput	high	high	high	medium	T
Thanjavur	high	high	high	low	C
S. Arcot	high	med.-high	med.	medium	T/C/W
Kanniyakumari	high	med.-low	med.	high	C/T
Tirunelveli	med.	high[*2]	med.	medium	T/W
Ramnathapuram	low	low	high	0	T

*1 T=tanks, C=canals, and W=wells

*2 It was low in 1970/71 and later irrigated area significantly increased

Source: Season and Crop Report, 1987/1988

Table 3.5. *Details of irrigation in paddy-growing districts of Tamil Nadu*

district	*(1) average rainfall*	*(2) Net irr.acres as a % of net sown (1970/71)*	*(3) Net irr.acres as a % of net sown (1987/88)*	*(4) irrigation % (70/71)* C	T	W	*(5) irrigation % (87/88)* C	T	W
Chingleput	1,211	74 %	77	3	78	18	2	46	52
Thanjavur	1,168	83	82	93	6	1	96	0	4
S.Arcot	1,189	50	53	26	37	31	21	22	57
Kanniyakumari	1,470	39	34	59	38	0	39	55	6
Tirunelveli	941	32	67	14	45	39	17	52	31
Ramnathapuram	819	36	30	2	84	15	0	91	9

district	*(6) % of area under paddy to the total area sown*	*(7) % of area irrigated more than once to the total area irrigated*
Chingleput	64.7 %	23.0
Thanjavur	62.0	14.3
S.Arcot	33.4	25.1
Kanniyakumari	34.0	45.2
Tirunelveli	44.7	29.5
Ramnathapuram	64.2	0.0

* 'others' excluded

Source: *Season & Crop Report of Tamil Nadu, 1987/88*, Gov't of T.N. 1993

Recent changes in wet cultivation

With exception of Thanjavur, Madras state (now Tamil Nadu state) had been a food deficit area since the mid-18th century. The rice was imported from Bengal, and from Indochina (Burma and Thailand). The import of rice from Indochina stopped during the World War II when the Japanese occupied Southeast Asian countries. The import of rice from Bengal also stopped when a great famine occurred in 1943. In 1953-54, rice production in Madras state became surplus for the first time (Mencher 1978:54-55). Later, in the late 1960s and early 1970s, Madras emerged as a rice-exporting state. According to Mencher

(1978), this was due to: 1) tube-well irrigation expansion in Chingleput, S.Arcot, N.Arcot, and Coimbatore districts and 'the installation of irrigation facilities allowing for a second crop in some parts of Tanjore': 2) good rainfall up to the agricultural year 1973-74; and more importantly, 3) early adoption and continuous use of hybrid species(238). The high yielding varieties (HYVs) have been increasingly cultivated for their shorter duration and higher yields than local traditional or locally improved varieties (LIVs).

However, the area under paddy cultivation decreased in 1969-70. This was partially due to the drought in some regions in 1969. More importantly, it was because some farmers returned from HYVs to the cultivation of local varieties. The HYVs are not always attractive: first, local varieties, especially *samba*, taste better than HYVs and therefore sell at better prices in the market. Second, HYVs need more inputs such as fertilizers and herbicides. This is fine as long as the crop is successfully harvested. However, the HYVs are less resistant to pests and diseases, and more sensitive to water shortage compared to local varieties. Therefore, whenever water is uncertain, farmers prefer to plant local varieties because yields are more certain, even though the amount harvested is less than that of HYVs. Mencher (1978) also explained that the LIVs are preferred by some farmers because they need less labour, less supervision, less fertilizers, and so on.

Moreover, some farmers switched over to the cultivation of garden crops such as groundnut, sugarcane, and occasionally pulses. According to Mencher (1978:239), the switch might have occurred as a result of wage increases and the desire of landowners to reduce the need for interaction with labourers. The labour cost of garden crops is lower than that of paddy, which requires many labourers for transplanting, harvesting, and frequent weeding. In addition, groundnut, sugarcane and pulse cultivation increased because the cultivation of these crops became more profitable than millets.

2. Dry cultivation

Cultivation is mostly rainfed in the semi-arid inland regions, which extend from north to south of the Indian subcontinent. To harvest good yields, the rainfall should be adequate in terms of both amount and timing. Neither too little nor too much rain are good for cultivation. The late arrival of monsoon delays sowing, of Cholam for example. Then the harvest might fall in the midst of the next monsoon period, which inevitably damages the grains. In fact, high incidents of rain fluctuation and crop failure have been characteristic in dry areas.

The irrigation of dry areas usually depends on rainfed wells and tanks. Unlike in the wet regions, river irrigation only plays a minor role in the dry areas of Tamil Nadu. Seasonal streams made by monsoons may bring some water for a few months, but water is insufficient to irrigate the fields during the rest of the year.

The red soils widely distributed in the dry lands of Tamil Nadu are of poor quality in nutrients and moisture. Many parts of the dry lands are single cropped. The soils do not retain enough moisture to harvest good yields from two sequential crop without adequate rain and irrigation. Yet "sole cropping often fails to exploit effectively available resources" (Walker et al. 1990:244).

Cropping

An agronomic characteristic of dry farming common throughout India is *intercropping* or *row intercropping*. At least two species of crops are grown in the same plot of land during the same season (Walker *et al.* 1990:46). In the simple intercropping, different crops are sown mixed while crops are sown in line for the row intercropping. In Tamil dry lands, Cumbu (pearl millet) and Cholam (Sorghum) are intercropped with pulses of various sorts, most frequently blackgram (Athreya *et al.*1990:80). Other combinations of

intercropping include millet/cotton, and millet/cotton/pulse. Intercropping is more common during the rainy season and rare during the dry period (Walker *et al.* 1990:46).

The practice of intercropping is a means to 1) reduce disease and insect risks; and 2) produce more yields, by exploiting available nutrients, moisture and light. Crops of either the same- or different-duration (long and short) are intercropped. It is not very clear whether intercropping produces better yields than single cropping (Walker *et al.* 1990:244-48). In some cases, the effect is adverse. Groundnut is often grown mixed with either cotton, caster, cholam or redgram, but the yield of groundnut is said to decline compared when it is raised alone (Ramaswami 1972, *Tamil Nadu District Gazetteers, Ramanathapuram*). From the viewpoint of labour demand, this is a means to create different peak periods of farm operations.

In dry lands, paddy is usually difficult to grow. Instead, drought-resistant crops (various millets), legumes, cotton and tobacco are most commonly planted. What follows is an overview of dry crops grown in Tamil Nadu (Sanpat & Ganesan 1972; *Madras District Gazetteers: Coimbatore* 1966; and from my interviews):

[Millets] Cholam (*Sorghum Vulgare*): Cholam is a dominant dry crop in Tamil Nadu. It has been the important staple diet in dry areas, but is losing its popularity as rice gains a symbolic value as the main food cereal. Cholam yields the highest both in grain and straw of all the rain-fed cereals. Adapted well to a dry environment, the crop "regulates transpiration and remains dormant if the rains fail" (Olurieldt *et al.* 1990:81). When raised only for the purpose of fodder, seeds are sown three times as densely as normal. If irrigated and manured, the yields will be increased three to four times. After sowing, the crop is weeded and manured, then harvested 75 to 105 days later.

The stalks are cut by sickle at 10 to 15 cm above the ground, dried, threshed, and straws are separated. For consumption, grains are stored in pits made in the ground.

Ragi (*Eleusine cora cana*): It can be raised at any time of year, and on variable soils. The duration of the crop is four months. Harvest extends over a number of days as grains do not ripen simultaneously. When harvested, only ears are cut. Then they are placed in heaps so that, after some time, grains can be easily threshed out. The straw is good as cattle fodder.

Cumbu (bulrush or pearl millet): This crop grows on dry land where rain is insufficient even for Cholam. Cumbu is also grown as mixed crop. The duration is four to five months. It does not require any careful preparatory cultivation. Only ears are cut for harvest, an operation which extends over some weeks. Straw is not good as cattle fodder, but stalks are used for thatching and fuel.

Tenai (Italian millet), Varagu (Kodo millet), and Samai (*Panicum Milliare*): These are coarser kinds of millet, which do not have high yields but can be grown even on poor soil and with little water. The duration is six months. They are relatively resistant against drought, pests and disease.

[legumes] **Greengram and Blackgram**: On the dry lands, they are often grown as an intercrop. For harvest, grams are pulled out, then dried on the threshing floor during the day for three to four days. Threshing is done by beating with sticks or cattle stamping on the grain. Then they are winnowed.

[oilseeds] **Groundnut**: The production of groundnut has been increasing as it can bring good prices in the growing market both domestic and overseas. As rain-fed crop, groundnut is grown from June/July to December/January (a winter crop), and as an irrigated crop, from February/March to June/July. There are two types of groundnut, long duration (135 days) and short duration (105 days). Groundnut is a soil exhausting crop, requiring much manure. For seed-bed

preparation, the soil is tilled two to eight times by country plough. Sowing is done either behind country plough by hand, or by using a seed-drill. The plant is weeded by hand and by intercultivation. In the case of the long-duration type, the crop is dug out with spades, while the short-duration crop is pulled out by hand. Then peanuts are plucked off by hand, and stored either in pods or in kernels after being dried well in the sun for about a week. As groundnut fixes nitrogen in the soil, a cereal planted after groundnut yields better than when it follows another cereal.

Gingelly (sesame): Sesame oil is widely used in south Indian cooking. The crop is raised with little moisture. After ploughing, seeds are sown in lines or broadcast. Weeding by intercultivation and thinning is done two weeks after germination. When the stem turns yellow, the crop is pulled out and dried until it releases seeds. Then the seeds are collected, and cleaned by winnowing. Gingelly depletes soil nutrients, and the subsequent crop needs to be manured well.

[other crops] Cotton: India has a long tradition of cultivating cotton of local species. Cotton became one of the major cash crops in south India in the beginning of the twentieth century, when new species from Indochina and America were introduced. Cotton is grown both as a rain-fed crop (during the winter season from October to April) or as an irrigated crop (as a summer crop from March to August). Cotton might be intercropped with other crops in the winter season. In Tamil Nadu, cotton can be double cropped (winter and summer season), or rotated with millets (cumbu or cholam) or paddy. After the soil is ploughed once or twice, seeds are sown broadcast, and covered by country plough. If irrigated, the plant is watered eight to ten times with an interval of eight to ten days (depending on rainfall). Weeding is done by hand and also by intercultivation using a hoe. Excessive leaves are thinned out. When cotton balls swell, they are picked up by hand, which is an operation extending over

two months or more. Cotton is then taken out, and sorted out into better and lesser qualities.

Tobacco: This crop needs good soil and irrigation. Tobacco seedlings are transplanted after soaking in water. The plants are watered and manured. Weeding (once or twice by hand then by hoe) and thinning are done. Leaves are harvested and dried. Timing of the cutting leaves depends on the use (*beedi*, cigarette, cigar, or snuff).

Chilies: Introduced to India by the Portuguese (c. 17th century A.D.), chilies are now an essential part of Indian cooking. The crop is raised on either rainfed or irrigated lands.

Pulses, oilseeds, cotton, and tobacco are most often grown in so-called garden lands, or *tôttam*. A *tôttam* is a plot of land irrigated by wells or/and tanks. In my study area (Kongu region), *tôttam* is contrasted to dry, unirrigated land, or *kâdu*. In *kâdu*, Sorghum is sown, used as grazing land and put under fallow. By-products of pulses, oilseeds, and cotton make good cattle fodders. For various millets grown in dry areas, farmers do not expect to get much grain. Instead, they will graze cattle on the straw (Olurieldt et al. 1990:81; my interview in a Kongu village).

Actually, crops which feature dry cultivation, such as millets, oilseeds, tobacco and cotton, are raised to different degrees depending on the locality. The dry land agriculture has diversified cropping patterns (Walker *et al.*1990: 252). Between dry regions of India, and also within Tamil Nadu, the predominant kind of millet and the combination with other crops differs. Soils are quite diverse even within a village. The farmers 'in the dry area normally [cultivate] a multitude of crops in a variety of fields' (Athreya *et al.*1990: 35). Depending on the types of land owned, the proportion of each crop grown changes between households.

Recent change in dry farming

India's dry farming has been transformed over recent decades from extensive farming with low input/output, to more intensive and diversified farming with higher inputs and higher yields. Total production in the dry regions has been increasing as more non-millet crops and more high yielding varieties (HYVs) including millets (such as Cumbu and Cholam) are cultivated. Intensification of dry farming has been promoted by several factors. Most importantly: 1) increasing population density and land fragmentation; 2) improved irrigation system; 3) price incentives; 4) adoption of hybrid varieties; and 5) inputs of pesticide and fertilizer (Walker *et al.* 1990: 49-51).

Population increase has segmented lands through inheritance. From 1961 to 1991 in Tamil Nadu, the total population increased from 34,686,953 to 55,858,946 (62% increase), and the rural population from 24,696,425 to 36,781,354 (49% increase) (Government of India 1964, Pt II C[1]; Commissioner of Statistics, Government of Tamil Nadu 1993). An increased population shrinks land holdings. It is generally held that cultivation of smaller farms has become more intensive with more inputs of labour, implements, and manure (Walker *et al.* 1990:116-119). This does not always occur (Mencher 1978:55-56). As a way to avoid parceling out lands, some of the family members (one or two sons most probably) might migrate to towns or try to pursue urban jobs.

The increase in irrigated areas also intensified cultivation in dry regions. The electric-pump wells have rapidly increased especially since the late 1960s, and due to heavily subsidized electricity (Athreya *et al.*1990: 86). If water is sufficient, paddy might be planted on the newly irrigated lands, but usually the paddy is not double-cropped. More often so-called garden crops, such as cotton, sesame, groundnut, sugarcane, and banana, are cultivated on *tōttam*, or irrigated garden lands. The increasing trend towards growing these

cash crops, notably over the past three decades, was encouraged by the rising price ratio of oilseeds, pulses, and cotton vis-à-vis coarse cereals. These crops, cotton for example, are labour-intensive. Farm employment opportunities for both men and women expanded in the area where cultivation of cotton increased (Walker *et al.*1990:131).

It is widely known that the Green Revolution led to the introduction of High Yield Varieties (HYVs) of rice and wheat to India in the 1970s. In contrast, it is relatively unknown that HYVs were also widely adopted in the dry regions at that time. In dry areas the HYVs are important, not because of high yields as implied by the name. Rather, it is because of their shorter growing period, which requires less water, which is therefore important in dry areas where water is scarce. The use of herbicides and fertilizer necessary for the HYVs has also increased in dry areas. The intensity of use is determined by the degree of irrigation (more fertilizers and herbicides are used on better irrigated lands).

It is said that the area under dry cultivation (of millets and other unirrigated crops) can be extended. However, resources (water, labour, finance, etc.) are concentrated in small parts of irrigated land (Athreya *et al.* 1990:70-72). The more fertile and irrigated lands are better ploughed and given more manure as the yield is higher and more certain than on dry lands. Today, a dry-land farmer's wealth is said to depend on the holding of garden lands (Caldwell *et al.* 1988:8).

While some systematic changes in cropping are in progress, technological changes in implements for dry cultivation have been less widespread. Adoption of tractors has been slow, and ox-ploughs remain important in operations such as seed bed preparation, and covering manure and seeds. Traditional large implements, including ploughs, carts, and *kavalai* (a device for lifting water from a well with animal power, now being replaced by motor-pump sets), are

usually owned by only a few farmers in a village. In contrast, small tools such as spades and sickles are owned by everyone (Athreya et al. 1990:84-85). New appliances now widely used are backpack-sprayers and threshers.

Stock raising has been traditionally an important part of the dry agricultural economy. Oxen, needed for ploughing, and also milk cows have been bred in the dry areas and exported to the wet areas. Cattle raising is viable in dry lands, where relatively high proportion of fallowed areas offer grazing lands. Fodders are also available from millet straws and by-products of various crops. Cattle in India are raised mainly for traction power and to supply manure, and less importantly, for milk. They are not used for the meat. On the other hand, sheep and goats are primarily raised for the meat. With the price of mutton rising, more farmers started herding sheep and goat. Soon, problems of overgrazing also became acute. Furthermore, introduction of HYVs created some fodder shortage. The straw yield of the HYVs is very low, and the digestibility is less than 40%, which is much lower than local and improved varieties (Athreya *et al.*1990:82).

Droughts

Because of the rainfall fluctuation, an incidence of crop failure has been high in these drought-prone areas. In the past, drought caused famine when rain failed in consecutive years. Although chances of drought are high, when it does occur in one region, other regions might receive average rain, as India's semi-arid tracts extend over a vast area. The farmers in a village affected by drought might, therefore, migrate in search of employment to less affected areas. This option, however, does not ease agroclimatic risks farmers are facing in the dry regions.

Drought causes the loss of farm income more often in dry areas than in wet areas, seriously affecting socioeconomic conditions of farmers. Shortfalls in income compel the farmers (both small landowner-cultivators and agricultural

labourers) to sell stored produce, consume grains that were to be kept as seeds for the next season, borrow money, liquidate assets, change jobs, or migrate in search of work (Walker *et al.*1990:239). In addition to income shortfalls, rural populations are hit by inflation in grain prices. (Today, the impact of price fluctuation is less devastating as crop prices are controlled by the government and India's economy is well integrated.) Drought also jeopardizes 'human capital formation'. Walker *et al.* (1990) cited Jodha's (1975) study of the 1962/63 drought in several villages in Rajasthan (north India) where 42 percent of households withdrew their children from school after the years of drought (240).

Furthermore, it is the economically disadvantaged who are hardest hit by a severe drought. Having no surplus capital, small holders might be compelled to sell the lands that they have. There is a danger that unemployed landless labourers fall into near-starvation, and go into a huge debt. With little rain, the demand for hired labour will be drastically reduced. When droughts occur in consecutive years the polarization of local economy may take place. This is all the more so in rural India, 'where land is the dominant form of wealth, source of collateral, means of production, and determinant of status (Walker *et al.* 1990:241, summarized from Cain [1981]).

3. Implications for task composition

The type of farm work for wet and dry cultivation are distinct in task composition and seasonal intensity. The patterns are shaped by crops raised and agronomic practices. First, wet paddy cultivation in Tamil Nadu generally employs the transplanting method. Seeds are sown in a nursery, which is a small part of paddy fields. While the channels are dug and the field is prepared by ploughing a few times, the seeds germinate and are ready for transplanting in about one month. The seedlings are collected in bundles and carried to the

field. Divided seedlings are planted into the soil, deep enough for paddy to establish itself well. After that, the crop is manured, and the field is flooded. Weeding is done a few times. When the grains ripen, they are harvested by sickles, brought to a threshing ground and threshed, and winnowed. Dehusking is done at rice mills.

Characteristic of paddy cultivation is seasonal intensity of tasks created by transplanting and harvesting. Those tasks as well as related operations such as field preparation and threshing have to be done in a narrow time period. Therefore, even a small landholder (with one or a half acre of land) will hire somebody to get these tasks been done. Depending on the size of land, weeding also requires some outside labour force. The application of fertilizers and pesticides is done by family labour (smallholders) or by both family and hired labourers (larger landholders). 'This is partly because of the fear that someone else might steal the material, partly to see that they are applied carefully and are not wasted, and partly because the time for doing this does not usually coincide with other major work' (Mencher 1978:208).

The availability of farm work for paddy cultivation depends on: 1) the number of paddy crops; 2) kinds of paddy cultivated; 3) degree of synchronic cultivation; and 4) cultivation of other crops. First, if triple cropped paddy can be raised, there are tasks all year round with some peak periods. If only single paddy is cultivable, one needs to find work somewhere else. Second, there are various kinds of paddies both among traditional varieties and hybrids. The HYVs need more labour for their harvest. Three, if the same kind of paddy is planted everywhere at the same time, there is not much work available other than at peak seasons. However, if various kinds of paddy of different duration are planted, transplanting in some fields is lagged, there are variable operations needed at one time. Four, the cultivation of other crops may create tasks to be performed during an otherwise slack

season. One example of labour demand can be seen in the case of Ramanathapuram. This is the district where the percentage of area under paddy to the total cultivated area is high. However, productivity is low and paddy is all single-cropped. Consequently there is not much work during the rest of the year, when many migrate into neighboring district of Thanjavur for some agricultural work.

For the gender division of work, there are variable patterns between regions except for ploughing which is exclusively done by men. Transplanting, manuring, weeding, harvesting, threshing, and winnowing are the operations in which women are often involved. Arrangement of these operations differ from one region to another. Harvesting, for instance, is done mostly by women in Chingleput (Mencher 1978), while it is carried out by men and women in pairs in Thanjavur (Mencher and Saradamoni 1982; Gough 1981; and my interview). Men plough the field (with two teams of bullocks, one behind the other), dig channels, help women transplant by passing them bundles of seedlings, apply chemical fertilizer and pesticides, and harvest and thresh the crop.

Not every woman nor every man engage in these tasks. Agricultural labourers (in Tamil Nadu, the majority of them are ex-Untouchables) carry out tasks such as ploughing and transplanting. These tasks are the hardest and most hazardous: for ploughing, one needs to hold the device well in order to till a straight line with consistent depth. The blade must be handled carefully, or one may get injured; transplanting is a back-breaking work. Tranplanters have to soak their bare feet in the mud from which they get infections easily or leeches. There is a tendency for landholding households to withdraw women from transplanting, though among smallholders, the women transplant paddy in their family fields. Mencher (1978) explains that most landholders with more than three to four acres of wet land, especially if it is double cropped, can manage farming without the women working in the fields, hiring outside labour (206).

In contrast to paddy, operations required for dry crops are less

intensive, and spread over a longer period. First, the labour intensity and the length of period for a particular operation depend on the nature of the crop. Some crops such as ragi, cumbu, or cotton, do not ripen at the same time and harvest extends over several weeks. Second, different kinds of crops are planted on different lands or within a plot of land (intercropping). This is a type of risk management used on dry lands, where the incidence of crop failure is high and mono-culture is too risky. As a consequence, numerous operations are undertaken at the same time: at one place, cotton leaves are thinned out, and at another, cholam is harvested, and in yet a different field, groundnut is sown. Third, although there are peak periods of sowing regulated by monsoons, duration of crops are diverse. Different durations and timings of rotation mean a varied number of tasks are always necessary. However, all of this depends on soil quality and rainfall. If these are poor, then dry cultivation and availability of work become difficult.

Women's roles in paddy cultivation has been relatively well discussed by Mencher, Saradamoni, Sen, and others. Their roles in millet cultivation, on the other hand, have received little attention. On genuinely infertile lands where nothing but coarse millets can be raised, there is not much farm work for women. On such poor land, there is little work available even for men. If land is more productive, and various crops such as legumes, oilseeds, and cotton are cultivated, the situation is different. Agronomic features of these dry crops require more labour and therefore favour greater female participation. Certain tasks such as preparation of beds, building ridges and channels tend to be culturally assigned to males, as in wet cultivation. However, there are plenty of other tasks that are culturally permissible for women (this varies between regions), including sowing, hand weeding, thinning, harvesting various crops and processing. A high degree of women's contribution to dry cultivation (in areas of millet pattern) needs to be underlined, as in the literature only

paddy cultivation has been presented as having high participation by women.

Maclachlan (1993) explains that women's farm work is important in the millet pattern because poor soils requires much weeding which is done by women. The hand weeding, however, is not the sole reason for high demand for female labour in dry millet regions, as we will see in the case study of Kongu. In the next chapters, the social relations of production in dry and wet areas in Tamil Nadu will be further discussed.

Chapter 4

Wet Cultivation in Thanjavur

According to some predictions, wet rice cultivation is associated with high FLP (in case of south India) and low JSR. This chapter examines Thanjavur's wet rice cultivation and the way women participate in its process.

Thanjavur district is a flat plain with a gentle slope towards the east coast. With about 80% of the acreage in paddy, Thanjavur looks, for much of the year, like an "ocean of green wet paddy fields" with "clumps of palm trees" and "small brown islands of villages" (Gough 1989:11). This region is embraced by the fertile Kaveri river delta. Irrigation systems along the Kaveri and its branches have developed since as early as 50 A.D. Compared to other districts in Tamil Nadu, rainfall in Thanjavur is more favourable, with a yearly average of 1,168mm and with smaller year-to-year fluctuations. These agro-climatic conditions made paddy "far and away the principal crop" (Baker 1984:170). The significance of paddy as the principal crop has not changed much since the mid-1920s, when 78 % of Thanjavur's acreage was already under paddy (Baker 1984: 169).

Paddy cultivation and social stratification

Thanjavur's relatively stable paddy production with irrigation sustains a denser population than other regions of less dependable dry-crop cultivation. This deltaic region developed as the heartland of the Chola kingdom (from about the third century B.C. to the third century A.D.; and again from c.850 to c.1534). "From about 100 to 250 A.D., the famous Sangam Age, it became a brilliant center of Hindu, Buddhist, and Jain civilization and literacy. During this period, the basic structure of royal government, the systems of irrigation

and land tax, the multicaste settlement patterns of towns and villages, the religious supremacy of the Brahmans, and the presence of certain other castes such as the Parayars, were established much as in later centuries' (Gough 1981:6). Numerous settlements were set up along the Kaveri and its tributaries. Vellalas and Brahmans came to dominate the management of land and irrigation in those settlements. They legitimized their dominance by strengthening their ritual status: Brahmans conferred on Vellalas a high status in return for Vellalas' economic support of Brahmans (Stein 1969; 1975; 1980).

The society eventually polarized between those elite shareholders who co-managed the land and irrigation on the one hand, and numerous agricultural labourers on the other. 'The fecundity of irrigated rice agriculture attracted many people' who accepted a 'serf-like' status in exchange for reliable subsistence however meager it might be (Baker 1984:86-87). The existence of numerous labourers allowed the Brahman and Vellalar *kaniyatchikarans* (shareholders: those with *kaniyatchi*, or control of land) to stand aloof from direct, hands-on cultivation. Thus a division between the elites and the Harijan labourers was formed. Thanjavur's social structure is more complex, as explained later in this chapter; nevertheless, the differentiation between upper and lower socio-economic classes is much more marked than in drier regions.

Numerous authors have discussed the more pronounced social stratification in India's wet-rice regions. Gough (1981) explains that paddy can maintain a large leisure class and Thanjavur is characterised by steeper social stratification with more Brahmans at the top, more Harijans at the bottom, and the highest percentages of tenant serfs in Tamil Nadu (p.68). The whole Brahman caste constituted 6.2 % of Thanjavur's rural population in the 1931 census (p.44), while the state average is around three per cent or less (p.71). Gough's (1981) inter-district and inter-taluk comparison also shows that lands

in rice areas are more valuable, being intensively cultivated and productive, and the average size of land holdings is relatively small (p.101).

Labourers in Thanjavur are broadly categorized into three types. One type is the *pannaiyāl* (fem. *pannaiyācchi*), which was once a tied labourer who worked permanently for a particular landowner. When Gough studied in 1951, *pannaiyals* were hired as married couples or families, paid individually for each day they worked. "In 1951 male *pannaiyals* were called to work about 180 to 300 days a year, women about 120 to 240 days, and boys aged eight to fourteen about 260 days" (Gough 1981:51). Another type of labourer is the tenant, either for *varam* (sharecropping) or *kuthakai* (fixed rent). There has not been much difference in the economic status between permanent labourers and tenants, since the tenants' profit share has been low (Gough 1981:47). A third type is casual, or *coolie* workers who are hired and paid daily. The use of coolie labourers increased a great deal by the 1930s. For one thing, landowners no longer wished to pay fringe benefits, such as a harvest bonus or contributions to marriage costs, to which *pannaiyals*, or permanent labourers, were once entitled. For another, by the mid-30s, well-organized gang-labourers emerged (both men and women, depending on demand). They migrated on contracts for the harvests of cotton, groundnut, and paddy transplantation, etc. (Baker 1984: 197). Today, many labourers from Ramanathapuram district come to neighbouring Thanjavur for harvesting of paddy (Srinivasan 1978). In addition, coolie workers increased when many migrant labourers returned from plantations in Southeast Asia during and after the second world war (Gough 1981:53).

The demand for labour in paddy cultivation is particularly high during field preparation, transplantation, harvest and related operations. It is crucial and difficult to secure labour at the peak seasons of paddy: crucial, because transplantation has to be early enough in order to ensure the harvest before the arrival of the northeast monsoon; difficult, because everyone needs

the labourers at the same time. For the rest of the period, paddy does not require much labour except for some weeding. Therefore,

> Many mirasidars [landlords] would take on *pannai* [system of tied labour] almost as many labourers as they needed just for the harvesting period, even though they could not find profitable employment for most of them for much or the rest of the year' (Baker 1984:174).

Where double cropping is possible, the labour shortage tends to be more acute. The time for the harvest of the first crop *kuruvai* (short duration paddy) is also the period for the field preparation and transplantation of the second crop, *thaladi* (long duration paddy of lesser quality). If there are single cropped fields, the preparation for the single crop, *samba*, usually has to be done as well. Bullocks at this time are in great demand. In Tamil Nadu, bullocks are used for both ploughing and threshing. Moreover, double cropped land needs more labour input, as it requires more careful manuring than one-crop land. Manuring for two-crop land is done by 'penning animals, carting leaf-mould or cattle manure, digging silt out of tanks and channels and occasionally growing crops of 'green manure'' (Baker 1984:176).

Agro-economic variations within Thanjavur: Old & New Delta, and Dry Area

So far, I have treated Thanjavur as one geographical unit. Within the district of Thanjavur, however, social structure, landholding patterns, crop intensity and cropping patterns are variable. Srinivasan (1978), Gough (1981) and Bouton (1984) consider at least three agro-economic zones. (1) The northern part of the district is called the Old Delta, which is the natural deltaic region of the Kaveri, and has been irrigated since ancient times. (2) The New Delta is the area irrigated by the Grand Anicut canal of the Cauvery Mettur Project (CMP) [Cauvery is the Anglicized form of Kaveri] and its branches. By the mid-30s, the re-construction of the Grand Anicut was completed, and the

Mettur dam was built in Salem, in the upper Kaveri. The introduction of canal irrigation made intense cultivation of paddy possible in the western part of Thanjavur. (3) The westernmost and southernmost parts are dry uplands, where only 50 % of the total acreage is irrigated, mostly by means of wells, rather than canals. In these tracts, ragi, gingelly and groundnut are usually raised as the first crop, followed by ragi or chilli (Srinivasan 1978:24). (4) The extreme southeastern part of the district, Vedranyam, is largely infertile salt swamp, and therefore excluded from analysis (Srinivasan 1978; Gough 1981; and Bouton 1984).

The Old Delta is further divided into the head-part of the canal systems and the tail-end coastal part. Both Gough (1981) and Bouton (1984) compare physical characteristics, differences in cropping patterns and social structure within the Old Delta. First, the northern part along the Kaveri has more fertile soils and better drainage sloping with mild towards the ocean. This area also receives water earlier, being located closer to the water source. Thus, in most of the northern part, paddy is double cropped. In contrast, soils become clayey and drainage deteriorates towards the coast. Less fertile soils make only one paddy crop possible in east Thanjavur. As the coastal region is the tail-end of the canal systems, the arrival of water is late and delays *kuruvai* transplantation. Moreover, the northeastern monsoon often causes flood, damaging the entire harvest. Bouton (1984) contends that the less favourable conditions compared to the head-end villages render peak labour demand much more acute. It becomes more critical to finish field preparation and transplantation in the narrow period after the arrival of water, and to harvest the crop before the monsoon damages the crop.

The problem of late water arrival seriously affects the entire Old Delta. Before the Mettur dam was constructed, Thanjavur's rivers flowing by June, when farmers could start ploughing. Now water will not be released until the Mettur

reservoir is sufficiently filled up by the southwest monsoon. The discharge of water may be delayed as late as August. The discharge of water is stopped in the month of February, drying up the river for the rest of the year. Gough (1984) reports that a whole series of operations are now carried out almost one month later than before the dam was constructed. Farmers in the area she studied (the more fertile northwestern part of the delta) now prefer dry to wet ploughing (219).

In terms of the social relations of production, the Old Delta is more polarized between landowner-managers and landless labourers. In the New Delta and dry areas, "the prevailing mode of production is relatively direct and family-oriented" because "canal irrigation and intensive paddy cultivation are very sparse and relatively recent" (Bouton 1984:112). In the latter case, more females participate in cultivation as part of the family labour production system. Thus the percentage of female cultivators among total female workers is much higher in the dry upland areas (36.2 %) and in the New Delta (23.0 %), compared to the Old Delta areas (10.8 to 13.5 %) (ibid.111).

In Thanjavur, landless labourers have been politicized by the Communist parties since the 1930s, having struggled for the betterment of their status and wages and against the landowners' importing of labour from outside areas. The Old Delta has been the Communists' strong hold. Within the Old Delta, the conflicts between labourers and landowners have been more intense in coastal areas, rather than in the more fertile zone. The settlements in the northern fertile zone are old, the Brahman population is more concentrated, and the oldest Hindu temples, which were once the centre of culture and society, are there. Even so, the social structure of the northern (head-end) area is less polarized between the landholders and labourers, and more complex than in the eastern coastal (tail-end) zone. In the head-end northern area, the proportion of small cultivators is higher and many agricultural labourers are, in fact,

also cultivators who work either on their own or rented lands (Bouton 1984: 119). Present-day land ownership is divided between the Brahmans and middle-caste non-Brahmans.

In the coastal part of the Old Delta, landowners are high-caste non-Brahmans and middle-caste non-Brahmans. The coastal delta's conditions for paddy cultivation are less favourable. This led to a larger and more impoverished labour force than in the northern area: "larger because of the higher peak demand for labor on the more extensive holdings and more impoverished because of the lower cropping intensity and lower *average* demand for labor" (Bouton 1984:143, original emphasis). The wage issue is central to conflict between landless labourers and landholder managers. For agricultural labourers, employment is only available for a few months and other opportunities are hard to come by. Therefore the level of wages is a question of vital importance for survival. For landholders, lowering the labour cost is also key to survival, as productivity is limited (Bouton:1984:172).

Farm calendar and female participation in agricultural labour

For single and double crop paddy, the yearly cycle of operations differs. In Thanjavur, for the single crop, *samba*, the nursery preparation begins in the month of August. After four to five weeks, paddy seedlings are transplanted. The duration of the *samba* crop is about 180 days. The crop is harvested around mid-January to mid-February, depending on rainfall during the northeast monsoon. If the moisture remaining in the soil is adequate, pulse crops are sown (Bouton 1984:91). Sowing of pulses or a green-manure crop is usually done two weeks before the harvest of the paddy. No other operations are performed on these post-*samba* crops, which grow with available moisture and will be harvested in June (Srinivasan 1978:23).

Operations starts much earlier for double cropping of paddy. In June, the

nursery of the first crop, *kuruvai*, is prepared. After three to four weeks, transplantation starts. The duration of *kuruvai* is about 120 days. The harvest takes place in October. In the same month, the nursery preparation for the second crop, *thaladi*, starts. It is transplanted from November to December, then harvested from February to March. If water is insufficient, groundnut replaces the second paddy crop (Bouton 1984:92). In the early 1950s when Gough studied Thanjavur villages sheperds from Ramanathapuram brought their sheep to graze freely in the fields from February to June (Gough 1981:219).

Gough (1981) describes the yearly cycle of paddy cultivation in Kumbapettai village: how agricultural labourers work in the field and how male landowners supervise them (213-238). Most of the cultivation is carried out by Harijan labourers.

From April to June, male labourers dig channels to draw water to the paddy fields. When sowing paddy, male labourers break the clods in the nursery, then sow the seeds. Female labourers apply ash to the nursery. After 18 to 27 days, seedlings are transplanted. The first transplantation has ritual significance. Each Non-Brahman owner summons about twenty to fifty women labourers according to his means. Gough explains:

> Sometimes more women would arrive than had been summoned, *for women's work was scarce* and there were special small gifts on the first transplanting day. Occasionally, if several men [non-Brahman owners] had planned their first transplanting on the same day, there was a shortage of labor and relatives of Kumbapettai's Pallar [Harijan] women were quickly summoned from nearby villages. In one case Non-Brahman women of the Ambalakkārar caste came to substitute for Pallathis [female Pallars], but *usually Non-Brahman women would not take part in the hard work of transplanting except in their own families' leased fields* (222, my emphasis).

For transplantation, male *pannaiyals* (about one male to every fifteen females) bring the clumps of seedlings to the fields, break them into smaller bunches, and drop these beside each woman. The women then transplant them.

Harvest of the first crop, *kuruvai*, takes place in September/October. Both men and women labourers, about twelve people per acre, cut the ripe stalks with semicircular sickles. They bundle the cut paddy in the morning, and thresh it in the afternoon. Again, both men and women take part in threshing and winnowing. In Thanjavur, pairs of male and female labourers, most commonly husband and wife, are employed for harvesting, threshing and winnowing. Employment of couples for these operations is prevalent in Thanjavur (Mencher and Saradamoni 1982, also my interviews in Dec.1995). Mencher and Saradamoni explain that this unique custom of Thanjavur inhibits widowed or single women from earning wages in harvest related operations. In Chengalpattu women work more prominently in harvesting and threshing operations (A-161).

Gough's description of the gender division of labour supports Mencher's, Saradamoni's, Sen's, and others' assumptions that women's labour is significant in paddy cultivation in India. But Gough's description of the yearly cycle omits weeding of paddy fields. For weeding, small groups of labourers are employed as teams. They weed one field one day, another field the next day. Even owners of small farms employ outside labour for weeding.

In India, most of work for rice production depends on hired labour. Dependence on hired labour is even more important in Thanjavur, where Brahmans who are forbidden by religion to touch the plough are numerous, and where a large number of high caste non-Brahman landowners regard "it as beneath their dignity to cultivate their fields" (Gough 1981:45-46). In Thanjavur, even small owner-cultivators do not do all their own agricultural work and hire labourers, since transplanting and harvesting must be done quickly (ibid.:46).

Dependence on hired labour is also high in other paddy regions of India.

According to Mencher (1988), in some Palghat villages (in Kerala, just west of the Kongu), "even among the small holdings where the percentage of hired labor is lower, it never fell below 87 percent for plowing and 81 percent for transplanting and weeding" (102). Women make up for the major part of the labour force. "[L]andowners on the average used women for 417 hours per acre of wet land per crop season, whereas they used males for only 106 hours per acre" (Mencher 1988:102). Mencher, Saradamoni, and others repeatedly stress the significance of hired female labourers in paddy cultivation. This is important since women's role in India's paddy cultivation tends to be overlooked. What also needs to be emphasized is that the majority of paddy field labourers, both men and women, are un(der)employed outside the peak seasons. Thanjavur offers an extreme case, as this region is significantly mono-crop oriented; having no notable industries other than agriculture and being largely unurbanized, there is no alternative employment during the slack season of paddy cultivation.

The scarcity of agrarian employment in Thanjavur:

Employment in Thanjavur is especially limited in the coastal area of the Old Delta. Here Bouton (1984) found that agrarian radicalism, measured as Communist control of panchayats, was the highest. In this area, not many fields are double-cropped (about 10 to 20 % of paddy acreage) compared to 33.5 % of double-cropped area in the fertile part of the Old Delta (Bouton 1984:110). Today, some twenty years after Bouton's study in the 1970s, Thanjavur's un(der)employment is still acute. In December 1995, in one village located in the coastal Old Delta near Tiruvarur, Harijan labourers (both men and women) explained to me:

> "Now, we are transplanting. Men are paid 30 rupees, and women 25 rupees for eight hours of work. This way, we do weeding, and do harvesting as well. There is some gram (=pulse)-harvesting after the paddy. But

> *vivasáyam* [agricultural work] is not available all through the year. From the month of *Másí* [February/March] to *Chittrai* [April/May], for three months, no *vivasáyam* is available at all. We have to stay at home.'

From February to May, when nothing is raised in the fields, male labourers might do some coolie jobs:

> 'During this period, men might go to town for coolie jobs, mostly in house construction. We carry stones.'

However:

> 'For women, there are no coolie jobs. Women have to stay at home for three months.' 'They lie down on the floor doing nothing!' [laughter] 'We do housework during this time.'

In another village, four to five kilometers away, even to get coolie work for men is difficult, because of its location farther from the towns.

In Thanjavur, adoption of hybrid seeds and new technology occurred at a slow pace. Through the years 1960 to 1965, Thanjavur lacked a significant yield-inreasing technology (Bouton 1984:223). ADT 27 and other high yielding paddies were adopted increasingly in the late 1960s. However, after the trial of new species, some Thanjavur farmers returned to cultivation of local varieties, to *samba* rice in particular. They preferred the old varieties because they receive better prices in the market, require less labour and other inputs, and withstand natural disasters better than hybrid species. Even so, high yielding paddies became important due to their shorter period of growth. The introduction of ADT 27 made it possible to increase the double cropped area (Bouton 1984:223). There was not much impact from adding hybrids in the head-end part of the Old Delta, for the major part of this area was already double cropped. In the New Delta, in contrast, *kuruvai* acreage increased very sharply

in the 1960s and 1970s, as it also did in the tail-end of the Old Delta to some extent. '[T]he shorter duration of ADT 27 freed many cultivators from the constraints of marginal water supply and control' (Bouton 1984:227).

The adoption of hybrid seeds which enabled double cropping made the availability of hired labour for the peak season critical. Technological change also increased the labour demand, as more labour was needed for ploughing, transplanting, intensive weeding, application of fertilizers, harvesting and threshing (Bouton 1984:244; see also Ramamurthy 1988). During the period of the harvest of the first crop and field preparation of the second, the labour shortage became acute. Because of the difficulty of securing the necessary labour in this period, labourers in the tail-end Old Delta successfully pressured landowners by strikes to raise wages. But the landowners counter-attacked by importing migrant labourers to carry out harvesting. Thus, the labour conflict in this area became more intense after the intensification of paddy cultivation (Bouton 1984; Gough 1981).

The scope for agrarian employment is limited by both gender and class or caste. Gough (1981) compares women's work between two Thanjavur villages, Kumbapettai (in the centre of the Old Delta) and Kirippūr (in east Thanjavur). She finds that more of Kirippūr's women worked in relatively independent circumstances and went out to work (ibid.385). However, in both the villages, non-agricultural occupations including cookery for teashops, housemaids and spinners involve only Brahman and non-Brahman women, but none of the Harijan women.

In such a social setting, employment opportunities for female agricultural labourers (mostly Harijans) might be better improved by increasing labour demand in cultivation and decreasing seasonal unemployment. This will require diversification of the cropping pattern in Thanjavur. Yet there are some

restrictive factors for crop diversification. In some parts of Thanjavur, where soils are clayey and saline, even though two-crop paddy is possible, no other crops, such as maize, cholam, gingelly, groundnut or coconut, can be grown. Some crops do not like inundation. What is more, Thanjavur's landowner managers are unwilling to change their mono-crop cultivation of paddy. One problem is marketability of other crops. For example, to grow sugarcane and make profits, sugar refineries need to be located close by, or transportation needs to be adequate, and the price for sugarcane has to be stable. None of these criteria is satisfied in Thanjavur. For another, the government of Tamil Nadu procured Thanjavur farmers' surplus paddy for rationing. The price paid for Thanjavur paddy was better than for the paddy from other districts, thus more profitable to Thanjavur growers. Below are the rates levied for paddy in the year 1975/76 (Rs. per quintal [one hundred kilograms]):

	Thanjavur	*other districts*	
Coarse	90	89	
Medium	95	93	
Fine	100	98	*(Srinivasan 1978: 131-132)*
Superfine	105	101	

Now that government procurement of paddy has ceased, "paddy does not appear to be such a profitable proposition as it seemed in 1975" (Srinivasan 1978:132). Srinivasan (*ibid.*) recommends that Thanjavur farmers should diversify cropping patterns in order to use available resources and labour optimally, and deplete soil nutrients less. However, the same author does not believe that Thanjavur's mono-crop orientation will change:

> Special high yielding varieties of maize, greengram, blackgram, gingelly, groundnut and coconut could be evolved which would enthuse the cultivators to go in further for such cash crops. But it is doubtful if these crops could replace mono-crop paddy in its

> entirety... Kuruvai and Thaladi are meant for export to Kerala and other districts of Tamil Nadu respectively...Hence it will be too much to expect Thanjavur cultivators to switch over to rotation of groundnut-maize-gingelly.... (Srinivasan 1978:28).

Ten years after Srinivasan's study (1978), the importance of paddy in Thanjavur's agricultural production slightly decreased, and other cash crops increased as their market price became attractive. In the year 1978/88, the percentage of area under paddy in Thanjavur dropped to 62 %. Total pulses increased to 16.5 %, groundnut to 5.1 %, gingelly to 5.4%, and cotton to 1.0 % (*Season and crop report 1978/88*). The actual impact is greater than this figure, as the drier part of southwestern Thanjavur where the production of dry-crops and other non-paddy cash crops was significant, was separated and formed the Pudukkottai district together with a part of Tiruchy.

In terms of the effect of increasing non-paddy cash crops on labour demand in Thanjavur, generally, these crops are female-labour intensive (as will be explained in the next chapter), and women's on-farm employment becomes more favourable. However, depending on who increased the acreage of these cash crops the implications will differ. If the increase is confined to owner-cultivators of small lands, it might imposed heavier work loads on women of the family, who already participate in farm work to a significant degree. This is because smallholders cannot afford to hire more outside labour as they need cash for other inputs. If the increase is not limited to small holders, female hired labour as well as male labour will be more in demand. However, we need more data to assess to what extent the current level of cash cropping in Thanjavur changed the employment opportunities as a whole.

In sum, the case of Thanjavur shows relatively high female labour participation in wet rice agriculture in peak seasons, but a shortage of year round employment. The degree of un(der)employment is especially serious in the

tail-end of irrigation systems in the Old Delta, where cultivation is mono-crop oriented, and paddy is usually single-cropped. The shift toward cash crops probably entails higher female participation. Employment for female landless workers will increase, provided that more managerial landowners diversify their cropping. Landless labourers's employment may not increase if it is only small owner-cultivators that diversify their cropping pattern.

Males have more opportunity for migrant labour than females, although sometimes *coolie* jobs such as carrying soil and stones are locally available for the females.

Social class overrides gender in the division of labour. Major operations of paddy cultivation, that is, transplanting, weeding and harvesting are carried out mainly by those of landless marginal households. In drier parts of Thanjavur, where garden and dry crops are important, the utilization of both male and female family labour within owner-cultivator households is comparatively high. Variation in the social relations of agricultural production between wetter and drier areas of Thanjavur presents a view in miniature of state-level variations within Tamil Nadu.

Chapter 5

Dry cultivation in the Kongu region

In this chapter, I draw on some literature on agro-economic conditions and female participation in agriculture in the Kongu region. I also introduce material from my own fieldwork to examine how women's participation is influenced by cropping pattern, labour demand, the gender division of labour, and the regional social structure.

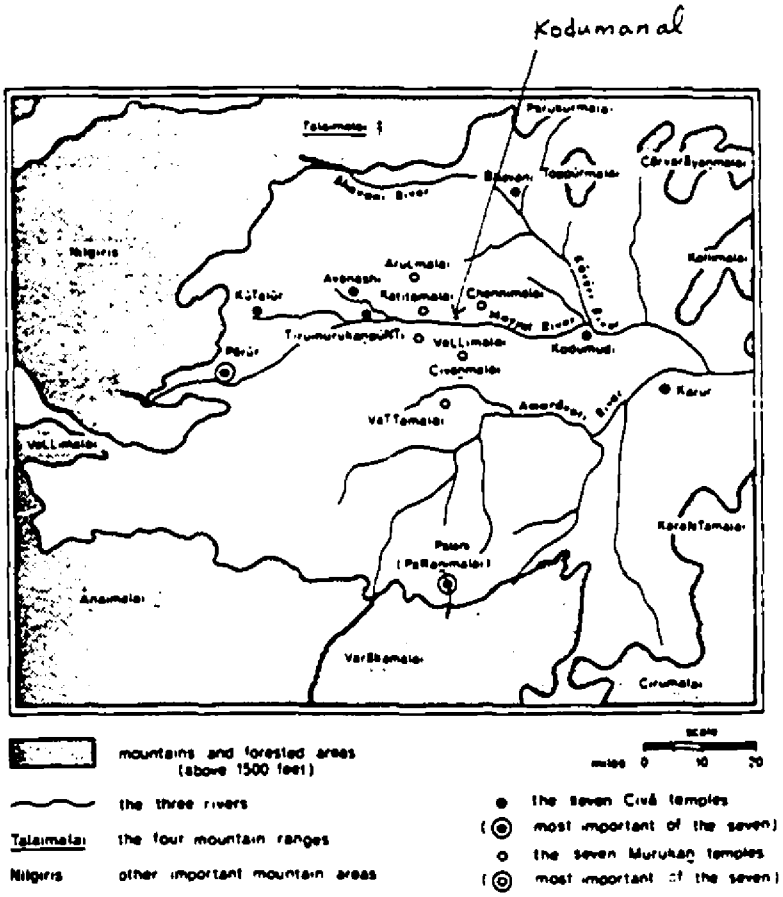
The Kongu region, located on the upper Kaveri in western Tamil Nadu, is an upland basin area (about 400 to 600 meters above sea level) with low rainfall and little river irrigation. The region is surrounded by the Western Ghats and other hills. To the west, there is a small gap in the mountains called Palghat. 'The southeast is the only direction in which passage is not imposed by high hills' (Beck 1972:22). In ancient periods, one of the most important trade routes passed from the Malabar coast in present-day Kerala through Palghat, along the Noyyil (a branch of the Kaveri river), to the southeast of Kongu, finally reaching the Kaveri delta. Along this route, gems, garments, and spices were carried and exported to Rome, Greece and Egypt (*Madras District Gazetteers, Coimbatore* 1966:25-26). Kongu embraces today's Periyar district (formerly the eastern half of Coimbatore district), parts of the districts of Coimbatore, Salem, Tiruchchrappalli, and Madurai.

Formation of the Kongu society

Kongu has been inhabited for a long period from at least the beginning of the Neolithic period (Ramaswami 1967). However, because the western and southern tracts are largely forests and jungles, the population used to be sparse. Pastoral and hunting peoples, who originally inhabited the region, were

Map 5.1 The Kongu region

(Source : Beck 1972 : 23)



gradually pushed away into more marginal hill ranges by immigrants. The new settlers cleared forests, opened lands for cultivation, and established villages. The process was intensified through the tenth to thirteenth centuries A.D., when Kongu was developed as a 'buffer state' (Baker 1984:200) for the Chola kingdom in the Kaveri delta. It seems that numerous Brahmans, Vellalas, and others of service professions such as barbers and carpenters came from the lower Kaveri to settle in this region (Arokiaswami 1956, cited in *Madras District Gazetteer, Coimbatore* 1967; also cited in Beck 1972).

Kongu did not remain under the control of one particular Tamil or Mysore kingdom for a long period but continued to be peripheral, and the local rulers had been rather autonomous. In more recent history, several waves of migrants reached the Kongu regions. In the fourteenth to the fifteenth century, Kannada-speaking people, many of them 'businessmen from Mysore', came to Kongu (Beck 1972:32). During the period from the fifteenth to eighteenth century, a political link with the Vijayanagar kingdom and later with the Madurai Nayakas became established. In that period a large number of Telugu speakers from Andhra Pradesh came as administrators, officials, and priests. In addition, there were migrants seeking business and job opportunities: merchants, artisans, cultivators, agricultural labourers, and others of service occupations (Beck 1972:32).

The influx of migrants might have created a tension with the already established agrarian community, including cultivators, agricultural labourers, and various service castes, who identified themselves with their local region. This group had strong attachment to the land. They obtained their livelihood from the soil: cultivators and agricultural labourers from farming; and *pucâris* (non-Brahman priests), barbers, washermen, etc., from payment in kind in return for their services to cultivators. This local group might have seen newcomers as a threat, since immigrant farmers and artisans brought new technologies and

systems of social and cultural organization (Stein 1980; Ludden 1985[1989]:46). What is more, these people from the north were economically independent.

This antagonism seems to have bifurcated Kongu society: one group who came to be referred to as the Right-hand division having a strong affiliation to the land; and the other Left-hand division including both local and newly-arrived merchants and artisans. Beck (1972) contends that the Gounders (Kongu Vellalars) were the role models for all other members of the Right-hand division. Thus, political and ceremonial units of the Gounders functioned as such for other members as well. In particular, Gounder leaders were considered as the final adjudicators for all other castes in this division (Beck 1972: 72-77). This suggests that the perceptions, values, and way of life of the Gounders were accepted more or less as norms for those in the Right hand division.

Discussion about the left and right castes is interesting, but it is beyond the scope of this thesis. What is important here are the implications of the Gounder model for the gender division of labour. Sparse population in this region rendered family labour much more valuable than in a densely populated region. Gounder farmers put high value on hard work both by males and females in the fields. Women work on the the land, especially their own family land, was not only acceptable, but appreciated. Thanks to this Gounder model, women's farm labour was valued socially as much higher in Kongu than in intensive rice regions, where, in contrast, cultivation jobs tended to be associated with farm servants, and low castes and Harijans. In this view, farm work in wet regions correlated with low social status, although their contribution was economically significant and might strengthen their status *within* their households. The Gounder agriculturist model stressing direct involvement in cultivation seems to serve a better economic opportunity and recognition for women.

Agriculture in Kongu

Dry cultivation concentrated on food grain production until the middle of the nineteenth century. In Kongu, cumbu millet was once the most commonly grown, followed by cholam and ragi. Poor soils needed to be fallowed to recover the nutrients, and these fallowed lands were used for grazing cattle. Kongu has been famous for cattle of the Kangayam species, which are sturdy and very good for draught animals. Kangayam cattle were raised not only for local use, but also for export to more fertile deltaic regions through numerous markets and fairs (*chandai*) (Baker 1984:203).

The soils predominant in the Kongu area were black and red. The black soils in the region were "heavy, liable to waterlog when wet and tessellate when dry" (Baker 1984:201). Very strong cattle were needed to plough these soils. The red soils, on the other hand, were "light, thin, and thus usually unproductive unless assisted by irrigation" (Baker 1984:201). In Kongu, the rivers were not perennial, and year-round irrigation was not possible. Tanks, which were vital irrigation sources in the plain regions, were not viable due to the Kongu region's sparse and undependable rainfall, absorbent soils, and high mean temperature which makes water evaporate quickly (Baker 1984: 201).

Since around the nineteenth century, farmers in Kongu responded to this environment by intensifying their cultivation methods. They invested in good strong cattle so that heavy black soils could be tilled by ox-plough. They dug more wells, which were expensive not only for the immediate costs of digging, but because of the risk that water might not come out at all. In addition, once wells were dug, cattle were needed for drawing water, all of which made well irrigation costly (cf. Attwood 1992). Yet once established, good wells could irrigate fields with certainty, on the condition that they were carefully used. Cultivation in Kongu thus developed around the well-irrigated lands called *tŏttam*, or "garden lands". Multitudes of crops were cultivated on garden lands:

cotton, groundnut, chilies, tobacco, and sugar. Garden cultivation rapidly expanded as well digging multiplied. In the Coimbatore district, the number of wells was around 18,000 to 22,000 at the turn of the 19th century; 27,097 in the 1814 census; and 35,411 by 1854. "In the following year, the British abolished special rates of assessment [of tax] on garden cultivation", and as a result, the number rose to 57,437 by 1872, and to 64,985 by 1880. "These number had roughly tripled to the point where there was roughly one per cultivator" (Baker 1984:202).

Since the second half of the 19th century, agriculture in Kongu developed much more rapidly than in other areas in Tamil Nadu. Nineteenth and twentieth-century British administrators and authors often noted the Gounder farmers' expertise, hard work, and wealth (Baker 1984:200) --a reputation which they enjoy even today. In Kongu, I myself was overwhelmed by Gounder farmers' enthusiasm, hard work, knowledge, constant efforts, and their pride in agriculture.

Markets for cash crops expanded as transportation improved. When railways opened in the last quarter of the nineteenth century, new trading centres emerged: "Erode for chilies and tobacco, Tiruppur and Coimbatore for cotton, Avanashi and Pollachi for groundnut" (Baker 1984: 205). Kongu farmers quickly responded to market growth by producing more cash crops, suited to their garden lands.

Cultivation of cotton, which had a long history in the region, was increased in response to the demand created by the American civil war, though production decreased at the end of the war. Then it increased again as the price in world market recovered, transportation improved, and a variety called Cambodian was introduced to Kongu and successfully adopted. Tobacco was expensive to grow, requiring careful watering but it could get a high profit per acre. The cultivation of groundnut started in Kongu around the first world

war. It was already a major cash crop outside Kongu in the plains region where groundnut was raised with a minimal investment. However, the kind adopted in Kongu was grown with irrigation and more labour, and yielded much more per acre (Baker 1984:206-207). According to Baker (1984), the quick response of Kongu farmers to a growing market for cash crops was due to the methods of cultivation already practiced:

> Kongunad farmers were accustomed to working at relatively high levels of capitalization and intensity and thus it was comparatively easy --and very profitable-- to move towards a far larger proportion of cash-crops... they already knew the techniques for the production of cash-crops on *thottam* gardens and on the black-soil tracts... (Baker 1984:205).

The rapid growth of cultivation in Kongu in the late 19th century caused a labour shortage, since garden cultivation needed continuous labour through out the year. The labour shortage was partly solved by a large number of migrant labourers from outside Kongu. In the early 20th century, landless labourers in Kongu were paid better than in other regions, and thus Kongu could attract labourers (Baker 1984:209). Baker also explains that permanent farm servants in Kongu were treated much better than *pannaiyals* in the intensive rice regions, and they were "more like an extension of family labour" (Baker 1984:209). This may be an exaggeration, considering the harsh reality as an agricultural labourer, even in Kongu. Yet it is true that the nature of agrarian conflict in Kongu was and is quite different from that in deltaic regions. Conflict in the regions of intensive rice cultivation developed as agricultural labourers' struggled for better status, campaigning against exploitation by landowners. In contrast, conflicts in Kongu are often the manifestation of cultivators' campaigns organized against government policies on agriculture, crop prices, subsidies, etc., and are not labour-management

conflicts (Gough 1981:104) .

The intensive style of cultivation in Kongu favoured female labour. On *tôttam* many crops are grown in order to reduce the risk of price fluctuations and natural disasters such as drought, insect attacks, and plant diseases. Unlike mono-crop cultivation, this means different operations are needed at the same period for different crops. Most tasks required for garden crops were carried out by both male and female family labour supplemented by hired labour.

Ramamurthy (1988) examines the impact of agricultural intensification on women's work in a dry village of Andhra Pradesh, which became canal- irrigated in the 1950s. She finds that irrigation enabled the villagers to grow paddy, irrigated cotton, tobacco, irrigated groundnut and chilies. Consequently, as the necessary operations increased, many tasks became available for women, and a dramatic transformation in women's work occurred:

> In contrast to the 25 woman-days for jowar [*cholam*], paddy requires 53 woman-days per acre. Compared to 44 days for rainfed cotton, irrigated cotton requires 112 woman-days per acre and compared to 23 days for rainfed groundnut irrigated groundnut requires 45 woman-days (1988:9-10).

Ramamurthy explains that irrigated agriculture can increase women's opportunities to work and earn more, and that diversified cropping including female-labour-intensive crops such as onion and cotton could be more beneficial for women (1988:24). Her conclusion, however, is that the intensification of agriculture was *not* beneficial to female agricultural labourers and marginal cultivators.

> In fact, ...the technical organization of labour has changed so that even the smallest cultivator needs to hire non-family labor at certain times in the crop cycle. To minimize the cost of hired labor, family labor is used as much as possible. Moreover, the financial intensity of

> irrigated agriculture --the need to purchase seed, fertilizer, pesticides, etc.-- *forces* women from marginal households to work on other farms as well to generate cash incomes (1988:15, my emphasis).[2]

In Kongu, a transformation similar to that shown in Ramamurthy's village study had already occurred by the middle of the nineteenth century. The difference from Ramamurthy's case study is that HYVs (high yielding varieties) were not yet known at the time of intensification in Kongu. Therefore, Kongu women were not 'forced' to work to the same extent to finance the inputs of HYVs. Overall, changes in cultivation increased demand for female family labour in Kongu. Whether the increase in farm work opportunity is favourable for women or not, however, depends on each woman's situation.

Industry as a source of female employment

The textile industry developed around the Coimbatore area as cotton was an abundant crop. Hand spinning and handloom weaving are among the oldest industries in the region. In Chennimalai, coarse cotton saris are woven from yarn obtained from local mills and from coloured yarn obtained from Madurai. In Coimbatore and Dharapuram, silk is imported from Mysore, then dyed and woven into silk saris. Block-printed cloths are made in Tiruppur, Chinnimalai, and Coimbatore (Madras District Gazetteers, Coimbatore: 324-327). The rapid industrial growth of Coimbatore city, the 'Manchester of South India', is due to the development of hydro-electricity from the Pykara Falls in the 1930s, which led to the boom in cotton textile milling (1995 India Handbook:890). In the surrounding villages, there are numerous textile-related home industries, such as spinning yarn and weaving, where both men and women are employed.

Kodumanal village

Kodumanal, located on the northern bank of the Noyyal (also spelled Noyyil) river, is a revenue village in the Perundurai taluk, Periyar district. Kodumanal village (*grāman*) contains three hamlets or villages (*ūr*): Kodumanal, Kuppampalayam and Siviyarpalayam. In the 1991 census, the total population is 934 (males 469 and females 465) in an area of 705.3 hectares. Among the three *ūrs*, Kodumanal is the main village with about 80 households and 300 people. Most of these (about 60 households) are Gounders who are basically landowner-cultivators. Seven Christian (Scheduled Caste) households were initially located 200 meters south of the main habitation area. After the new dam flooded their houses, all of them moved to about 500 meters east to the main village, where they established their 'colony' in 1993. The second *ūr*, Kuppampalayam is located one kilometer north of the main village. Its population is about 350 people, with approximately 80 households, of which about 30 are Nadars and 50 are Harijans (Non-Christian Scheduled Caste). In terms of occupation, many Nadars make their living by tapping palmyra palm trees, a very hazardous and laborious job. The Harijans are completely bilingual in Telugu (their mother tongue) and Tamil (the language used outside the family). Most of them work as agricultural labourers for Gounder landowners. By 1995, a new residential area ('new colony') was set up, and now half of the Harijan households live there. The third *ūr*, Siviyarpalayam, 1.5 km east of Kodumanal, had a dozen Gounder households as well as a few different castes. By now, it is under the dam water, and the people were forced to evacuate. The rest of the village population is thinly scattered. I will use the name Kodumanal to indicate the main village from now on.

In the main village, Kodumanal, most of the households receive electricity, and have radios. Some of them have had telephones since 1986. Three families have television sets, in addition to the one belonging to the

village panchayat (council hall). There is one elementary school (up to grade five) with two permanent teachers. All the students are provided with a mid-day meal at school, which is a Tamil Nadu government program. Mails are delivered daily. No household regularly subscribes to any newspaper. Most of the children can now read and write, in contrast to the adults, especially women over middle age who largely are illiterate. Tamil magazines of various genres are widely read.

Kodumanal has no hospitals, biomedical doctors, or traditional medical practitioners. Those who can afford to go to hospitals in Tiruppur as need be. There are no midwives either, and Gounder women go to the town hospital for childbirth. A primary health care centre is located at a nearby village, Ramalingapuram, which is a few kilometers away. This centre serves thirteen villages. A woman health worker visits four villages including Kodumanal, vaccinates infants and also distributes contraceptives.

By 1995, seven water spigots were built. Previously, water for bathing and dish washing was drawn from a large well with a motor, located at the center of the village. Water from this well was *uppu tanni* ('salted water'), not drinking water. *Nalla tanni* ('good water') needed to be fetched from about 500 meters away. Both the wells were used by caste Hindus; Christians had to go further away for their drinking water.

The villagers set up a milk cooperative, which collects milk in the village and sells it at Tiruppur town. There is a government shop where subsidized rice, wheat, oil, and other rations are sold. Two other shops are privately owned; they sell a small variety of vegetables, spices, tea, coffee, sweets, juice, etc.

Agriculture in Kodumanal:

Villagers call their farming *mânâvari*, or dry cultivation on the rain-fed

tracts. Compared to the taluk as a whole, the crops raised in the village are limited: no paddy, tapioca, or castor are grown. The main crops are cholam, cotton, groundnut and gingelly. The soils prevalent are red and sandy, and not of good quality. Kodumanal is bordered on the south by the Noyyil river which dries up during half the year. There are a few *anicuts* (river diversion systems built of stone) along the Noyyil. Kodumanal does not benefit from them, as the stream flows in lower areas. Farming in this village mostly depends on rainfall, which fluctuates yearly as much as 35% (Madras District Gazetteers, Coimbatore:16). Dry, unirrigated rain-fed fields are called *kâdu*. Some Gounder landowners privately own wells equipped with motor-pumps, and thus garden lands, *tôttam*, irrigated by these wells. Each *kâdu* or *tôttam* is called a distinct name, such as 'fig-tree tottam', 'big kadu', or 'Kuppusami's tottam'.

The first farming season generally begins around July-August. In June, strong winds blow in this region. When the showers come, around July-August, major crops are sown: tobacco, ragi, greengram, irrigated and unirrigated cotton and groundnut, and unirrigated cholam. These crops are harvested mostly in the months of December-January. Between February and March, cotton stalks remaining in the fields are all pulled out. The second season begins around March, when irrigated cholam and gingelly are sown. These are harvested from May to August. The busiest season falls in August and September. From June to July farming slows down, which allows many life-cycle ceremonies and weddings to be held. Figure 5.1. shows the major crop seasons of this village. Actual sowing and harvesting dates are subject to varying rainfall and change every year. Certain rotation patterns are preferred in Kodumanal: Tobacco is rotated with periya cholam or cumbu, groundnut or gingelly with cotton or fox millet, and cholam with gingelly.

Kinds of crops sown depend on one's landholding: its size, soil quality, and irrigation. Usually the villagers try to diversify their crops, with

tobacco and cotton taking first priority as cash crops. Thus, Laximi', a fourty years old Gounder woman of a big landholding family, explains:

> With a one acre field, we plant half an acre each of tobacco and cotton. With two acres, 1 acre of cholam is added. The cholam includes both food and fodder cholam. With 2.5 acres, further half an acre of groundnut is added. If we have more land, more cholam is planted. If irrigation is available, we can grow cotton, tobacco, and groundnut. If irrigation is very good, even paddy and sugarcane may be sown.

Her family has 46 acres, of which about five acres are tottam, the rest is kadu. The family yearly harvests about 500 kg of tobacco, 500 kg of cotton, 300 kg of cumbu, 300 kg of gingelly, one ton of groundnut, and 200 kg each of fox millet and yellow cholam. Among landowners, the percentage of tottam to the entire holdings varies. In another case, a Gounder owner-cultivator family has thirty acres of land, of which about 20% is tottam. For the year 1994, this family planted 2 acres of tobacco, 4 acres of cotton rotated with 4 acres of groundnut, and 4 acres of gingelly. In addition, over ten acres of cholam was planted. The rest was put in fallow. From these examples, it is clear that a dry-land farmer's wealth really depends on his holdings of tottam. The scope of my study did not allow me to investigate further the distribution of landholdings in this village. From interviews and observations, I estimate that about five Gounder families own more than thirty acres of land, and most other Gounders have less than ten acres.

Gender division of labour:

Some tasks are preferably done by men, others by women, the rest are carried out by both. The tasks which are considered to belong to men, in this village, include seed-bed preparation by plough, making irrigation channels and drawing water to the field, intercultivation by plough or hoe, and application

of pesticides. Winnowing and clearing of harvested products are generally women's work in Kodumanal. The following table (5.1.) gives some idea of the gender division of farm work in this village. The table was constructed using data drawn from my interviews and observations, and is by no means complete.

Most of the landowning Gounders in this village work in the fields themselves, with the help of hired labourers. Most commonly, husbands and wives work together in their family fields. Among such couples, the division of labour is not very rigid, and it is a matter of accommodation and voluntary arrangement between the couple. In some cases, for example, the wife takes care of the cattle, by washing and feeding them. In other cases, this is done by the husband. Or they take turns, depending on each other's tasks. Weeding various garden crops is done by both. Grown-up children (sons and unmarried daughters) also join with their parents in the farm work. Before dawn, Gounder men go to the field and start working. The time of morning when a woman can leave her home for the field depends on her housework responsibilities, depending on whether she has babies or children; whether she finds someone to take care of them; whether her mother, her mother-in-law, her grown-up daughter, or daughter-in-law available; whether she has to do all the housekeeping alone, or has someone to help her. In this village, there are no large extended families --mostly nuclear and stem families. Arrangement of child care also depends on whether relatives (such as a husband's sister) live nearby.

Women's work as Gounder owner-cultivators

This diary follows one woman's work over two days. As noted, Laxmi, with her family, owns a relatively large tract of land (46 acres).

A day of work for Laxmi, May 31, 1989

Laxmi got up just before dawn. She sent her husband out to the field

Table 5.1. Gender division of labour among (owner) cultivators, Kodumanal

	women	men
cotton	-weeding -application of salt/fertilizer -thinning -harvesting -processing cotton	-seed-bed preparation -application of insecticides and fertilizers -weeding -watering
groundnut	-weeding -digging out the plants -plucking off the groundnut	-seed-bed preparation -sowing seeds -weeding -watering -application of insecticide
tobacco	-transplantation -thinning -application of salt -weeding -harvest leaves -carrying them to the threshing floor	-nursery and seed bed preparation -watering -weeding
gingeliy (sesame)	-sowing sesame seeds -harvesting -dehusking -winnowing -weeding	-seed-bed preparation -watering *(According to the villagers, 3/4 of work for gingelly is done by women)*
cholam	-weeding -drying ears	-seed-bed preparation -sowing
vegetables	-weeding -harvesting	-seed-bed preparation -application of pesticides and fertilizers
cumbu	(-no weeding) -harvesting	-seed-bed preparation

Source: My fieldwork, 1995

which is one kilometer away. Around six o'clock, she served coffee to her sons and herself. Her morning routine started with churning butter out of milk, followed by grinding dried peas for breakfast *vadai* (cutlet). She fed her chickens, washed the dishes from the previous day, cleaned inside and around the house, and cooked breakfast. About 8:30 a.m. she brought breakfast to her husband in the field. She picked a basket full of cotton until ten. Then she brought it back to her house, where she took apart the cotton and sorted it into better and lesser grades, bagging them separately.

At noon, she prepared lunch. Her husband came back home, had lunch, then went back to the field. The heat was severe on that day, and Laxmi took a rest, lying down with her three-year old nephew, for twenty minutes. Then, she took out a bag of harvested cotton bolls and started ginning again. Around three in the afternoon, two women neighbors visited her. They exchanged some news, but she and her guests continued the same work, together, while chatting. At four o'clock, Laxmi went back to the field, gave water and feed to the buffaloes, goats, and hens. Then she picked some cotton in the field. At about six-thirty or seven, she went back home alone, and started cooking supper, which was served around 9:00 p.m. Her husband returned home around 8:00 p.m.

A day of work for Laxmi on June 18, 1989

In the morning, Laxmi did her routine work, beginning with butter churning. At 10:30 a.m. she went to the well of 'good water', 0.6 km away, to fetch drinking water with her younger brother's wife. (Water was drawn, using a rope and a small water pot). She filled a big, heavy stainless steal pot with water, placed it on her head, and carried it home. (She makes this short trip once every three to five days). Around noon, she went to the field, carrying lunch for her husband. They ate together at the barn. In the afternoon, three Harijan woman workers, who are often called for this family's farm work, came

to the barn. They winnowed sesame seeds to separate them from mud and dust. These sesame seeds had been harvested several days previously, taken out of the pods, and collected together. Laxmi supervised these women's work, herself also winnowing with them. Three women labourers sang a Telugu song for winnowing. The barn became very dusty inside. Sesame seeds are very oily, and everyone became blackened from head to foot at the end of four hours of work. Cleaned seeds were bagged. Laxmi thanked these women for their work, paid each of them five rupees and a bag of sesame seeds. That evening, her husband finished supervising ploughmen working in the field of tobacco. Laxmi and her husband went back home together around 6:00 p.m.

It was once normal for Gounder women to work in the field. These days, however, among the medium sized and larger landholding families, women go less to the fields and are less directly involved in cultivation. Gopalasami who owns 30 acres says:

> 'Once all the Gounder women took care of cattle, and did many tasks in the field. Nowadays, they stay more and more at home.'

However, even Gounder women of big landowners do not completely withdraw from farm work. Gopalasami's wife, Govindammal:

> 'In the morning, I go to the field. I have to go to garden if this person (her husband) is not there. But I do not go all the time. When they (men in general) go to the field, we (women) do not have to go. I have to feed my children, and send them out to school.'

Interviews need to be carefully interpreted taking into account direct observations: in fact, Govindammal actually goes to the field in the morning as often as she can.

Gounder women of marginal landowners work longer hours in the field. Owners of larger farms can afford hiring labourers for intense farm operations,

and women may supervise labourers' work, as just seen above with Laxmi, or stay at home to do other work. Gounder women of marginal families work very hard and some do *coolie* work as well.

Women landless labourers:

Mencher, Saradamoni, and other authors clarified the importance of female agricultural labourers' contribution to paddy cultivation. But the significance of female agricultural labour in dry regions has not yet been explained. In Kodumanal, women agricultural labourers are much more important than male labourers in terms of the amount of work performed. Male labourers are employed mainly for ploughing, seed-bed preparation, and some inter-cultivation. Female labourers, on the other hand, are employed for sowing seeds, transplanting of ragi, cumbu and tobacco, hand weeding, harvesting, and harvest-related operations. The kind of work for which they are employed is shown in the following table 5.2.(made from interviews).

In interviews, male and female labourers explained that they will work for any Gounder families. Some develop strong ties with particular Gounder families, who call them first for work. Although they are not attached labourers, Gounder landowners sometimes refer to them as 'our family's workers'.

In this dry region, total crop acreage waxes and wanes, and the kinds of crops sown differ from one year to another. Without rainfall, they cannot cultivate much. Gopalasamy explains:

> 'If there is good rain and there are plenty of weeds, we will call for five or six labourers. In the year of little rain, there is not much work to be done. Maybe we call one or two persons.'

The most intensive tasks which require many hired labourers are the weeding of various crops and cotton harvesting. Both Gounder landowners and Harijan

Table 5.2. Division of labour for agricultural labourers, Kodumanal

	women	men
cholam	-harvesting	-ploughing
tobacco	-transplanting -the 1st weeding by hand	-ploughing -the 2nd weeding by hoe
ragi	-transplanting -weeding -harvesting	-ploughing
cumbu	-transplanting -harvesting (no weeding)	-ploughing
cotton	-weeding fallowed cotton fields -weeding -harvesting	-ploughing
groundnut	-weeding -harvesting -plucking off the peanut	-ploughing
sesame	-sowing -harvesting -winnowing	-ploughing
vegetables	----	-----

Source: My fieldwork, 1995

workers answered that not only women but also men can do these tasks. However:

> 'Men can pick cotton, but the wage is not high. So men won't do it.' (Harijan labourers)

Wages for certain tasks are fixed, regardless of gender. Yet usually male agricultural labourers are paid Rs.40 per day for tasks such as ploughing and hoeing, while female labourers are only paid Rs.20 for various tasks. When unemployed in the field, male labourers find *coolie* jobs in towns. In Tiruppur, they are employed in *Banian* companies which produce cotton knit underwear and various clothes. Also in Chennimalai, they work for weaving factories. From this village, only men go to work in Tiruppur or Chennimalai, as there is great hesitation about women's traveling to town for wage work.

The availability of off-farm employment for male agricultural labourers creates more on-farm employment opportunities for female labourers. Thus rain fluctuation affects female labourers economically more than the men. Though women labourers might occasionally do some coolie work near the village, such as road construction and repair organized by the government, such employment opportunities are still very limited.

The impact of Tiruppur's rapidly growing industry on village economy

Agriculture was and is the most important occupation for most of the villagers. Although, with a famous weaving centre nearby, some participated in activities such as spinning yarn and handloom weaving at home, these are not the major occupations in Kodumanal. In 1989, a school teacher tenaching in Kodumanal but originally from Kanniyakumari, which is an educationally advanced area, explained:

> 'In this village, the dream of most of the children's dream is to become *a good farmer* like their father. But in Kanniyakumari, all students want to be doctors, teachers, engineers, pilots,...'

This narrative tells us how Kongu farmers' enthusiasm for agriculture is passed on to their children. This comes from the high standard of Kongu agriculture which was attained because of the farmers' innovative and entrepreneurial spirit. At the same time, it was very difficult for the villagers to get good urban jobs. Murthy, medium farmer, explained in 1989:

> 'Here, we need a lot of money for bribing in order to get a good town job. Oh, we cannot afford such an amount of money.'

Today, working in Tiruppur town's cotton knitting 'company'[2] sounds trendy for the village youth. Boys working in companies wear more modern, colourful and fashionable clothes. The money they bring in also transforms the village: this can be seen in the increased number of motorcycles, for example. The transformation is great, in my eyes, compared to six years ago when frugality was one of the most important teachings of the villagers.

Tiruppur (population 235,000 in 1991, 53 km from Coimbatore city), is located some twenty kilometers away from Kodumanal village. It is a rapidly expanding town, previously an 'obscure town' developed into 'India's premier cotton knitting manufacturing centre' (Padmini Swaminathan and J.Jeyaranjan 1994:1).

> Upto 1985 the export growth was slow but steady. From a modest beginning of Rs. 18.06 crore [Rs.180 million] direct exports from Tiruppur in the year 1985, the direct export in 1993 was Rs.1197.55 crores [Rs.12 billion]. Including indirect export from centres like Bombay, delhi, etc., Tiruppur's contribution to garment export has crossed Rs.2200 crores [Rs.22 billion]. In short Tiruppur exports nearly 85 per cent of the total cotton knit wear exported from India (Tiruppur Exporters' Association [TEA] 1994, cited in Swaminathan and Jeyaranjan 1994:1).

Tiruppur's garment industry is made up of a network of numerous small and

medium-sized manufacturers: "2500 knitting and manufacturing units, 600 processing units, 300 printing units, and 100 embroidery units" (ibid.:1). Owners of factories are mostly Chettiyars (traditionally a merchant caste), Sengunthar Mudaliyars (traditionally a weaving artisan caste with large numbers in the Kongu region), and Gounders (traditionally agriculturists). Swaminathan and Jeyaranjan (1994) noted that the latter two castes share common values, which are "an extraordinary capacity to work to succeed under inhospitable conditions and a work ethic that is shared and imbibed by all members of the family including women" (15).

One interesting phenomenon is that ownership of the knitting factories by Gounders is increasing more rapidly than the Chettiyar ownership (ibid.:9). I feel that this has an important impact on labour force recruitment from surrounding villages. Chettiyars and Sengunthars have been historically quite independent of agrarian village economy. Gounders, in contrast, have been the dominant rural caste and functioned as the centre of agrarian economic activities in Kongu. Increase in the Gounders' ownership of companies in Tiruppur will probably make more employment available not only for the Gounders but also for closely related castes (former allies in the Right-hand division, in other words).

In Kodumanal, the three sons of the Gounder family who hosted me during my fieldwork set up their own manufacturing and exporting company in Tiruppur in 1994. This family is unusual because two of the sons have M.A. degrees, which is a very high achievement by the standard of their village. Two unmarried younger sons' interest is solely in their 'company', yet the married eldest son is also interested in his family's farm management. Their company now employs a dozen workers, half of them from Kodumanal.

Considering the growth rate of Tiruppur's industry, it is expected that labour demand will further increase and absorb more workers from both the

owner-cultivator and landless labourer classes. At that point the women left behind might become more important in agricultural work. At the moment no women go to work in Tiruppur from Kodumanal. However, in the near future, women might go to Tiruppur for factory or company work. Women (and children) are working at factories in Tiruppur but none from this village. When many village women begin to work in Tiruppur, the entire picture of the labour market in Kodumanal village will be repainted.

To summarize, family labour has been an integral part of Kongu agriculture. Kodumanal village is an example of how labour is organized in this region. Women of even large landholding households frequently work in the fields, although there is now a tendency for such women to work less in the fields than before. In Kongu's dry cultivation, female landless labourers contribute significantly to agricultural production.

Kongu agriculture evolved around the small tracts of garden land irrigated by wells and the vast tracts of dry land where millet is raised. The intensive cropping on garden lands and the cultivation of a variety of crops favoured female farm employment. In addition, the fact that a dominant agriculturist caste, the Gounders, place importance on cultivation by themselves augments the value of overall agricultural work in this region.

Note

1 The personal names I use in this chapter are all pseudonyms, although words from the original interviews are unchanged.

2 The villagers use this English word.

Table 5.3. *Crop Acreage in the Perundurai Taluk, 1993/1994*

Total area:		80,621	ha	
forest:		1,069	ha	
waste land:		411	ha	
non-cultivated area:		11,139	ha	
land in fallow:		3	ha	
grazing area:		43	ha	
area covered with groves, trees		2	ha	
land in fallow this year(93-94):		12,068	ha	
other fallowed area:		1	ha	
net cultivation area:		55,885	ha	
[Irrigated area]				
paddy		4,873	ha	
colam*	-1st season:	66	ha	* jowar; sorghum
	-2nd season:	16	ha	
kambu*	-1st season:	20	ha	* bulrush; pearl millet
	-2nd season:	--		
maize*		12	ha	* makkāc cōlam
ragi*		18	ha	* kēlvāku
chillis		67	ha	
others (vegetables & fruits)		1,135	ha	
total pulses		45	ha	
banana		370	ha	
tapioka		186	ha	
tuber*		113	ha	* cēnai: a kind of yam
avaraikkāi*		105	ha	* field beans
tomato		89	ha	
groundnut	-summer crop*	1,459	ha	* *kōdaip payir*
	-rain season crop*	1,848	ha	* *mārip payir*
castor		25	ha	
coconut		685	ha	
total oil seeds		5,477	ha	
cotton		1,238	ha	
sugarcane*	-transplanted crop	840	ha	* can be harvested in the
	-succeeding crop	357	ha	succeeding years
fodder		834	ha	
other non-food crops		62	ha	
total		7,782	ha	
Total irrigated crops (food/non-food)				16,268 ha

[including irrigated area + dry crops]

paddy	-*kuruvai* (1st crop)	4,178 ha	
	-*samba* (2nd crop)	695 ha	
*colam**	-1st crop	207 ha	*jowar: sorghum
	-2nd crop	16 ha	
*kambu**		52 ha	*bulrush: pearl millet
maize		52 ha	
ragi	-1st crop	10 ha	
	-2nd crop	8 ha	
total food cereals		5,178 ha	
total pulses		2,475 ha	
	(*total food cereals & pulses*		7,653 ha)
total vegetables & fruits		1,037 ha	
	(*total food crops*		11,110 ha)
cotton		1,238 ha	
groundnut		17,854 ha	
summer season crops		1,459 ha	
total		19,313 ha	
sesame		1,449 ha	
total oil seeds		21,461 ha	
tobacco		171 ha	
fodder *colam*		25,043 ha	
flowers		3 ha	
eucalyptus		4 ha	
casuarina		8 ha	
mulberry		8 ha	
black babul		1 ha	
total non-food crops		48,888 ha	
total food/ non-food crops		59,998 ha	
double-crop area		4,113 ha	
total area sown		55,885 ha	

water source: Lower Bhavani Project

Source: Crop report, 1993/1994 (Office of Collectorate, Erode)

Table 5.4. *Population of the Perundurai Taluk and Kodumanal, 1991*

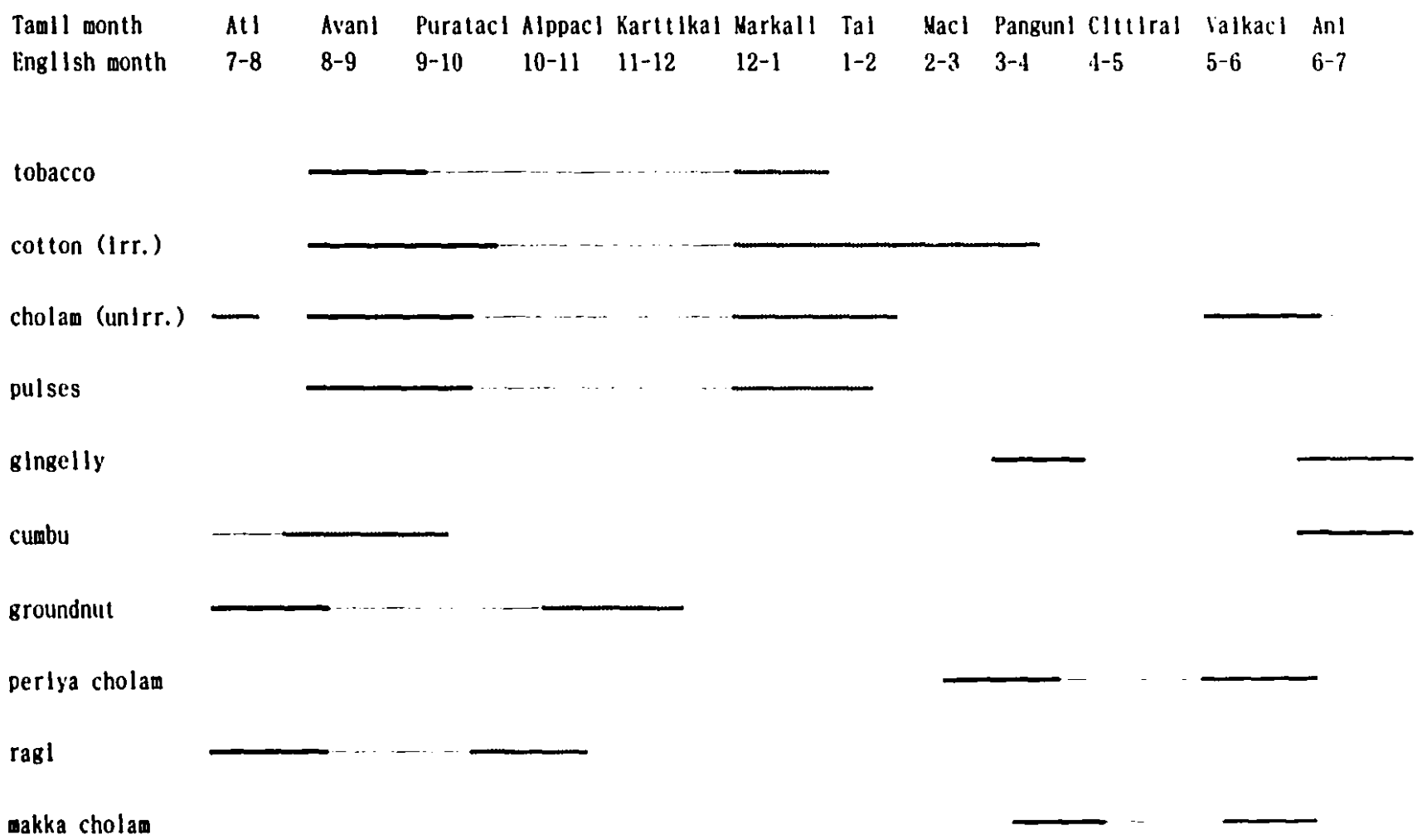
Pedundurai Taluk		
Total population		237,547
Female		116,469
Male		121,078
Sex Ratio	1.04	
SC* total		23,799
Female		11,590
Male		12,209
Sex Ratio	1.05	

Kodumanal Village	
Total area	705.30 ha
Total households	225
Total population	934
Female	465
Male	469
Sex Ratio	1.009
SC total	199
Female	100
Male	99
Sex Ratio	0.99

* SC: Scheduled Castes

Source: Census (Government of Tamil Nadu, 1991)

Fugure 5.1. *Farm Cycle, Kodumanal*



Source: My fieldwork, 1989 and 1995

Chapter 6

Conclusion

In my research I set out to examine the assumption that different agro-economic zones are pre-eminent in conditioning women's status. If the increased level of female employment in rice cultivation in India brings the women a better social position, and if the unavailability of female agricultural work in northwestern India threatens women's chances for survival, can we establish a similar correlation between women's work and their status in millet *versus* rice cultivation areas within the state of Tamil Nadu? The answer obtained from my medium-range analysis at the state level is not as simple as might be expected. There is no neat correlation between agro-economic zones, on the one hand, and women's involvement in agricultural production (measured by FLP) and gender discrimination against female children (measured by JSR), on the other.

In comparing JSR and FLP measurements from the 1961 and 1981 censuses, major dilemmas arose from: 1) the unclear census definition of female cultivators; 2) the artificial boundaries of districts as agro-economic zones; and 3) the periods of reference for comparison. First, as explained in chapter two, female cultivators were greatly underenumerated in these censuses. Not only was this category ill-defined, but wives or daughters of landowners may not have been counted as independent cultivators, and perhaps were omitted as auxiliary workers. In fact, those enumerated as cultivators might have been mostly widows. In addition, a newly introduced category -- that of marginal workers in the 1981 census -- made it still more difficult to count women farm workers properly. Second, each administrative district contains both dry and wet lands, as Bouton shows in his study of Thanjavur (1984). This complicates comparison of agro-economic differences between districts. Even

within a single village, lands are variable, and it is impossible to find an entirely dry or entirely wet district. Third and last, is the time period of comparison. To classify regions into dry and wet areas, I used the 1987/88 *Crop and Season Report*, which was available in December, 1995. However, my zoning of wet and dry regions according to the 1987/88 data may be inadequate, for I calculated the FLPs and JSRs from the older 1961 and 1981 censuses. Of course, the effects of agricultural practices do not immediately emerge in clear demographic behaviour. However, even if I could have used older agricultural data, the classification of some districts as intensive paddy production areas (Thanjavur and Chengalpattu) and of Kongu as a dry cultivation area (in parts of Coimbatore, Periyar and Salem) would have remained the same.

Despite these dilemmas, the comparison between a wet paddy region (Thanjavur) and a dry millet region (Kongu) was useful. The findings do NOT actually contradict two assumptions which have been applied to the analysis of India's agro-economic regions. The first assumption maintains that in the areas of relatively high FLPs, more balanced JSRs are found. The second assumption, by Maclachlan (1993), holds that the JSRs are balanced in both rice and millet areas. Within Tamil Nadu, high FLPs are found in both rice and millet regions. JSRs are variable, and do not seem to correlate with agro-economic patterns. Yet these variations in the JSRs can be treated as trivial, compared to inter-state difference between India's northwestern states and Tamil Nadu. In fact, the JSRs in Tamil Nadu are all more balanced than those in northwestern India.

Although FLP is high both in the wet and dry areas of Tamil Nadu, my comparison clarified that the conditions of FLP are dissimilar due to their different cropping patterns and social structures. First, it is not simply a matter of major crops, whether millet or rice, that shapes the FLP. Rather we must analyse more closely the cropping pattern of each region: the kinds of crops sown and their labour intensity. By the latter, I mean the kinds of

labour which specific crops require during specific time periods. Thus in the wet rice regions, women's contribution to rice cultivation, specifically transplantation, weeding, and harvesting, is extensive. But in the parts of Thanjavur where cultivation is mono-crop oriented, seasonal unemployment is great. In the millet regions, where now various cash crops are grown on small tracts irrigated by wells, women's involvement in cultivation is also significant. Garden crops are female-labour intensive and require attentive care year round. As small quantities of variable crops are sown at different times, the labour demand is more evenly spread over the year.

Secondly, the division of labour, in the framework of Tamil society, shows some preference in task allocation by both gender and class, according to the nature of each task. Ploughing is done by men, for example, and hand weeding by women, while rice transplantation tends to be identified as a task for female Harijan landless labourers. This gender division of labour is neither absolute nor universal, but rather arbitrary, settled only culturally in a given region. As Mencher suggests, the reasons for differences in the gender division of labour are complex and difficult to ascertain (1988:104). I found examples of inter-regional and inter-village variations of task allocation even within Tamil Nadu.

From these differences, it is impossible to predict which of the two regions' women should have a higher status in the society. The formula used in this argument -- that a higher FLP makes women economically more important and therefore their survival chances increase (JSR is more balanced) -- appears to be increasingly inaccurate as we look more closely at the details of FLP. Apparently, the economic value of women as defined by FLP is not synonymous with women's status, but is defined by multiple factors. Indeed, if women have more opportunities to work in the field, does that necessarily mean a higher status in society, as well as within the household? If female

labourers contribute significantly to paddy cultivation, does this imply a better social position, even if the conditions of work are hazardous and wages are low? Considered this way, FLP -- defined as the percentage of female agricultural workers (the sum of owner-cultivators and landless labourers) to the total female population -- appears to be a very rough measurement. As my comparison within Tamil Nadu shows, women cannot be aggregated into just one group, given the significant socio-economic gaps in this society.

We must re-examine if the state variations in JSRs and FLPs in India really arise out of the distinction between chief-grain areas. The labelling of India's agro-economic regions as 'wheat, rice and millet' or 'dry and wet' comes in handy, but it is a double-edged sword. The labels are useful to predict characteristics of regional social structure, the way agricultural labour is organized, and women's participation in farm work to some extent. Yet they can also be misleading because these labels give us an impression that the same pattern exists under the same major crop throughout different regions.

Take, for example, paddy cultivation. Its labour demands can be drastically changed according to diverse conditions: whether transplanting or broadcasting method is used, whether paddy fields are flooded or dry condition, and whether single, double, or even triple-cropped paddy is raised. It is natural that variable FLPs are found in the rice regions of a large country such as India, where types of riziculture greatly differ from one region to another. In contrast, due to limited agro-climatic conditions, labour demand for millet cultivation cannot be changed as drastically as for paddy cultivation. Female labour demand can be significantly increased by expanding cultivation of irrigated crops on garden lands, as we have seen.

This leads us to reflect on the characteristics of wheat cultivation in northwestern India. Compared to the rice and millet patterns, the wheat pattern may be exceptional in at least two ways: first, the wheat region in the

northwest is exceptionally uniform in agronomic conditions, with very fertile soil and irrigation available from perennial rivers: second, the cropping pattern and the gender division of labour is exceptionally adverse to women. Conditions in the wheat region may more seriously affect women's status than in the millet and rice regions. In sum, the wheat pattern may be the only case where a strong correlation between FLP and JSR is established. For other regions, the correlation is not evident, particularly because the FLP is influenced by a complicated combination of factors. Yet, before assuming that the wheat pattern is simple in terms of the correlation of FLP and JSR we must wait for a more detailed micro-analysis of various factors which may affect FLP in the wheat regions, including the social relations of production.

If the majority of the Indian population live in agrarian communities, is it possible to increase employment opportunities for women for their benefit? If, as Mencher (1978:206) and Bina Agarwal (1995) suggest, Indian women should own their own land and become economically independent, will their tasks become more diverse and their opportunities greater? Perhaps, as Babu *et al.* (1993) advise, women had better quit the tradition-bound agriculture pursuits and seek non-traditional employment.

I myself do not hold such a radical stance as Agarwal, but would suggest that the Gounder model found in the millet region is favourable for women. In this model, both men and women work in their fields with pride, sharing responsibilities and decision making, and respecting each other's work. Although my admiration for Gounder woman cultivators is great, I do not idealize their life and agriculture in Kongu nadu. First of all, the society of Kongu is by no means egalitarian. The above model fits only the relatively well-to-do land-owning cultivators. The economic stress faced by marginal landholders and landless labourers is as serious in Kongu as in other regions. Women of this stratum have great economic difficulties in their lives. In

years of drought, there is little agricultural work available and their incomes consequently shrink. If alternative off-farm employment is unavailable, these women and their families become impoverished.

But such a pattern of life does not clearly emerge form the purely statistic data, and we must pay more attention to the details of their lives. Analysis of agro-economic patterns also sets us a limit in considering 'which courses of life are open to women' (Chapter 2) in Indian agrarian communities. Perhaps, sociocultural factors are as important as agro-economic patterns. Then, as Miller (1981) and Dyson and Moore (1983) suggest, India's regional sociocultural variations are significant. These regional contrasts, however, do not necessarily correlate with agricultural regions. In the case of Tamil Nadu, for example, female literacy in the Thanjavur district is higher (42.5% in 1981) than in the Periyar district of Kongu (30%). However, within the Kongu region, Coimbatore recorded a 45.8% rate of female literacy (*Census of India 1981*). This variable is much more influenced by the accessibility to educational institutions in a region than by agro-economic conditions. Furthermore, the Tamil cultural tradition is more or less shared by the people regardless of agro-economic patterns, although sub-regional cultures are also important elements, as seen in the contrast between the Thanjavur and Kongu society. Cultural factors thus should be studied and analysed in their own right.

Perhaps, the complexity of women's roles will be revealed, not from the statistical aggregation of women, but rather from details of their lives, in terms of agriculture and culture.

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