

**NATURE OF LABOUR INPUT IN AGRICULTURE WITH REFERENCE  
TO SEASONAL UNEMPLOYMENT AND UNDER-EMPLOYMENT**

**A THESIS SUBMITTED TO  
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## PREFACE

This study analyses and examines how far agriculture provides employment to the population engaged in it and what is the nature of such employment. For a proper appreciation of the nature and magnitude of the problem concerning this, it has been examined in the background of the structure of agricultural industry and its relation to the population engaged in it in different parts of the country.

For a detailed analysis in its micro aspect, the study pertains to the regions covered by farm management studies under first and second series of survey. It examines the extent of self-employment and hired labour employment in agriculture, in general, and in crop production in particular, and the factors affecting the use of self-employed and hired labour.

Among various studies on the employment aspect of agricultural worker, not enough attention has been paid to the nature and extent of labour inputs used in crop production. Most of the studies confine attention to the problem of disguised unemployment and under-employment and generalize that the small farmers invariably suffer from large scale disguised unemployment without really going into the details of farm size-groupwise analysis of the

labour input used and output obtained. This study makes a modest attempt to bring to the light, with the available published information the complexity of the problem.

The research underlying this study was carried out at the Gokhale Institute of Politics and Economics, Poona 4. It was preceded by one-year pre-doctoral training imparted by the Institute.

This work owes much to Professor V. M. Dandekar, my research guide, who helped me in various ways all through my work. I take this opportunity to record my deep sense of gratitude to him.

I am grateful to the Indian Council of Agricultural Research for the financial assistance extended to me to carry out the doctoral research programme.

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## CHAPTER I

### INTRODUCTION

#### 1.1 Background

Agricultural workers occupy an important position in the socio-economic structure of the country. They form the largest single sector in the labour force, giving employment to about seven-tenth of the population. According to the Census of India, 1961, labour force in agriculture sector constitutes 13.43 crores out of the total labour force of 16.23 crores. The term agricultural worker refers only to workers engaged in cultivation of land and includes both cultivators and agricultural labourers. According to the definition used in the Census, cultivation involves ploughing, sowing, harvesting and other activities of land; it does not include fruit growing or keeping orchards or groves or working for plantation such as tea, coffee, rubber, cinchona and other medical plantations.

It is reported by the 1961 census that 36.96 per cent of the rural population is rural workers, of which agricultural workers constitute 30.61 per cent. Among agricultural workers, cultivators form the major category, 22.30 per cent, followed by agricultural labour, 7.30 per cent. There has been an increase in the proportion of cultivators, from 697 lakhs in 1951 to 995 lakhs in 1961, roughly by 43 per cent,

between 1951 and 1961 mainly because of sub-division of holdings leading to smaller and smaller land holdings and partial replacement of hired labour by family labour because the small holders need less of hired labour. Agricultural labour, i.e., those who sustain themselves mainly from wage paid employment in agriculture, increased from 275 lakhs in 1951 to 315 lakhs in 1961, an increase of 14.5 per cent as against 43 per cent of cultivators.<sup>1</sup>

### 1.2 The Present Work and Its Purpose

With this background, we propose to study the nature and extent of labour inputs in agriculture, in order to know how far agriculture gives employment to the persons engaged in it and what is the nature of such employment provided by it. As is well known, household constitutes the bulk of the production units in our agriculture, as such self-employment figures very prominently. Nevertheless, the employment of hired labour appears to be considerable. For a proper appreciation of the nature and magnitude of the problem concerning this it would be necessary to examine them in the background of the structure of agricultural industry and its relation to the population depending on it. The magnitude of agricultural worker class and the extensive and intensive use of land resources are the factors of great

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<sup>1</sup> India, National Commission on Labour. Papers for the Conference on Agricultural Labour. December 1968, p. 5.

relevance in this context. The importance of the study rests on the necessity of examining and analysing the labour input used in agriculture in its macro and micro aspects and the consequent appraisal of the seasonal unemployment and under-employment of labour engaged in crop production.

Nature and extent of employment evidently depends upon the intensity of agriculture and the density of the population engaged in it. We, therefore, examine the density of agricultural worker per cropped area or, in other words, the man-land ratio in different districts in India. This gives us an idea of how the density of agricultural worker per cropped area varies in different States and in different districts within the State and simultaneously this analysis also spots out the regions where the number of agricultural workers per cropped area is high and also the regions where it is low.

Agricultural worker consists of cultivators and agricultural labourers. The incidence of the cultivators and agricultural labour in total agricultural workers would indicate the nature of employment in agriculture and their extent would indicate the magnitude of the employment provided to these two components of agricultural workers. We, therefore, examine the proportion of cultivators and agricultural labours in total workers engaged in agriculture. More of agricultural labour means more of landless labour or

labour with very small land holdings, whose main source of earning is wage employment in agriculture. So, it would be generally supposed that wherever the proportion of agricultural labour is higher the density of agricultural worker per acre of cultivated area will also be higher, making in process more of workers work as agricultural labour. We, therefore, consider these two factors, namely, density of agricultural workers per cropped area and the incidence of agricultural labour together and examine the truth of the above proposition.

All India Rural Credit Survey Report also throws some light on this particular aspect. We examine, what proportion of the gross produce goes as wages to the hired labour, in order to get an indirect and rough idea of the extent to which hired labour is employed in agriculture. A comparison of the two estimates, thus obtained, helps us to know how far they are mutually consistent.

These are, however, the indirect sources of information. More direct source of information is probed into to go into the details of nature and extent of labour input used in crop production. This detailed analysis gives us information on the extent of hired labour used in crop production in the regions under study. Factors affecting the use of hired labour, namely, nature of crops grown, size of farm, extent of irrigation, intensity of cropping, size of farm family workers and the labour days put in by



them are all examined to get an idea of the variation in the nature and extent of labour inputs used in different regions and the reasons thereof.

Monthly utilization of farm labour input, when examined, indicates variation in the labour input used in crop production over months in a year. This brings out the seasonal aspect of employment. It is then examined, to what extent the farm workers are affected by seasonal unemployment in different regions. Variation in the extent of seasonal unemployment in these regions is then correlated with the types of crops grown and the operations involved in them. The situation is thus not merely that of a total unemployment but, is much more intricate involving complexities. A meaningful assessment of the phenomenon, therefore, requires thorough discussion.

Another aspect of unemployment, that is, disguised unemployment or under-employment, follows immediately in our discussion. In most of the under-developed economies, the major employment problem in the agricultural sector is that of under-employment rather than unemployment. Nurkse says that for under-developed countries particularly in agricultural areas, there is said to be a special concept of unemployment, that is disguised unemployment or under-employment.<sup>1</sup> Farm workers although appear to be engaged

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<sup>1</sup> Ragnar Nurkse. Problems of Capital Formation in Under-developed Countries (Oxford: Basil Blackwell, 1955) p. 33.

fully in agricultural operations during the normal busy season, some or all of them may be partially employed. In other words, it is believed that the agricultural operations which could be performed by a few workers are being shared by many workers in the family thereby making almost everyone under-employed and a few dispensable. We, therefore, examine, how far this statement holds good in the context of our study, on the basis of output and labour input data for different regions. The study in itself, however, is not conclusive in this matter. The analysis provided leaves much to be desired and is subject to further refinement. In fact, this comprehensive study will give us an idea of the vast scope that exists to elaborate on each aspect involved in it. In this respect this work may only be a first step in many possibilities that exist in this field for economic research, and aims at bringing it to the light with the help of available published information.

### 1.3 Source of Data

Data used in this study are mainly obtained from the Farm Management Reports, Directorate of Economics and Statistics, Ministry of Food and Agriculture, Government of India. These studies were conducted in two series and available reports for both the series have been used. Apart from these studies, data were also drawn from Census of India, 1961, and All India Rural Credit Survey Report.

#### 1.4 Outline of the Subsequent Chapters

This thesis starts with the chapter second, giving a brief account of the nature of labour input in agriculture in its macro aspects, for instance, density of agricultural worker per acre of total cropped area, the proportion in which total agricultural worker is divided into its component parts, namely, agricultural labours and cultivators. Although this does not give us any direct information on the extent of self-employed labour and hired labour, if we broadly assume cultivators and agricultural labours as self-employed and hired labours respectively, we come to know the extent to which hired labour is employed in agriculture in different regions in India. We then examine in this chapter, if the two factors, namely, the density of agricultural worker per cropped area and the incidence of hired labour in total agricultural workers, are correlated in any way.

Chapter Third deals with another indirect estimate of the proportion of agricultural labour or hired labour on the basis of the information given by All India Rural Credit Survey Report, and with a comparison of the two estimates thus obtained.

Chapter Fourth deals with the more direct source of information regarding labour inputs used in crop production, that is, Farm Management Reports. Total labour input per

acre used in crop production and the proportion of hired labour input to total in different regions under study are also discussed in this chapter.

Chapter Fifth deals with the factors affecting the nature and extent of labour input used in crop production. This gives an analysis of and a discussion on labour input per acre, both family and hired, by farm size, in different regions. The factors which influence the use of hired labour are also discussed in it.

Sixth chapter deals with the seasonal unemployment of farm family workers engaged in crop production. This includes a discussion on the seasonal nature of agricultural operations in raising different crops and on the extent of seasonal unemployment in different regions under study.

In Chapter Seventh, there is discussion on the other aspect of unemployment, that is, disguised unemployment or under-employment of the farm family labour engaged in crop production.

Finally, the Chapter Eighth concludes the study by reviewing the nature and extent of labour inputs used in crop production in different regions and the incidence and extent of seasonal and disguised unemployment of those engaged in crop production.

## CHAPTER II

### LABOUR FORCE IN AGRICULTURE AND LAND RESOURCES

#### 2.1 Growth of Agricultural Labour Force

Economic growth in all countries, in general, has been associated with a simultaneous decrease in the proportion of work force engaged in agriculture and a declining share of agriculture in the national output. The picture in India, however, looks entirely different. The proportion of population engaged in agriculture has been increasing. The Table 2.1 shows the regular increase in the proportion of the working force engaged in agriculture since 1900. In 1961 the ratio stood at 69.51 per cent as compared to 62.50 per cent in 1901.

Table 2.1 : Labour Force in Agriculture

<u>Year</u>	<u>Per cent workers engaged in agriculture to total workers</u>
1900	62.50
1911	67.30
1921	68.50
1931	66.40
1951	69.00
1961	69.51

Although there has been rapid industrialization, as indicated by a positive increase in the urban population, the fact remains that the pressure of population on agriculture is on the increase. It is, thus, seen that agricultural workers in our country form a very high proportion of total workers engaged in various activities.

The census population, 1961, gives classification of workers into nine different industrial classes. The proportion of workers engaged in various activities are as follows.

**Table 2.2 : Industrial Classification of Workers and Their Proportion to Total Workers**

Classes		Per cent to Total
I	As Cultivators	52.80
II	As Agricultural Labour	16.71 ✓
III	Mining, Quarrying, Livestock, Forestry, Housing and Plantations, Orchards and allied Activities	2.77
IV	At Household Industry	6.38
V	In Manufacturing and Other Household Industry	4.23
VI	In Construction	1.08
VII	In Trade and Commerce	4.06
VIII	In Transport, Trade and Communication	1.06
IX	In Other Services	10.37

It is seen that out of these nine classes, first two classes of workers, namely, cultivators and agricultural labours, comprising 69.51 per cent of the total workers are employed mainly in agriculture. These two classes separately account for 52.80 and 16.71 per cent of the total workers respectively.

## 2.2 Agricultural Worker and Its Break-up

A large part of the employment is known to be self-employment. The census data do not give the proportion of self-employed and hired labour directly. However, the two classes, namely, the cultivators and agricultural labours, may be taken to represent broadly the self-employed and hired labour respectively, though a number of cultivators would also often work as hired labourers.

The following table gives the number of workers engaged in those two classes and their break-up into male and female workers.

Table 2.3 : Proportion of Cultivators and Agricultural Labour, both Male and Female in Total Agricultural Worker

Occupational classes	Number of Agricultural Workers			Per cent to total Agricultural Workers		
	Male	Female	Total	Male	Female	Total
Cultivators	66,464,504	33,156,671	99,621,175	50.68	25.28	75.96
Agricultural Labour	17,324,256	14,197,385	31,521,641	13.21	10.83	24.04
Total Agricultural Workers	83,788,760	47,354,056	131,142,816	63.89	36.11	100.00

In the above table, the cultivators and agricultural labours, forming 75.96 per cent and 24.04 per cent of the total agricultural workers may be taken broadly as self-employed and hired labours respectively.

The Agricultural Labour Enquiry also gives information on labour force and its break-up, but, the definition adopted by the two enquiries regarding the earners, income and occupational distribution of the agricultural population are different and hence the data are not directly comparable. We have, therefore, used the data of the 1961 census.

In this chapter, we shall now describe the nature of agricultural employment in India with particular reference to the nature and extent of self-employment and hired employment in agriculture in its macro aspect.

### 2.3 Man-Land Ratio

The nature of employment, especially the nature and extent of self and hired employment, evidently depends upon the intensity of agriculture and the density of the population engaged in it. Conditions in this respect vary from region to region. We shall, therefore, examine to begin with, the number of agricultural workers in relation to the total cropped area in different States. The estimate of the total cropped area has been taken from the Indian Agricultural Statistics for the year 1958-59, that being the latest available report at present.<sup>1</sup> Due to non-receipt of 1958-59

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<sup>1</sup> Indian Agricultural Statistics, 1958-59, Volume II, (detailed tables).



data, figures for 1954-55 have been repeated in respect of Orissa and in case of Assam the latest available data are for the year 1953-54. Total number of agricultural workers in each State has been divided by the corresponding figures of the total cultivated area to find out the number of agricultural workers per acre. All India figures exclude the data for Union Territories.

**Table 2.4 : Number of Agricultural Workers Per Acre of Cropped Area in Different States**

States	Total Number of Workers	Total Cropped Area	Number of Workers Per Acre
Andhra Pradesh	12,823,313	29,871,568	0.43
Assam	3,510,916	5,904,709	0.59
Bihar	14,780,446	27,378,180	0.54
Gujarat	5,771,060	24,306,700	0.24
Maharashtra	13,247,077	46,366,000	0.28
Jammu and Kashmir	1,171,820	1,880,303	0.62
Kerala	2,156,499	5,536,713	0.39
Madhya Pradesh	13,426,708	43,813,452	0.31
Madras	9,286,207	17,096,654	0.54
Mysore	7,567,774	26,030,836	0.29
Punjab	4,530,774	24,527,457	0.18
Rajasthan	7,448,710	33,921,675	0.22
Uttar Pradesh	21,689,554	53,794,462	0.40
West Bengal	6,230,323	15,055,100	0.41
Himachal Pradesh	681,921	1,074,316	0.63
Orissa	5,656,523	14,958,191	0.38
All India	129,979,625	371,516,316	0.36

As seen from the Table 2.4 the workers employed in agriculture number about 130.00 millions, the total cropped area in the country is 371.50 million acres and the number of workers per acre amounts to 0.36. The ratio of agricultural workers to cropped area, however, varies widely from State to State. It is highest in Himachal Pradesh being 0.63 per acre and is lowest in Punjab being 0.18 workers per acre. If the States are grouped on the basis of the number of agricultural workers per acre, the following picture appears.

Groups	Range of number of workers per acre	States in each group
1st	0.59 to 0.63	Jammu and Kashmir, Assam and Himachal Pradesh
2nd	0.54	Bihar and Madras
3rd	0.38 to 0.43	Andhra Pradesh, Kerala, Uttar Pradesh, West Bengal and Orissa
4th	0.18 to 0.31	Gujarat, Maharashtra, Madhya Pradesh, Mysore, Punjab and Rajasthan

It is observed that the three hill States fall in the first group. All the States in the third group are rice growing. In the fourth group Punjab's figure is quite low as compared to figures of the other States.

The above observation is on the basis of the total agricultural worker, inclusive of both male and female. We shall now examine the proportion of female agricultural

workers in total agricultural workers to note the variation, if any, from State to State. The following Table (Table 2.5) gives the proportion of female agricultural workers in total agricultural workers.

**Table 2.5 : Proportion of Female Agricultural Workers to Total in Different States**

State	Total Agricultural Workers	Percentage of Female Agricultural Workers
Andhra Pradesh	12,823,313	44.56
Assam	3,510,916	33.12
Bihar	14,780,446	35.72
Gujarat	5,771,060	39.42
Maharashtra	13,247,077	48.23
Jammu and Kashmir	1,171,820	30.43
Kerala	2,156,499	30.09
Madhya Pradesh	13,426,708	45.41
Madras	9,286,207	38.89
Mysore	7,567,774	38.73
Punjab	4,530,774	23.46
Rajasthan	7,448,710	40.46
Uttar Pradesh	21,689,554	24.68
West Bengal	6,230,323	14.32
Himachal Pradesh	681,921	49.87
Orissa	5,656,523	29.46
All India	129,979,625	32.43

The Table 2.5 shows that not an inconsiderable amount of female workers is engaged in agriculture. About one-third of the agricultural workers are females. However, there is a wide variation in the proportion from State to State. We find that the States of Himachal Pradesh, Maharashtra, Madhya Pradesh and Andhra Pradesh show a higher proportion of female agricultural workers, amounting to about 50 per cent of the agricultural workers. West Bengal, on the other hand, shows the proportion of female agricultural workers as low as 14 per cent. The marked variation in the proportion of female workers may be due to the way the census definition of the term 'worker' was understood in different parts of the country, especially in its application to female workers in a household industry such as agriculture. In any case, since the variation is too large it will be more appropriate to concentrate on male agricultural workers only. We shall, therefore, exclude the female workers from our analysis and will proceed with male agricultural workers only.

#### 2.4 Distribution of States according to Man-Land Ratio

Concentrating on male agricultural workers only, it is noted that the ratio of the male agricultural workers to cropped area also varies considerably from State to State. The Table 2.6 gives the above-mentioned information for all the States. For convenience of discussion, we have expressed the relation between the male workers and cropped area in two alternative ways, namely, per capita cropped

area and number of male workers per acre of cropped area.

Table 2.6 : Man-Land Ratio in Different States

States	Total Number of Male Agricultural Workers	Total Cropped Area	Number of Male Workers Per Acre	Cultivated Area Per Worker
Andhra Pradesh	7,109,005	29,871,568	0.24	4.20
Assam	2,348,053	5,904,709	0.40	2.51
Bihar	9,500,296	27,378,180	0.34	2.88
Gujarat	3,496,263	24,306,700	0.14	6.95
Maharashtra	6,857,398	46,366,000	0.15	6.76
Jammu and Kashmir	815,208	1,880,303	0.43	2.31
Kerala	1,421,416	5,536,713	0.26	3.90
Madhya Pradesh	7,330,032	43,813,452	0.17	5.98
Madras	5,675,069	17,096,654	0.33	3.01
Mysore	4,636,757	26,030,836	0.18	5.61
Punjab	3,468,064	24,527,457	0.14	7.07
Rajasthan	4,435,260	33,921,675	0.13	7.65
Uttar Pradesh	16,337,650	53,794,462	0.30	3.29
West Bengal	5,338,110	15,055,100	0.35	2.82
Himachal Pradesh	341,821	1,074,316	0.32	3.14
Orissa	3,990,137	14,958,191	0.27	3.75
All India	83,105,003	371,516,316	0.22	4.47

It is seen that the number of agricultural worker per acre of cropped area comes to 0.22. The extent of variation is from 0.13 per acre in Rajasthan to 0.43 per acre in Jammu and Kashmir. Naturally, therefore, the cropped area per head of worker is highest in Rajasthan being 7.65 acres and lowest in Jammu and Kashmir, being 2.31 acres. Density of worker per acre of cropped area is comparatively much lower in the States of Rajasthan, Punjab, Gujarat, Maharashtra, Madhya Pradesh and Mysore indicating that the agricultural workers are better off in these States so far as per capita cropped area held is concerned. One cannot, however, rule out the possibility that although the per capita cropped area is quite high in Rajasthan, most of it might be unirrigated and unsuitable for cultivation. However, if the States are re-grouped on the basis of the number of male agricultural worker per acre as well as on the basis of cropped area per male worker, four distinct groups as follows can be formed.

Groups	Density of male worker	States	Cropped area per male worker
1st	0.40 to 0.43	Assam and Jammu and Kashmir	2.30 to 2.52
2nd	0.30 to 0.35	Bihar, Madras, Uttar Pradesh, West Bengal and Himachal Pradesh	2.80 to 3.30
3rd	0.24 to 0.27	Andhra Pradesh, Kerala and Orissa	3.75 to 4.20
4th	0.13 to 0.18	Gujarat, Maharashtra, Madhya Pradesh, Mysore, Punjab and Rajasthan	5.60 to 7.65

It is seen that the majority of the States fall in the last group indicating lower density of agricultural workers per acre of cropped area. Assam and Jammu and Kashmir are the only regions where the density is very high. In Bihar, Madras, Uttar Pradesh, West Bengal and Himachal Pradesh also the density is comparatively higher.

## 2.5 Incidence of Agricultural Labour in Agricultural Workers

Agricultural workers as reported by the Census consist of cultivators and agricultural labourers. Agricultural labours are conceived of as those who have either no land or have very little land, which makes them depend mainly on hired work as agricultural labour for their livelihood. As we have seen already that nearly 20 per cent of all agricultural workers belong to this category, we shall now see how the proportion varies in different States.

Self-employment is the most prominent feature of Indian agriculture and as found earlier more than 75 per cent of the total work force comes from the farmer and his family members. Conditions in this respect, however, vary from region to region, we shall, therefore, examine the proportion of cultivators and agricultural labours in total agricultural workers reported in different States. There is, thus, wide variation from State to State in the proportion of agricultural labour to total agricultural workers. The proportion is very low in Jammu and Kashmir (2.06 per cent) and

**Table 2.7 : Proportion of Agricultural Labour to Total  
Agricultural Workers (Male)**

States	Agricultural workers	Per cent Agricultural Labour
Andhra Pradesh	7,109,005	34.53
Assam	2,348,053	6.74
Bihar	9,500,296	27.10
Gujarat	3,496,263	19.43
Maharashtra	6,857,398	30.81
Jammu and Kashmir	815,208	2.06
Kerala	1,421,416	36.37
Madhya Pradesh	7,330,032	19.06
Madras	5,675,069	25.46
Mysore	4,636,757	19.11
Punjab	3,468,064	13.91
Rajasthan	4,435,260	5.19
Uttar Pradesh	16,337,650	12.46
West Bengal	5,338,110	27.10
Himachal Pradesh	341,821	2.21
Orissa	3,990,137	20.17
All India	83,105,003	20.68

Himachal Pradesh (2.21 per cent). If we exclude these two hilly areas which incidentally have special soil climatic features the State showing the lowest proportion of agricultural



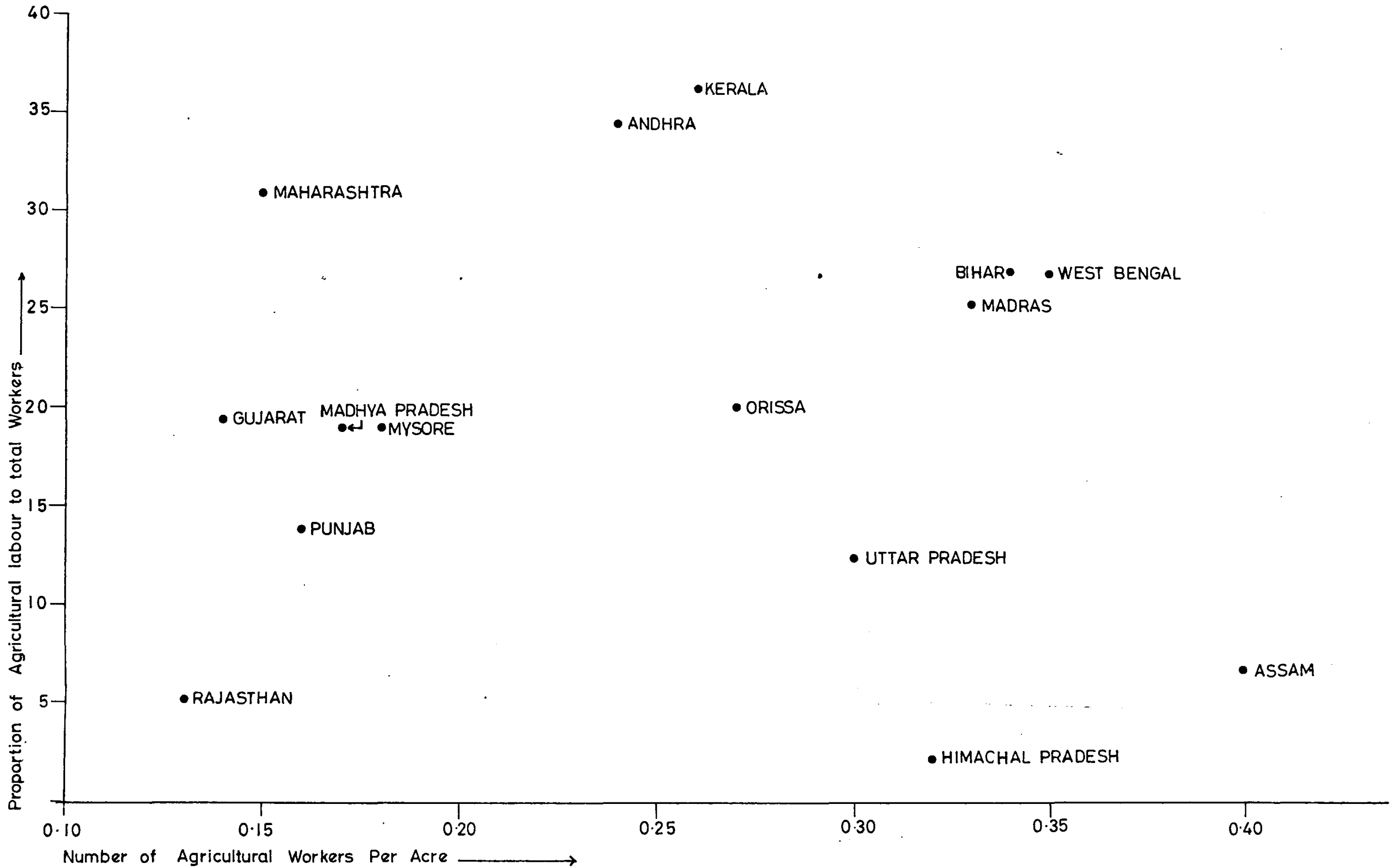
labour turns out to be Rajasthan, where it is 5.19 per cent. Assam comes next with 6.74 per cent. The States showing very high proportion of agricultural labour are Kerala (36 per cent) and Andhra Pradesh (35 per cent). Broadly examined, Kerala, Andhra Pradesh, Maharashtra, Bihar, Madras, West Bengal and Orissa are the States where there is a higher incidence of agricultural labour in total agricultural worker, ranging from 20 to 36 per cent. Whereas Assam, Rajasthan, Uttar Pradesh and Punjab are the regions where its incidence is low, ranging from 5 to 14 per cent. A graph to this effect has been drawn and presented at the end of this section.

#### 2.6 Density of Agricultural Worker and the Incidence of Agricultural Labour

Agricultural labours, in general, are conceived as those who have either no land or very little land, so it would be generally understood that wherever the proportion of agricultural labour is higher the density of agricultural worker per acre of cropped area will also be higher, making in process, more of worker work as agricultural labour. We may now consider these two factors together, one is the density of agricultural workers per cropped area (Table 2.6), and the other is the incidence of agricultural labour among agricultural workers (Table 2.7). This may be most conveniently done on a graph. A graph drawn by taking the number of agricultural workers on the 'X' axis and the proportion of agricultural labour to total agricultural worker on the 'Y' axis gives the following picture.

### SCATTER DIAGRAM SHOWING DENSITY OF AGRICULTURAL WORKER PER CROPPED AREA AND THE PROPORTION OF AGRICULTURAL LABOUR IN DIFFERENT STATES.

SCALE: X axis 2" = 0.15 Unit  
Y axis 1" = 5 Per cent



Andhra Pradesh and Kerala are the only two States where the conditions are more or less similar. In both the States, both the factors, namely, number of agricultural worker per acre and the proportion of agricultural labour are moderately high, ranging from 0.24 to 0.26 per acre and 35 per cent to 36 per cent respectively. This appears to be in accordance with the expectation. Higher density of workers naturally leads to a greater incidence of landless labourers and hence a higher proportion of agricultural labour. That seems to be the reason why these two regions having moderately high density of agricultural worker show moderately high proportion of agricultural labour.

Similarly in Gujarat, Punjab, Madhya Pradesh and Mysore both the factors, density of agricultural worker per cropped area and the proportion of agricultural labour are small. The reason appears to be the same as already mentioned above.

Other two regions, Bihar and West Bengal, having geographical proximity also show similar conditions regarding the two factors. However, here as compared to Andhra Pradesh and Kerala, the number of agricultural worker is higher (0.35 per acre), while the proportion of agricultural labour is comparatively smaller (27 per cent). Madras, though geographically apart is marked with a similar situation.

In Assam, Himachal Pradesh, Jammu and Kashmir, the incidence of the proportion of agricultural labour is low, although the number of agricultural worker per acre is high.

This may be because of the nature of the terrain, making agriculture with hired labour more difficult.

Maharashtra appears to be the only State where there is incidence of a large proportion of agricultural labour with smaller number of workers per acre. The reason may be that there is unequal distribution of land, i.e., land concentrated among few owners employing agricultural labour for the cultivation purposes.

The above is the position, however, at the State level. The conditions vary greatly within a State. Hence, it seems advisable to examine the situation at district level in each State. A detailed Table for all the districts is given at the end. A scatter <sup>\*</sup>diagram drawn on the basis of the observation is also attached. The contiguous districts falling in different intervals of the number of workers per acre and the proportion of agricultural labour to total worker are as given in Table 2.8. It is, thus, seen that the distribution of districts according to the two factors does not follow geographical proximity. On the whole it is seen that the incidence of agricultural labour in total agricultural worker is quite considerable in different parts in India, and its proportion is not in all the cases positively correlated with the density of agricultural worker per cropped area. At the State level, Andhra Pradesh, Bihar, Maharashtra, Kerala, Madras, West Bengal and Orissa are the regions where its occurrence is high. At the district level there are as many

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\* See Appendix.

as ten districts, namely, East Godavari, West Godavari, Krishna in Andhra Pradesh, Amravati, Yeotmal, Wardha in Maharashtra, Alleppey and Palghat in Kerala and Madras in Tamilnad, showing more than 50 per cent of the total agricultural worker as agricultural labour. Almost all the districts of Himachal Pradesh, Jammu and Kashmir, Punjab, Rajasthan and Assam show low proportion of agricultural labour varying mostly between 4 and 15 per cent.

**Table 2.8** : Distribution of Districts according to the Proportion of Agricultural Labour and Density of Worker

Number of Agricultural Workers/acre (1)	Percentage of Agricultural Labour (2)	Districts (3)
0.06 to 0.22	1 to 11	Banaskantha (G <sub>8</sub> ), Sabarkantha (G <sub>9</sub> ), Datia (MP <sub>10</sub> ), Jhabua (MP <sub>18</sub> ), Mandsawe (MP <sub>20</sub> ), Gwalior (MP <sub>15</sub> ), Shivapuri (MP <sub>39</sub> ); Mahendragarh (P <sub>14</sub> ), Gurgaon (P <sub>6</sub> ), Churu (R <sub>10</sub> ), Barmer (R <sub>4</sub> ), Bikaner (R <sub>7</sub> ), Jodhpur (R <sub>18</sub> ), Ganganagar (R <sub>12</sub> ), Jalore (R <sub>15</sub> ), Nagaur (R <sub>20</sub> ), Jaisalmer (R <sub>14</sub> ), Sikar (R <sub>23</sub> ), Tonk (R <sub>25</sub> ), Ajmer (R <sub>1</sub> ), Bundi (R <sub>8</sub> ), Alwar (R <sub>2</sub> ), Jhunjhunu (R <sub>17</sub> ), Jaipur (R <sub>13</sub> ), Jhalwar (R <sub>16</sub> ), Sawai Madhopur (R <sub>22</sub> ), Chittorgarh (R <sub>9</sub> ), Bharatpur (R <sub>5</sub> ), Banswara (R <sub>3</sub> ).

(continued)

Table 2.8 : (continued)

(1)	(2)	(3)
0.17 to 0.28	11 to 14.5	Rajgarh (MP <sub>30</sub> ), Ambala (P <sub>1</sub> ), Jalaon (U <sub>30</sub> ), Shaharanpur (U <sub>46</sub> ), Mathura (U <sub>39</sub> ), Meerut (U <sub>36</sub> ), Pilibhit (U <sub>43</sub> ), Dehra Dun (U <sub>17</sub> ), Kanpur (U <sub>16</sub> ).
0.11 to 0.21	19.5 to 30.5	Ujjain (MP <sub>43</sub> ), Durg (MP <sub>13</sub> ), Narsimhapur (MP <sub>23</sub> ), Dhar (MP <sub>12</sub> ), Chindwara (MP <sub>8</sub> ), Damoh (MP <sub>9</sub> ), Sagar (MP <sub>43</sub> ), Dewas (MP <sub>11</sub> ), Shajapur (MP <sub>38</sub> ), Nimar West (MP <sub>24</sub> ), Rajpur (MP <sub>28</sub> ), Jabalpur (MP <sub>19</sub> ), Senoi (MP <sub>36</sub> ), Satna (MP <sub>33</sub> ), Sidhi (MP <sub>40</sub> ), Panna (MP <sub>26</sub> ), Greater Bombay (M <sub>1</sub> ), Koraput (O <sub>2</sub> ).
0.7 to 0.22	24 to 59	Bhir (M <sub>16</sub> ), Sholapur (M <sub>12</sub> ), Aurangabad (M <sub>14</sub> ), Nanded (M <sub>17</sub> ), Parbhani (M <sub>5</sub> ), Wardha (M <sub>23</sub> ), Osmanabad (M <sub>18</sub> ), Buldana (M <sub>19</sub> ), Akola (M <sub>20</sub> ), Yeotmal (M <sub>22</sub> ), Amravati (M <sub>21</sub> ), Dhulia (M <sub>6</sub> ), Jalgaon (M <sub>7</sub> ), Hoshangabad (MP <sub>16</sub> ), Indore (MP <sub>17</sub> ), Broach (G <sub>15</sub> ), Gulbarga (My <sub>9</sub> ), Bijapur (My <sub>5</sub> ), Bidar (My <sub>4</sub> ), Kurnool (A <sub>12</sub> ).

(continued)

Table 2.8 : (continued)

(1)	(2)	(3)
0.22 to 0.38	30 to 66	Guntur (A <sub>7</sub> ), Cuddapah (A <sub>4</sub> ), Nellore (A <sub>16</sub> ), Krishna (A <sub>11</sub> ), Khammam (A <sub>10</sub> ), West Godavari (A <sub>6</sub> ), East Godavari (A <sub>5</sub> ), Surat (G <sub>16</sub> ), Alleppey (K <sub>1</sub> ), Kozhikode (K <sub>5</sub> ), Cannanore (K <sub>2</sub> ), Kottayam (K <sub>4</sub> ), Trichur (K <sub>8</sub> ), Palghat (K <sub>6</sub> ), Coimbatore (T <sub>2</sub> ), Nilgiris (T <sub>16</sub> ), Tanjavur (T <sub>10</sub> ).
0.34 to 0.57	26 to 47	Patna (B <sub>10</sub> ), Saharsa (B <sub>17</sub> ), Champaran (B <sub>2</sub> ), Monghyr (B <sub>7</sub> ), Muzaffarpur (B <sub>8</sub> ), Darbhanga (B <sub>3</sub> ), Burdwan (W <sub>3</sub> ), Hooghly (W <sub>7</sub> ), 24 Parganas (W <sub>15</sub> ), Howrah (W <sub>8</sub> ), Srikakulam (A <sub>18</sub> ), Chingleput (T <sub>1</sub> ).
0.27 to 0.43	3 to 22.5	Kheri (U <sub>33</sub> ), Rampur (U <sub>45</sub> ), Kanpur (U <sub>16</sub> ), Etah (U <sub>19</sub> ), Shahajahanpur (U <sub>47</sub> ), Baharaich (U <sub>6</sub> ), Moradabad (U <sub>38</sub> ), Mainpuri (U <sub>35</sub> ), Bareilly (U <sub>10</sub> ), Gonda (U <sub>26</sub> ), Fatehpur (U <sub>22</sub> ), Etawah (U <sub>20</sub> ), Badaun (U <sub>14</sub> ), Hardoi (U <sub>29</sub> ), Sitapur (U <sub>48</sub> ), Ballia (U <sub>7</sub> ), Ghazipur (U <sub>25</sub> ), Farrukhabad (U <sub>21</sub> ), Unnao (U <sub>51</sub> ), Rae Bareli (U <sub>44</sub> ), Bara Banki (U <sub>9</sub> ).

(continued)

Table 2.8 : (continued)

(1)	(2)	(3)
		Faizabad (U <sub>23</sub> ), Sultanpur (U <sub>49</sub> ), Gorakhpur (U <sub>27</sub> ), Azamgarh (U <sub>5</sub> ), Basti (U <sub>11</sub> ), Jaunpur (U <sub>31</sub> ), Sirmoor (H <sub>5</sub> ), Mahasu (H <sub>3</sub> ), Kamrup (a <sub>2</sub> ), Darrang (a <sub>3</sub> ), Ratnagiri (M <sub>4</sub> ), Cooch Behar (W <sub>4</sub> ), Santal Pargana (B <sub>14</sub> ), Singhbhum (B <sub>15</sub> ), Hazaribagh (B <sub>6</sub> ), Saran (B <sub>13</sub> ), Bangalore (My <sub>1</sub> ), Kolaba (M <sub>3</sub> ).



Table 2.9 : Man Land Ratio and the Proportion of Agricultural Labour in Different Districts in India

State/District	Total Cropped Area in Acres	Cultivators		Agricultural Labourers		Total Agricultural Workers		Number of Workers per acre		Per Worker Cultivated area		Per cent Agricultural Labour to Total Agricultural Workers (Males)
		Total	Males	Total	Males	Total	Males	Total	Males	Total	Males	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<b>ANDHRA PRADESH</b>												
Adilabad	1,281,617	249,597	141,233	137,280	63,037	386,877	204,270	0.30	0.16	3.31	6.28	30.85
Anantpur	2,645,003	443,041	270,724	236,779	103,539	679,820	374,263	0.26	0.14	3.89	7.07	27.66
Chittoor	1,169,999	544,579	331,466	252,364	121,783	796,943	453,249	0.68	0.39	1.47	2.58	26.87
Cuddapah	1,142,634	301,755	188,594	200,520	91,233	502,275	279,827	0.44	0.24	2.27	4.08	32.60
East Godavari	1,345,750	293,889	233,032	445,934	242,306	739,823	475,338	0.55	0.35	1.82	2.83	50.98
West Godavari	1,207,508	253,198	207,803	391,819	199,308	645,017	407,111	0.53	0.34	1.87	2.97	48.96
Guntur	2,368,674	506,427	338,763	452,600	213,349	959,027	552,112	0.40	0.23	2.47	4.29	38.64
Hyderabad	850,356	210,985	120,719	138,238	54,629	349,223	175,348	0.41	0.21	2.43	4.85	31.15
Karimnagar	1,212,068	361,839	211,944	206,614	92,853	568,453	304,797	0.47	0.25	2.13	3.98	30.46
Khammam	794,577	230,239	147,664	172,559	78,115	402,798	225,779	0.51	0.28	1.97	3.52	34.60
Krishna	1,471,880	264,279	209,944	371,674	175,091	635,953	385,035	0.43	0.26	2.31	3.82	45.47
Kurnool	3,090,102	351,333	226,751	336,612	150,401	687,945	377,152	0.22	0.12	4.49	8.19	39.88
Mehbubnagar	2,285,865	404,510	234,358	265,543	103,901	670,053	338,259	0.29	0.15	3.41	6.76	30.72
Medak	1,137,927	363,940	209,824	177,817	74,905	541,757	284,729	0.48	0.25	2.10	4.00	26.31
Nalgonda	1,899,076	380,804	239,870	260,215	112,529	641,019	352,399	0.34	0.19	2.96	5.39	31.93
Nellore	1,696,493	414,666	255,480	314,333	143,666	728,999	399,146	0.43	0.24	2.33	4.25	35.99
Nizamabad	766,507	284,301	155,667	122,058	51,947	406,359	207,614	0.53	0.27	1.87	3.69	25.02
Srikakulam	1,271,279	634,159	347,789	376,370	165,123	1,010,529	512,912	0.79	0.40	1.26	2.48	32.19
Vishakhapatnam	1,103,753	629,261	362,783	239,218	113,959	868,479	476,742	0.79	0.43	1.27	2.32	23.90
Warangal	1,130,300	364,017	219,856	237,947	103,067	601,964	322,923	0.53	0.29	1.88	3.50	32.08
<b>Total</b>	<b>29,871,568</b>	<b>7,486,819</b>	<b>4,654,264</b>	<b>5,336,494</b>	<b>2,454,741</b>	<b>12,823,313</b>	<b>7,109,005</b>	<b>0.43</b>	<b>0.24</b>	<b>2.33</b>	<b>4.20</b>	<b>34.53</b>

(continued)

Table 2.9 : (continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<u>BIHAR</u>												
Bhagalpur	1,102,125	306,283	214,946	201,227	107,898	507,510	322,844	0.46	0.29	2.17	3.41	33.42
Champaran	1,945,760	605,104	462,806	456,763	282,159	1,061,867	744,965	0.55	0.38	1.83	2.61	37.88
Darbhanga	1,981,480	654,853	522,811	542,889	381,788	1,197,742	904,599	0.60	0.46	1.65	2.19	42.21
Dhanbad	260,606	227,634	118,325	24,797	12,114	252,431	130,439	0.97	0.50	1.03	2.00	9.29
Gaya	2,351,201	773,339	528,049	434,364	220,128	1,207,703	748,177	0.51	0.32	1.95	3.14	29.38
Hazaribagh	1,164,396	785,342	418,995	110,070	52,302	895,412	471,297	0.77	0.40	1.30	2.47	11.10
Monghyr	1,683,019	592,005	445,097	364,618	211,325	956,623	656,422	0.57	0.39	1.76	2.56	32.19
Muzaffarpur	2,013,695	692,778	576,394	418,321	313,390	1,111,099	889,784	0.55	0.44	1.81	2.26	35.22
Palamau	861,052	336,553	202,588	138,182	66,859	474,735	269,447	0.55	0.31	1.81	3.20	24.81
Patna	1,529,292	450,970	346,122	296,363	156,729	747,333	502,851	0.49	0.33	2.05	3.04	31.17
Purnea	2,187,300	564,759	473,966	359,672	227,102	924,431	701,068	0.42	0.32	2.37	3.12	32.39
Ranchi	1,810,517	947,131	464,396	67,506	32,408	1,014,637	496,804	0.56	0.27	1.78	3.64	8.37
Saran	1,686,178	780,911	561,179	238,823	113,991	1,019,734	675,170	0.60	0.40	1.65	2.50	16.88
Santal Parganas	1,817,678	1,033,439	551,659	124,396	66,427	1,157,835	618,086	0.64	0.34	1.57	2.94	10.75
Singhbhum	1,002,998	618,257	309,568	130,375	57,712	748,632	367,480	0.75	0.37	1.34	2.73	15.76
Shahabad	2,884,483	578,686	449,676	280,999	154,669	859,685	604,345	0.30	0.21	3.36	4.77	25.59
Saharsa	1,096,400	413,927	279,487	229,110	117,038	643,037	396,525	0.59	0.36	1.71	2.77	29.52
Total	27,378,180	10,361,971	6,926,057	4,418,475	2,574,239	14,780,446	9,500,296	0.54	0.34	1.85	2.88	27.10

(continued)

Table 2.9 : (continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<u>GUJARAT</u>												
Jamnagar	1,408,400	165,237	105,449	19,161	11,541	184,398	116,990	0.13	0.08	7.64	12.04	9.86
Rajkot	2,160,100	252,641	144,100	37,209	21,313	289,850	165,413	0.13	0.08	7.45	13.06	12.88
Surendranagar	1,591,900	122,981	83,963	31,510	18,306	154,491	102,269	0.10	0.06	10.30	15.57	17.90
Bhavnagar	1,822,600	203,854	130,624	63,486	35,319	267,340	165,943	0.15	0.09	6.82	10.98	21.28
Amreli	605,000	175,683	101,940	44,111	24,380	219,794	126,320	0.36	0.21	2.75	4.79	19.30
Junagadh	1,559,800	303,476	169,756	59,095	33,005	362,571	202,761	0.23	0.13	4.30	7.69	16.28
Kutch	1,480,300	128,823	77,718	31,228	15,246	160,051	92,964	0.11	0.06	9.25	15.92	16.40
Banaskantha	1,868,800	322,377	203,167	28,061	18,687	350,438	221,854	0.19	0.12	5.33	8.42	8.42
Sabarkantha	1,169,300	310,353	173,846	28,640	18,697	338,993	192,543	0.29	0.16	3.45	6.07	9.71
Mehsana	1,833,100	396,697	243,269	72,993	41,785	469,690	285,054	0.26	0.16	3.90	6.43	14.66
Ahmedabad	1,632,600	178,136	134,090	78,017	44,381	256,153	178,471	0.16	0.11	6.37	9.15	24.87
Kaira	1,361,000	375,457	309,420	117,624	74,592	493,081	384,012	0.36	0.28	2.76	3.54	19.42
Panchmahals	1,450,700	633,848	348,018	30,248	15,886	664,096	363,904	0.46	0.25	2.18	3.99	4.37
Baroda	1,372,100	253,395	194,934	162,316	90,518	415,711	285,452	0.30	0.21	3.30	4.81	31.71
Broach	1,110,300	185,892	116,211	144,387	72,983	330,279	189,194	0.30	0.17	3.36	5.87	38.58
Surat	1,798,900	484,119	266,667	295,387	138,340	779,506	405,007	0.43	0.23	2.31	4.44	34.16
Dangs	81,800	26,091	13,824	8,527	4,288	34,618	18,112	0.42	0.22	2.36	4.52	23.67
<b>Total</b>	<b>24,306,700</b>	<b>4,519,060</b>	<b>2,816,996</b>	<b>1,252,000</b>	<b>679,267</b>	<b>5,771,060</b>	<b>3,496,263</b>	<b>0.24</b>	<b>0.14</b>	<b>4.21</b>	<b>6.95</b>	<b>19.43</b>

(continued)

Table 2.2 : (continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<u>MAHARASHTRA</u>												
Greater Bombay	21,900	4,840	2,944	1,949	1,156	6,789	4,100	0.31	0.19	3.25	5.34	28.20
Thana	792,300	383,156	197,725	118,277	61,336	501,433	259,061	0.64	0.33	1.58	3.06	23.68
Kolaba	541,100	329,567	160,063	54,033	26,175	383,600	186,238	0.71	0.34	1.41	2.91	14.05
Ratnagiri	894,100	616,417	256,631	49,976	20,131	666,393	276,762	0.74	0.31	1.34	3.23	7.27
Nasik	2,410,400	491,432	261,089	180,795	83,316	672,227	344,405	0.30	0.14	3.59	7.00	24.19
Dhulia	1,963,600	294,227	182,570	232,913	105,488	527,140	288,058	0.27	0.15	3.73	6.82	36.62
Jalgaon	2,112,300	346,022	198,168	295,827	139,019	641,849	337,187	0.30	0.16	3.29	6.26	41.23
Ahmednagar	3,213,300	524,345	281,145	196,107	99,462	720,452	380,607	0.22	0.12	4.46	8.44	26.13
Poona	2,615,300	557,583	288,078	97,793	47,221	655,376	335,291	0.25	0.13	3.99	7.80	14.08
Satara	1,826,200	485,307	220,814	66,958	27,115	552,265	247,929	0.30	0.14	3.31	7.37	10.94
Sangli	1,649,400	352,718	209,477	72,199	39,154	424,917	248,631	0.26	0.15	3.88	6.63	15.75
Sholapur	2,998,000	355,101	226,976	211,381	106,435	566,482	333,411	0.19	0.11	5.29	8.99	31.92
Kolhapur	1,020,700	467,643	253,059	105,367	57,507	573,010	310,566	0.56	0.30	1.78	3.29	18.52
Aurangabad	3,285,900	427,519	237,337	242,355	113,240	669,874	350,577	0.21	0.11	4.91	9.37	32.30
Parbhani	2,267,800	258,058	161,895	240,982	112,190	499,040	274,085	0.22	0.12	4.54	8.27	40.93
Bhir	2,076,100	288,009	159,846	161,286	71,843	449,295	231,689	0.22	0.11	4.62	8.96	31.01
Nanded	1,967,700	248,065	152,417	202,417	89,512	450,482	241,929	0.23	0.12	4.37	8.13	37.00
Osmanabad	2,594,000	358,950	219,597	283,584	127,997	642,534	347,594	0.25	0.13	4.04	7.46	36.83
Buldana	1,725,700	231,121	129,672	228,429	109,650	459,550	239,322	0.27	0.14	3.76	7.21	45.82
Akola	1,918,800	199,828	123,664	276,188	135,609	476,016	259,273	0.25	0.14	4.03	7.40	52.30
Amravati	1,674,800	159,833	110,079	298,235	148,388	458,068	258,467	0.27	0.15	3.66	6.48	57.41
Yeotmal	1,833,800	203,594	120,925	303,967	139,901	507,561	260,826	0.28	0.14	3.61	7.03	53.64
Wardha	1,019,200	107,147	64,699	137,657	60,286	244,804	124,985	0.24	0.12	4.16	8.15	48.23
Nagpur	1,332,500	224,947	118,362	152,823	65,074	377,770	183,436	0.28	0.14	3.53	7.26	35.48
Bhandara	1,236,400	413,817	199,221	119,260	51,119	533,077	250,340	0.43	0.20	2.32	4.94	20.42
Chanda	1,374,700	407,829	208,328	179,244	74,293	587,073	282,621	0.43	0.21	2.34	4.86	26.29
Total	46,366,000	8,737,075	4,744,781	4,510,002	2,112,617	13,247,077	6,857,398	0.28	0.15	3.50	6.76	30.81

(continued)

Table 2.9 : (continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<b>JAMMU AND KASHMIR</b>												
Anantnag	332,455	234,821	170,024	4,385	3,977	239,206	174,001	0.72	0.52	1.39	1.91	2.29
Baramulla	294,397	237,214	162,969	4,017	3,826	241,231	166,795	0.82	0.57	1.22	1.77	2.29
Doda	137,726	124,217	72,399	615	535	124,832	72,934	0.91	0.53	1.10	1.89	0.73
Jammu	358,208	97,108	77,487	4,276	3,910	101,384	81,397	0.28	0.23	3.53	4.40	4.80
Kathua	182,266	64,236	45,260	983	909	65,219	46,169	0.36	0.25	2.79	3.95	1.97
Ladakh	41,450	49,969	24,143	283	166	50,252	24,309	1.21	0.59	0.82	1.71	0.68
Poonch-Rajouri	165,988	105,793	82,463	881	834	106,674	83,297	0.64	0.50	1.56	1.99	1.00
Srinagar	185,226	136,233	96,291	2,453	2,155	138,686	98,446	0.75	0.53	1.34	1.88	2.19
Udhampur	182,587	103,812	67,408	524	452	104,336	67,860	0.57	0.37	1.75	2.69	0.67
<b>Total</b>	<b>1,880,303</b>	<b>1,153,403</b>	<b>798,444</b>	<b>18,417</b>	<b>16,764</b>	<b>1,171,820</b>	<b>815,208</b>	<b>0.62</b>	<b>0.43</b>	<b>1.60</b>	<b>2.31</b>	<b>2.06</b>
<b>KERALA</b>												
Alleppey	508,139	109,566	92,182	116,834	60,866	226,400	153,048	0.45	0.30	2.24	3.32	39.77
Cannanore	639,551	152,971	92,047	110,051	47,275	263,022	139,322	0.41	0.22	2.43	4.59	33.93
Ernakulam	522,052	126,789	89,910	86,773	39,932	213,562	129,842	0.41	0.25	2.44	4.02	30.75
Kottayam	713,782	113,397	99,479	85,170	54,692	198,567	154,171	0.28	0.22	3.59	4.63	35.47
Kozhikode	824,109	127,844	103,098	113,024	63,013	240,868	166,111	0.29	0.20	3.42	4.96	37.93
Palghat	779,109	140,505	98,079	217,567	95,035	358,072	193,114	0.46	0.25	2.18	4.03	49.21
Quilon	598,444	200,403	169,413	86,694	60,272	287,097	229,685	0.48	0.38	2.08	2.61	26.24
Trichur	463,726	90,276	64,938	83,031	34,982	173,307	99,920	0.37	0.22	2.68	4.64	35.01
Trivandrum	487,801	116,352	95,356	79,252	60,847	195,604	156,203	0.40	0.32	2.49	3.13	38.95
<b>Total</b>	<b>5,536,713</b>	<b>1,178,103</b>	<b>904,502</b>	<b>978,396</b>	<b>516,914</b>	<b>2,156,499</b>	<b>1,421,416</b>	<b>0.39</b>	<b>0.26</b>	<b>2.57</b>	<b>3.90</b>	<b>36.37</b>

(continued)

Table 2.9 : (continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<u>MADHYA PRADESH</u>												
Balaghat	879,707	317,355	152,660	88,177	42,431	405,532	195,091	0.46	0.22	2.17	4.51	21.75
Bastar	1,543,577	539,459	278,152	95,572	47,035	635,031	325,187	0.41	0.21	2.43	4.75	14.60
Betul	985,714	217,759	108,399	54,092	22,503	271,851	130,902	0.28	0.13	3.63	7.53	17.19
Bhilsa	908,725	122,626	87,207	51,315	32,119	173,941	119,326	0.19	0.13	5.22	7.62	26.91
Bhind	760,566	195,314	164,694	11,016	8,056	206,330	172,750	0.27	0.23	3.69	4.40	4.66
Bilaspur	2,486,474	779,842	401,929	208,273	97,932	988,115	499,861	0.40	0.20	2.52	4.98	19.59
Chhatrapur	636,663	185,202	119,485	37,663	19,907	222,865	139,392	0.35	0.22	2.86	4.57	14.28
Chindwara	1,186,488	257,490	133,381	76,008	33,167	333,498	166,548	0.28	0.14	3.56	7.12	19.91
Damoh	617,428	107,530	69,154	31,922	17,628	139,452	86,782	0.23	0.14	4.43	7.11	20.29
Datia	294,339	71,131	43,660	2,065	1,704	73,196	45,364	0.25	0.15	4.02	6.49	3.76
Dewas	701,292	132,868	71,748	49,306	23,496	182,174	95,244	0.26	0.14	3.85	7.36	24.67
Dhar	1,129,638	232,889	122,926	63,688	30,588	296,577	153,514	0.26	0.14	3.81	7.36	19.92
Durg	3,275,100	679,563	330,099	205,271	100,171	884,834	430,270	0.27	0.13	3.70	7.61	23.28
Guna	920,691	185,747	126,142	37,382	20,864	223,129	147,006	0.24	0.16	4.13	6.26	14.19
Gwalior	526,115	110,580	81,888	16,402	9,503	126,982	91,391	0.24	0.17	4.14	5.76	10.40
Hoshangabad	990,752	131,323	82,371	71,507	36,810	202,830	119,181	0.20	0.12	4.88	8.31	30.88
Indore	557,826	77,569	45,080	40,045	19,793	117,614	64,873	0.21	0.12	4.74	8.60	30.51
Jhabua	741,426	255,292	133,026	7,561	4,251	262,853	137,277	0.35	0.19	2.82	5.40	3.07
Jabalpur	1,179,576	250,608	144,221	96,488	43,516	347,096	187,737	0.29	0.16	3.40	9.57	23.18
Mandsaur	1,111,818	271,634	146,114	34,167	15,886	305,801	162,000	0.28	0.15	3.64	6.86	9.81
Mandla	1,041,543	289,751	146,034	63,326	28,012	353,077	174,046	0.34	0.17	2.95	5.98	16.09
Morena	887,759	273,113	197,619	15,100	9,372	288,213	206,991	0.32	0.23	3.08	4.29	4.53

(continued)

Table 2.2 : (continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Narsimhapur	634,539	95,779	59,990	44,645	22,738	140,424	82,728	0.22	0.13	4.52	7.67	27.48
Nimar (W)	1,497,253	332,293	176,896	99,949	49,545	432,242	226,441	0.29	0.15	3.46	6.61	21.88
Nimar (E)	999,036	188,921	102,098	83,666	40,704	272,587	142,802	0.27	0.14	3.67	7.00	28.50
Panna	460,643	108,020	64,899	29,506	15,668	137,526	80,567	0.30	0.17	3.35	5.72	19.45
Raigarh	1,247,349	421,810	224,718	82,154	45,209	503,964	269,927	0.40	0.22	2.48	4.62	16.74
Raipur	2,881,398	703,389	348,687	245,459	125,269	948,848	473,956	0.33	0.16	3.04	6.08	26.43
Raisen	748,678	94,717	64,674	43,111	25,557	137,828	90,231	0.18	0.12	5.43	8.30	28.32
Rajgarh	744,334	192,190	108,372	35,846	17,354	228,036	125,726	0.31	0.17	3.26	5.92	13.80
Ratlam	614,379	149,739	82,155	23,226	10,819	172,965	92,974	0.28	0.15	3.55	6.61	11.64
Rewa	960,522	203,675	121,268	118,048	57,940	321,723	179,208	0.33	0.19	2.99	5.36	32.33
Satna	831,992	190,107	111,344	88,216	42,186	278,323	153,530	0.33	0.18	2.99	5.42	27.48
Sagar	995,834	167,777	111,038	56,754	31,166	224,531	142,204	0.23	0.14	4.44	7.00	21.92
Sehore	891,786	148,469	91,255	66,546	35,132	215,015	126,387	0.24	0.14	4.15	7.06	27.80
Seoni	850,060	201,353	104,653	62,969	28,596	264,322	133,249	0.31	0.16	3.22	6.38	21.46
Shahdol	1,102,474	302,937	171,399	77,415	37,918	380,352	209,317	0.34	0.19	2.90	5.27	18.12
Shajapur	828,606	169,420	93,806	58,652	27,794	228,072	121,600	0.28	0.15	3.63	6.81	22.86
Shivpuri	678,789	221,548	131,918	20,263	11,039	241,811	142,957	0.36	0.21	2.81	4.75	7.72
Sidhi	752,538	200,404	114,669	81,505	39,970	281,909	154,639	0.37	0.21	2.67	4.87	25.85
Surguja	1,304,173	474,120	258,684	64,918	31,523	539,038	290,207	0.41	0.22	2.42	4.49	10.86
Tikamgarh	449,458	189,201	110,353	16,902	8,430	206,103	118,783	0.46	0.26	2.18	3.78	7.10
Ujjain	976,394	170,994	93,889	59,104	27,977	230,098	121,866	0.24	0.12	4.24	8.01	22.96
<b>Total</b>	<b>43,813,452</b>	<b>10,611,508</b>	<b>5,932,754</b>	<b>2,815,200</b>	<b>1,397,278</b>	<b>13,426,708</b>	<b>7,330,032</b>	<b>0.31</b>	<b>0.17</b>	<b>3.26</b>	<b>5.98</b>	<b>19.06</b>

(continued)

Table 2.9 : (continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<u>MADRAS</u>												
Chingleput	922,818	334,974	252,451	241,254	129,297	576,228	381,748	0.62	0.41	1.60	2.42	33.87
Coimbatore	2,328,804	519,270	351,718	269,294	154,427	788,564	506,145	0.34	0.22	2.95	4.60	30.51
Kanya Kumari	284,344	72,865	67,669	31,267	23,358	104,132	91,027	0.37	0.32	2.73	3.12	25.66
Madras	-	104	102	193	181	297	283	-	-	-	-	-
Madurai	1,573,065	569,510	375,362	292,976	151,600	862,486	526,962	0.54	0.33	1.82	2.99	28.77
North Arcot	1,479,841	755,723	493,619	250,670	107,316	1,006,393	600,935	0.68	0.41	1.47	2.46	17.86
Nilgiris	120,668	35,541	19,236	20,695	10,854	56,236	30,090	0.47	0.25	2.15	4.01	36.07
Ramanathpuram	1,457,880	615,781	353,357	167,686	74,002	783,467	427,359	0.54	0.29	1.86	3.41	17.32
Salem	2,219,927	1,067,768	649,475	250,440	128,010	1,318,208	777,485	0.59	0.35	1.68	2.86	16.46
South Arcot	1,663,232	690,928	498,156	400,359	205,930	1,091,287	704,086	0.66	0.42	1.52	2.36	29.25
Thanjavur	1,741,954	494,668	361,059	445,975	248,793	940,643	609,852	0.54	0.35	1.85	2.85	40.80
Tiruchirapalli	1,937,534	862,396	525,797	256,875	120,981	1,119,271	646,778	0.58	0.33	1.73	2.99	18.70
Tirunelveli	1,366,687	438,305	282,027	200,690	90,292	638,995	372,319	0.47	0.27	2.14	3.67	24.25
Total	17,096,654	6,457,833	4,230,028	2,828,374	1,445,041	9,286,207	5,675,069	0.54	0.33	1.84	3.01	25.46
<u>MYSORE</u>												
Bangalore	864,580	438,079	291,935	63,230	37,558	501,309	329,493	0.58	0.38	1.72	2.62	11.40
Belgaum	2,334,336	519,238	347,660	143,770	77,452	663,008	425,112	0.28	0.18	3.52	5.49	18.20
Bellary	1,522,885	209,617	140,782	94,727	45,446	304,344	186,228	0.20	0.12	5.00	8.18	24.40
Bidar	941,544	126,131	86,286	104,980	51,071	231,111	137,357	0.25	0.14	4.07	6.85	37.18
Bijapur	3,651,111	371,854	252,110	223,047	104,045	594,901	356,155	0.17	0.10	6.14	10.25	29.21
Chikmagalur	505,900	142,159	89,068	28,697	17,798	170,856	106,866	0.34	0.21	2.96	4.73	16.65

(continued)



Table 2.9 : (continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Chitradurg	1,405,639	337,014	195,150	79,707	38,299	416,721	233,449	0.30	0.17	3.37	6.02	16.41
Dharwar	2,794,546	369,174	259,853	230,285	120,990	599,459	380,843	0.21	0.14	4.06	7.33	31.77
Gulbarga	3,160,825	301,601	208,377	175,065	84,433	476,666	292,810	0.15	0.09	6.63	10.79	28.83
Hassan	673,757	313,373	189,682	23,575	13,479	336,948	203,161	0.50	0.30	2.00	3.32	66.35
Kolar	693,203	426,584	269,464	51,946	26,367	478,530	295,831	0.69	0.43	1.45	2.34	8.91
Mandya	626,408	311,645	201,385	46,219	26,801	357,864	228,186	0.57	0.36	1.75	2.75	11.75
Mysore	1,139,619	404,752	295,723	94,828	53,546	499,580	349,269	0.44	0.31	2.28	3.26	15.33
Coorg	229,316	48,433	28,728	19,115	11,727	67,548	40,455	0.29	0.18	3.39	5.67	28.99
North Kanara	314,376	143,713	84,897	32,763	19,227	176,476	104,124	0.56	0.33	1.78	3.02	18.47
Raichur	2,597,159	287,420	196,175	105,088	50,423	392,508	246,598	0.15	0.09	6.62	10.53	26.45
Shimoga	669,776	225,256	147,837	51,979	30,580	277,237	178,417	0.41	0.27	2.42	3.75	17.14
South Kanara	675,235	343,147	168,167	130,607	48,209	473,754	216,376	0.70	0.32	1.43	3.12	22.28
Tumkur	1,230,621	487,472	297,406	61,482	28,621	548,954	326,027	0.45	0.26	2.24	3.77	8.78
<b>Total</b>	<b>26,030,836</b>	<b>5,806,664</b>	<b>3,750,685</b>	<b>1,761,110</b>	<b>886,072</b>	<b>7,567,774</b>	<b>4,636,757</b>	<b>0.29</b>	<b>0.18</b>	<b>3.44</b>	<b>5.61</b>	<b>19.11</b>
<b>PUNJAB</b>												
Ambala	959,768	180,902	160,561	27,161	26,526	208,063	187,087	0.22	0.19	4.61	5.13	14.18
Amritsar	1,237,573	167,168	164,921	43,523	42,274	210,691	207,195	0.17	0.17	5.87	5.97	20.40
Bhatinda	1,766,376	203,695	176,879	44,088	40,482	247,783	217,361	0.14	0.12	7.13	8.13	18.62
Ferozepur	2,565,347	294,784	247,991	73,043	66,254	367,827	314,245	0.14	0.12	6.97	8.16	21.08
Gurdaspur	624,534	118,054	115,672	23,089	22,365	141,143	138,037	0.23	0.22	4.42	4.52	16.20
Gurgaon	1,507,149	320,201	201,678	22,663	15,534	342,864	217,212	0.23	0.14	4.40	6.94	7.15

(continued)

Table 2.9 : (continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Hissar	380,351	471,695	304,586	41,628	33,561	513,323	338,147	1.35	0.89	0.74	1.12	9.92
Hoshiarpur	991,142	226,205	180,712	14,488	13,914	240,693	194,626	0.24	0.20	4.12	5.09	7.15
Jullandur	794,180	122,731	117,486	26,698	26,284	149,429	143,770	0.19	0.18	5.31	5.52	18.28
Kangra	779,864	430,723	209,154	8,032	5,611	438,755	214,765	0.56	0.28	1.78	3.63	2.61
Kapurthala	313,983	49,080	47,849	4,837	4,765	53,917	52,614	0.17	0.17	5.82	5.97	9.06
Karnal	1,887,083	293,569	240,442	49,465	44,077	343,034	284,519	0.18	0.15	5.50	6.63	15.49
Ludhiana	861,939	106,769	101,962	23,018	22,830	129,787	124,792	0.15	0.14	6.64	6.91	18.29
Mahendragarh	1,125,135	168,660	103,592	4,283	3,120	172,943	106,712	0.15	0.09	6.51	10.54	2.92
Patiala	1,304,308	149,254	146,867	35,816	34,918	185,070	181,785	0.14	0.14	7.04	7.18	19.21
Rohtak	1,734,631	347,018	199,785	47,364	29,686	394,382	229,471	0.23	0.13	4.40	7.56	12.94
Sangrur	2,268,693	311,020	251,141	53,630	50,189	364,640	301,330	0.16	0.13	6.22	7.53	16.66
Simla	391	25,922	13,972	498	424	26,420	14,396	67.57	36.82	0.01	0.03	2.94
<b>Total</b>	<b>24,527,457</b>	<b>3,987,450</b>	<b>2,985,250</b>	<b>543,324</b>	<b>482,814</b>	<b>4,530,774</b>	<b>3,468,064</b>	<b>0.18</b>	<b>0.14</b>	<b>5.41</b>	<b>7.07</b>	<b>13.91</b>
<b>RAJASTHAN</b>												
Ajmer	991,694	255,293	135,463	18,439	8,202	273,732	143,665	0.28	0.14	3.62	6.91	5.71
Alwar	1,494,935	379,332	236,544	16,723	9,298	396,055	245,842	0.26	0.16	3.77	6.08	3.78
Banswara	557,360	215,274	122,475	5,530	2,194	220,804	124,669	0.40	0.22	2.52	4.47	1.76
Barmer	2,829,348	297,995	184,871	5,743	3,424	303,738	188,295	0.11	0.07	9.31	15.03	1.82
Bharatpur	1,421,501	387,994	283,617	19,156	11,986	407,150	295,603	0.29	0.21	3.49	4.81	4.05
Bhilwara	796,948	406,820	224,369	10,241	5,178	417,061	229,547	0.52	0.29	1.91	3.47	2.26
Bikaner	840,177	98,306	57,962	962	653	99,268	58,615	0.12	0.07	8.46	14.33	1.11

(continued)

Table 2.9 : (continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Bundi	492,790	107,818	67,255	10,688	6,740	118,506	73,995	0.24	0.15	4.16	6.66	9.11
Chittorgarh	859,301	329,052	176,305	16,995	7,677	346,047	183,982	0.40	0.21	2.48	4.67	4.17
Churu	2,331,421	260,154	146,044	2,217	1,520	262,371	147,564	0.11	0.06	8.89	15.80	1.03
Dungarpur	357,674	191,487	103,210	4,241	2,179	195,728	105,389	0.55	0.29	1.83	3.39	1.97
Ganganagar	3,125,561	272,445	197,036	46,476	40,653	318,921	237,689	0.10	0.08	9.80	13.15	17.10
Jaipur	1,904,569	545,217	314,078	22,803	13,079	568,020	327,157	0.30	0.17	3.35	5.82	4.00
Jaisalmer	231,775	34,744	24,094	350	197	35,094	24,291	0.15	0.10	6.60	9.54	0.81
Jalore	1,502,797	197,119	126,844	14,486	9,113	211,605	135,957	0.14	0.09	7.10	11.05	6.70
Jhalwar	721,415	177,611	107,894	27,106	12,457	204,717	120,351	0.28	0.17	3.52	5.99	10.35
Jhunjhunu	1,196,991	257,429	141,948	6,515	3,996	263,944	145,944	0.22	0.12	4.54	8.20	2.74
Jodhpur	2,227,923	274,731	169,805	9,758	4,634	284,489	174,439	0.13	0.08	7.83	12.77	2.66
Kotah	1,323,878	215,745	135,223	41,562	24,878	257,307	160,101	0.19	0.12	5.15	8.27	15.54
Nagaur	2,601,114	377,490	216,774	14,408	7,312	391,898	224,086	0.15	0.09	6.64	11.61	3.26
Pali	1,218,424	220,255	136,018	32,433	18,827	252,688	154,845	0.21	0.13	4.82	7.87	12.16
Sawai Madhopur	1,211,146	374,841	222,136	22,979	10,780	397,820	232,916	0.33	0.19	3.05	5.20	4.63
Sikar	1,345,334	293,637	163,825	6,493	3,806	300,130	167,631	0.22	0.12	4.48	8.03	2.27
Sirohi	375,744	70,318	49,791	13,789	9,047	84,107	58,838	0.22	0.16	4.47	6.39	15.38
Tonk	961,306	198,411	111,159	10,124	5,461	208,535	116,620	0.22	0.12	4.61	8.24	4.68
Udaipur	992,513	615,561	350,327	13,414	6,902	628,975	357,229	0.63	0.36	1.58	2.78	1.93
Total	33,921,675	7,055,079	4,205,067	393,631	230,193	7,448,710	4,435,260	0.22	0.13	4.55	7.65	5.19

(continued)

Table 2.9 : (continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<u>UTTAR PRADESH</u>												
Agra	1,040,901	253,917	246,402	28,501	27,585	282,418	273,987	0.27	0.26	3.69	3.80	10.07
Aligarh	1,342,602	274,592	266,534	55,140	54,367	329,732	320,901	0.25	0.24	4.07	4.18	16.94
Allahabad	1,410,176	624,880	392,076	192,077	95,999	816,957	488,075	0.58	0.35	1.73	2.89	19.67
Almora	514,122	473,781	188,400	3,562	1,884	477,343	190,284	0.93	0.37	1.08	2.70	0.92
Azamgarh	1,338,970	604,769	446,814	157,061	73,379	761,830	520,193	0.57	0.39	1.76	2.57	14.11
Bahraich	1,509,355	525,121	410,361	65,271	41,066	590,392	451,427	0.39	0.30	2.56	3.34	9.10
Ballia	761,378	269,391	215,712	92,866	46,204	362,257	261,916	0.48	0.34	2.10	2.91	17.64
Banda	1,264,323	281,065	200,340	84,832	49,471	365,897	249,811	0.29	0.20	3.46	5.06	19.80
Bara Banki	1,051,957	462,146	362,545	56,211	34,285	518,357	396,830	0.49	0.38	2.03	2.65	8.86
Bareilly	1,028,474	312,578	306,443	25,032	24,656	337,610	331,099	0.33	0.32	3.05	3.11	7.45
Basti	1,878,629	1,011,348	663,158	185,756	92,524	1,197,104	755,682	0.64	0.40	1.57	2.49	12.24
Varanasi	1,105,706	364,814	266,292	152,386	83,735	517,200	350,027	0.47	0.32	2.14	3.16	23.92
Bijnor	909,025	176,135	168,678	36,521	35,399	212,656	204,077	0.23	0.22	4.27	4.45	17.35
Badaun	1,206,262	384,806	376,666	24,860	24,557	409,666	401,223	0.34	0.33	2.94	3.01	6.12
Bulandshahr	1,261,232	316,964	292,419	47,480	45,757	364,444	338,176	0.29	0.27	3.46	3.73	13.53
Kanpur	1,298,165	353,611	323,020	49,620	40,640	403,231	363,660	0.31	0.28	3.22	3.57	11.18
Dehra Dun	178,677	60,281	42,807	8,254	6,650	68,535	49,457	0.38	0.28	2.61	3.61	13.45
Deoria	1,406,018	712,497	525,621	165,803	81,654	878,300	607,275	0.62	0.43	1.60	2.32	13.45
Etah	1,039,596	299,779	291,916	21,735	21,508	321,514	313,424	0.31	0.30	3.23	3.31	6.86
Etawah	875,271	280,754	271,275	17,995	16,988	298,749	288,263	0.34	0.33	2.93	3.04	5.89
Farrukhabad	894,607	307,537	299,600	24,902	24,486	332,439	324,086	0.37	0.36	2.69	2.76	7.56
Fatehpur	837,561	324,213	230,401	57,230	34,152	381,443	264,553	0.46	0.32	2.20	3.17	12.91

(continued)

Table 2.9 : (continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Faizabad	1,034,877	433,397	324,396	131,309	65,157	564,706	389,553	0.55	0.38	1.83	2.66	16.73
Garhwal	962,484	390,555	142,967	1,712	967	392,267	143,934	0.41	0.15	2.45	6.69	0.92
Ghazipur	783,638	328,392	226,489	85,064	45,873	413,456	272,362	0.53	0.35	1.90	2.88	16.84
Gonda	1,808,343	721,956	517,655	112,180	65,695	834,136	583,350	0.46	0.32	2.17	3.10	11.26
Gorakhpur	1,570,222	739,130	506,558	221,488	109,371	960,618	615,929	0.61	0.39	1.63	2.55	17.75
Hamirpur	1,179,191	226,047	149,755	53,528	32,166	279,575	181,921	0.24	0.15	4.22	6.48	17.68
Hardoi	1,361,690	447,584	416,385	29,512	27,431	477,096	443,816	0.35	0.33	2.85	3.07	6.18
Jalaun	885,683	171,030	134,215	25,036	18,271	196,066	152,486	0.22	0.17	4.52	5.81	11.98
Jaunpur	884,820	492,534	318,483	94,811	48,333	587,345	366,816	0.66	0.41	1.51	2.41	13.18
Jhansi	1,132,424	270,575	193,747	32,465	19,316	303,040	213,063	0.27	0.19	3.74	5.31	9.07
Kheri	1,327,841	353,453	340,840	36,471	32,255	389,924	373,095	0.29	0.28	3.41	3.56	8.65
Lucknow	472,623	216,849	171,909	19,703	13,723	236,552	185,632	0.50	0.39	2.00	2.55	7.39
Mainpuri	887,207	275,213	266,649	14,373	14,234	289,586	280,883	0.33	0.32	3.06	3.16	5.07
Meerut	1,629,293	363,994	335,443	43,814	41,756	407,808	377,199	0.25	0.23	4.00	4.32	11.07
Mirzapur	1,144,646	281,942	187,743	149,024	75,615	430,966	263,358	0.38	0.23	2.66	4.35	28.71
Moradabad	1,398,452	414,844	396,987	35,602	34,967	450,446	431,954	0.32	0.31	3.10	3.24	8.10
Mathura	951,477	207,638	179,632	27,598	23,842	235,236	203,474	0.25	0.21	4.04	4.68	11.72
Muzaffarnagar	1,070,837	210,994	203,631	55,950	54,103	266,944	257,734	0.25	0.24	4.01	4.15	20.99
Nainital	613,344	137,842	88,063	31,823	27,415	169,665	115,478	0.28	0.19	3.62	5.31	23.74
Pratapgarh	716,226	396,589	240,290	102,461	46,157	499,050	286,447	0.70	0.40	1.44	2.50	16.11
Pilibhit	606,672	136,439	133,946	17,054	16,788	153,493	150,734	0.25	0.25	3.95	4.02	11.14
Rae Bareli	912,709	416,588	287,307	88,186	46,780	504,774	334,087	0.55	0.37	1.81	2.73	14.00
Rampur	606,953	155,353	151,582	17,461	16,734	172,814	168,316	0.28	0.28	3.51	3.61	9.94

(continued)

Table 2.9 : (continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Saharanpur	1,262,932	197,546	193,928	49,355	48,788	246,901	242,716	0.20	0.19	5.12	5.20	11.49
Shahjahanpur	1,022,067	290,693	284,110	25,202	24,716	315,895	308,826	0.31	0.30	3.24	3.31	8.00
Sitapur	1,400,591	459,097	427,457	32,416	29,387	491,558	456,844	0.35	0.33	2.85	3.07	6.43
Sultanpur	916,416	363,699	275,362	139,316	73,137	503,015	348,499	0.55	0.38	1.82	2.63	20.99
Tehri Garhwal	191,195	281,564	113,595	1,438	813	283,002	114,408	1.48	0.60	0.68	1.67	0.46
Unnao	906,592	371,860	305,458	33,731	24,852	405,591	330,310	0.45	0.36	2.24	2.74	7.52
<b>Total</b>	<b>53,794,462</b>	<b>18,428,376</b>	<b>14,302,062</b>	<b>3,261,178</b>	<b>2,035,588</b>	<b>21,689,554</b>	<b>16,337,650</b>	<b>0.40</b>	<b>0.30</b>	<b>2.48</b>	<b>3.29</b>	<b>12.46</b>
<b>WEST BENGAL</b>												
Bankura	842,500	317,928	251,750	149,197	94,923	467,125	346,673	0.55	0.41	1.80	2.43	27.38
Birbhum	904,500	197,122	180,172	138,172	110,647	335,294	290,819	0.37	0.32	2.70	3.11	38.05
Burdwan	1,235,600	295,752	271,693	184,416	144,861	480,168	416,554	0.39	0.34	2.57	2.97	34.78
Cooch Behar	767,500	240,306	228,996	23,020	22,537	263,326	251,533	0.34	0.33	2.91	3.05	8.96
Darjeeling	275,900	99,703	59,825	7,807	5,361	107,510	65,186	0.39	0.24	2.57	4.23	8.22
West Dinajpur	1,391,400	267,636	250,104	91,402	77,854	359,038	327,958	0.26	0.24	3.88	4.24	23.74
Hoogly	621,200	206,138	194,831	134,188	101,512	340,326	296,343	0.55	0.48	1.83	2.10	34.25
Howrah	263,500	89,828	87,648	60,002	59,514	149,830	147,162	0.57	0.56	1.76	1.79	40.44
Jalpaiguri	784,300	227,314	189,656	15,424	14,134	242,738	203,790	0.31	0.26	3.23	3.85	6.94
Malda	820,100	199,654	178,819	57,728	46,015	257,382	224,834	0.31	0.27	3.19	3.65	20.47
Midnapore	2,310,700	781,823	688,264	286,077	205,882	1,067,900	894,146	0.46	0.39	2.16	2.58	23.03
Murshidabad	1,378,700	294,004	282,884	130,764	124,065	424,768	406,949	0.31	0.30	3.25	3.39	30.49
Nadia	1,048,700	199,736	196,422	77,616	74,714	277,352	271,136	0.26	0.26	3.78	3.87	27.56
Purulia	563,100	462,900	266,603	90,419	49,247	553,319	315,850	0.98	0.56	1.02	1.78	15.59
24 Parganas	1,847,400	578,859	563,808	325,388	315,369	904,247	879,177	0.49	0.48	2.04	2.10	35.87
<b>Total</b>	<b>15,055,100</b>	<b>4,458,703</b>	<b>3,891,475</b>	<b>1,771,620</b>	<b>1,446,635</b>	<b>6,230,323</b>	<b>5,338,110</b>	<b>0.41</b>	<b>0.35</b>	<b>2.42</b>	<b>2.82</b>	<b>27.10</b>

(continued)

Table 2.9 : (continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<u>HIMACHAL PRADESH</u>												
Bilaspur	127,456	66,388	33,981	841	577	67,229	34,558	0.53	0.27	1.90	3.69	1.67
Chamba	142,481	110,225	60,765	474	348	110,699	61,113	0.78	0.43	1.29	2.33	5.69
Mahasu	318,335	206,373	96,235	5,937	4,093	212,310	100,328	0.67	0.32	1.50	3.17	4.12
Mandi	315,354	195,528	89,894	2,098	977	197,626	90,871	0.63	0.29	1.60	3.47	1.08
Sirmur	170,690	92,075	53,391	1,982	1,560	94,057	54,951	0.55	0.32	1.81	3.11	2.84
<b>Total</b>	<b>1,074,316</b>	<b>670,589</b>	<b>334,266</b>	<b>11,332</b>	<b>7,555</b>	<b>681,921</b>	<b>341,821</b>	<b>0.63</b>	<b>0.32</b>	<b>1.58</b>	<b>3.14</b>	<b>2.21</b>
<u>ORISSA</u>												
Kalahandi	1,165,950	270,512	193,102	96,117	69,013	366,629	262,115	0.31	0.22	3.18	4.49	26.33
Koraput	2,387,211	486,464	310,008	153,618	81,252	640,082	391,260	0.27	0.16	3.73	6.10	20.77
Sambalpur	1,314,340	446,610	277,248	132,382	86,877	578,992	364,125	0.44	0.28	2.27	3.61	23.86
Bolangir	905,917	307,982	216,099	93,925	63,076	401,906	279,175	0.44	0.31	2.25	3.24	22.60
Baudh-Khondmals	828,907	186,246	106,481	38,749	21,519	224,995	128,000	0.27	0.15	3.68	6.48	16.81
Ganjam	845,960	456,705	281,480	170,052	69,751	626,757	351,231	0.74	0.41	1.35	2.41	19.86
Sundargarh	727,299	214,829	136,557	44,316	25,737	259,145	162,294	0.36	0.22	2.81	4.48	15.86
Dhenkanal	1,041,690	249,307	187,809	62,022	39,240	311,329	227,049	0.30	0.22	3.46	4.59	17.28
Puri	1,311,307	346,942	327,160	97,115	76,100	444,057	403,260	0.34	0.31	2.95	3.25	18.87
Keonjhar	658,756	221,368	149,827	49,933	28,352	271,301	178,179	0.41	0.27	2.43	3.70	15.91
Cuttack	1,973,297	513,179	495,314	136,231	112,943	649,410	608,257	0.33	0.31	3.04	3.24	18.57
Mayurbhanj	794,789	358,601	220,487	162,358	75,092	520,959	295,579	0.66	0.37	1.53	2.69	25.41
Balasore	1,002,768	294,267	283,556	66,693	56,057	360,960	339,613	0.36	0.34	2.78	2.95	16.51
<b>Total</b>	<b>14,958,191</b>	<b>4,353,012</b>	<b>3,185,128</b>	<b>1,303,511</b>	<b>805,009</b>	<b>5,656,523</b>	<b>3,990,137</b>	<b>0.38</b>	<b>0.27</b>	<b>2.64</b>	<b>3.75</b>	<b>20.17</b>

(continued)

Table 2.9 : (continued)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
<u>ASSAM</u>												
Goalpara	790,608	433,472	317,212	38,522	33,280	471,994	350,492	0.60	0.44	1.68	2.26	9.49
Kamrup	1,274,458	513,992	388,562	29,609	26,012	543,601	414,574	0.43	0.33	2.34	3.07	6.27
Darrang	776,142	412,904	255,951	21,147	17,815	434,051	273,766	0.56	0.35	1.79	2.84	6.51
Lakhimpur	617,789	419,702	229,915	10,407	7,958	430,109	237,873	0.70	0.39	1.44	2.60	3.53
Nowgong	671,897	325,961	252,543	22,552	21,439	348,513	273,982	0.52	0.41	1.93	2.45	7.82
Sibsagar	678,261	440,591	244,083	13,201	10,267	453,792	254,350	0.67	0.38	1.49	2.67	4.04
Cachar	595,023	244,856	219,632	32,581	30,251	277,437	249,883	0.47	0.42	2.14	2.38	12.11
Garo Hills	185,519	159,438	82,556	3,265	2,062	162,703	84,618	0.88	0.46	1.14	2.19	2.44
Mizo Hills	128,520	109,518	55,185	33	33	109,551	55,218	0.85	0.43	1.17	2.33	0.06
Mikir and N.C. Hills	95,972	127,580	72,470	2,224	1,850	129,804	74,320	1.35	0.77	0.74	1.29	2.49
K. and J. hills	90,520	135,486	71,765	13,875	7,212	149,361	78,977	1.65	0.87	0.61	1.15	9.13
Total	5,904,709	3,323,500	2,189,874	187,416	158,179	3,510,916	2,348,053	0.59	0.40	1.68	2.51	6.74



## CHAPTER III

### AN INDIRECT ESTIMATE OF THE INCIDENCE OF HIRED LABOUR

Till now we have been discussing the extent of the proportion of cultivators and agricultural labour, or, in other words, self-employed and hired workers in total agricultural worker on the basis of the information and data obtained from census of India, 1961.

#### 3.1 Information Based on Rural Credit Survey

Certain relevant information is also available in the Rural Credit Survey Report which we shall now examine.<sup>1</sup> The Rural Credit Survey Report does not give any direct information about the magnitude of agricultural labour and self-employed labour, but, it does give data and other relevant information on the wages paid to hired labour. We propose to utilize the data to find out the proportion that the wages form of the gross produce, and compare these proportions as the proportion of agricultural labour to agricultural workers as appearing in the census.

In the Rural Credit Survey the district was treated as the unit of investigation and 75 districts from all over the

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1 All India Rural Credit Survey, Vol. III, The Technical Report, Bombay, 1956.

country, representative of different regions in the country, were selected on a random basis.

In the Rural Credit Survey Report the wages paid to hired labour for the agricultural operations are classified into the following categories:

- (1) Wages in kind paid for harvesting
- (2) Wages in kind paid for work other than at harvest
- (3) Cash wages paid to hired labour
- (4) Salaries paid to annual farm servants

All these items of wages appear in the Intensive Enquiry District Table 17 of the Technical Report of the Survey, in some form or the other. The structure of the Table is given below to show the order in which the data are presented. The data appearing in the Table for illustration refer to the district Cachar in Assam. (Table 3.1.)

Out of the earlier mentioned items of wages, two items, namely, wages in kind other than at harvest and cash wages paid to hired labours are directly available from the Intensive Enquiry District Table 17, shown in Table 3.1, in columns 20 and 21 respectively. Wages paid for harvesting is included in the item, value of total disposal in kind immediately after harvest and given in column 19 of the Intensive Enquiry District Table 17. Total disposal includes disposal as share rent to landlord, share to co-sharer, wages to labour for harvesting and payments to artisans. We need

**Table 3.1 : Amount in Rupees Per Family**

Family Group	Proportion of families	Value of gross produce	Value of disposal immediately after harvest	Wages in kind other than harvest	Cash wages paid to hired labour	Other cash expenses
	1	17	19	20	21	23
All Cultivators	100	776.2	104.5	1.4	42.8	11.9
V. Rent paid to landlord or share to co-sharer as per cent of value of gross produce						
Nil	51.0	822.3	61.2	2.6	51.3	10.2
Less than 5	15.6	776.6	17.4	-	44.7	26.6
5 to 10	0.2	545.0	30.0	-	30.0	25.0
10 to 20	9.9	696.7	107.1	-	34.0	8.8
20 to 30	11.1	390.7	88.7	-	10.0	7.9
30 to 40	6.1	758.0	281.8	-	37.4	8.7
40 to 50	6.1	1246.9	539.3	-	45.7	3.6
50 to 60	-	-	-	-	-	-
60 to 70	-	-	-	-	-	-
70 to 80	-	-	-	-	-	-
80 and above	-	-	-	-	-	-

**Source :** All India Rural Credit Survey, Vol. III, The Technical Report, Bombay, 1956, Intensive Enquiry District Table 17, p. 675.

to isolate the payments made to hired labour for harvesting. No direct information is available in this regard to isolate it from other items of the total disposal. So, in order to isolate the wages paid for harvesting we adopt the following procedure.

Sub-Table V of the Intensive Enquiry District Table 17 which is what is shown in Table 3.1, gives the relevant information for classes of cultivators classified according to the rent paid to landlord or share to co-sharer as percentage value of gross produce. Actual value of gross produce is given in column 17 against each of the above proportions.

### 3.2 Estimation of the Wages Paid to Hired Labour at Harvest

Now, with the above information it is possible to compute from the Table the value of produce given as share to the landlord or co-sharer. If we subtract it from the total disposal at harvest, we have an estimate of the wages in kind paid at harvest and payments in kind made to artisans. We have no separate estimate of the latter. We, however, presume that the payments to artisans form a relatively small proportion of the value of the disposal immediately after harvest and that the balance of disposals at harvest is mainly paid to hired labour for harvesting.

Salaries paid to annual farm servants is also not obtainable direct from Table 17. It is included in the item

'other cash expenditure' in column 23 of the Table 17, but, is shown separately in the columns 10 and 24 of the Intensive Enquiry District Table 7.

A sum of these four items, namely, the balance left after subtracting the share to the landlord or co-sharer from the total value of disposal immediately after harvest, the cash wages paid to hired labour, wages in kind other than at harvest and the salaries paid to the annual farm servants gives the total wages paid to hired labours.

### 3.3 Wages Paid to Hired Labour as Proportion of Gross Produce

We then find out the proportion which these wages form of the gross produce. The results obtained are given in Table 3.2.

It appears from the Table 3.2 that on the whole the two estimated figures, namely, proportion of gross produce paid as wages to hired labour and the proportion of agricultural labour, from two different sources, namely, Census of India and All India Rural Credit Survey, compare favourably. Districts showing a smaller proportion of gross produce given as wages to hired labour are, Lakhimpur, Cachar, Kamrup in Assam, Jalpaiguri in West Bengal, Palamau in Bihar, almost all the districts in Uttar Pradesh and Punjab, shown in the Table, and Jhabua and Shivapuri in Madhya Pradesh. Almost all the districts in Maharashtra, Gujarat, Madras, Andhra Pradesh, Mysore and Orissa show a comparatively high proportion of gross produce given as wages.

**Table 3.2 : Proportion of Gross Produce as Wages Paid to Hired Labour**

State/District	Value of gross produce	Proportion of gross produce paid to hired labour	Proportion of agricultural labour as per 1961 census
(1)	(2)	(3)	(4)
<b><u>ASSAM</u></b>			
Lakhimpur	731.6	4.96	3.35
Cachar	776.2	9.25	12.11
Kamrup	1420.6	9.31	6.27
<b><u>TRIPURA</u></b>	1029.6	18.45	N.A.
<b><u>WEST BENGAL</u></b>			
Jalpaiguri	968.1	5.85	6.94
Malda	1039.2	27.23	20.47
Burdwan	423.6	30.52	34.78
Midnapore	926.1	23.99	23.03
<b><u>BIHAR</u></b>			
Bhagalpur	651.8	29.36	33.42
Monghyr	1090.2	26.71	32.19
Hazaribagh	747.6	15.21	11.10
Palamau	327.8	9.15	15.76
<b><u>UTTAR PRADESH</u></b>			
Mirzapur	473.4	9.97	28.71
Ballia	423.9	14.65	17.64
Deoria	695.5	10.71	13.45

(continued)

Table 3.2 : (continued)

(1)	(2)	(3)	(4)
Jaunpur	423.4	8.06	13.18
Sultanpur	496.5	9.18	20.99
Sitapur	531.3	6.64	6.43
Kanpur	645.8	6.55	11.18
Hamirpur	906.0	12.43	17.68
Shahjahanpur	700.9	10.84	8.00
Agra	943.8	5.50	10.07
Aligarh	1826.9	7.73	16.94
Nainital	655.8	8.54	23.74
Meerut	1175.3	10.64	11.07
<u>HIMACHAL PRADESH</u>			
Sirmoor	600.4	12.48	2.84
<u>PUNJAB</u>			
Hoshiarpur	1062.5	10.16	7.15
Jullandhar	1537.0	5.05	18.28
Hissar	712.6	6.72	9.92
Bhatinda	2335.5	4.94	18.62
Mohindergarh	287.9	7.78	3.92
<u>RAJASTHAN</u>			
Churu	-	-	-
Barmer	250.8	20.08	1.03
Sirohi	198.2	39.58	1.82
Jaipur	550.0	11.66	4.00
Sawai Madhopur	258.2	40.08	4.63
Chittorgarh	388.9	21.33	4.17

(continued)

Table 3.2 : (continued)

(1)	(2)	(3)	(4)
<u>MADHYA BHARAT</u>			
Jhabua	369.9	8.67	3.07
Shivapuri	407.9	9.73	7.72
Bhilsa	867.9	34.30	26.91
Raisen	537.7	42.83	28.32
Satna	402.8	16.25	27.48
Rewa	694.3	19.32	32.33
Bilaspur	490.7	18.95	19.59
Durg	398.8	21.19	23.28
Shajapur	826.8	17.16	22.86
Sagar	532.7	29.11	21.92
<u>GUJARAT</u>			
Surat	1057.2	20.87	34.16
Ahmedabad	633.6	26.56	24.87
Broach	492.5	30.65	38.58
<u>MAHARASHTRA</u>			
Nagpur	873.0	35.44	35.48
Chanda	610.0	41.50	26.29
Akola	2252.4	24.11	52.30
Dhulia	982.0	26.63	36.62
Poona	758.0	23.24	14.08
Ratnagiri	221.0	16.88	7.27
Kolhapur	436.6	33.46	18.52

(continued)



Table 3.2 : (continued)

(1)	(2)	(3)	(4)
Osmanabad	1479.8	16.70	36.83
Parbhani	1562.4	21.24	40.93
<u>MADRAS</u>			
Coimbatore	1793.8	25.37	30.51
Chingleput	863.4	38.26	33.87
Ramanathpuram	465.8	25.25	17.32
<u>ANDHRA PRADESH</u>			
Cuddapah	722.7	33.61	32.60
Kurnool	1126.8	31.81	39.88
West Godavari	1082.4	32.91	48.96
Nizamabad	507.3	26.58	25.02
Mahboobnagar	890.6	38.10	30.72
<u>MYSORE</u>			
Hassan	359.9	23.86	66.35
Bangalore	283.7	23.12	11.40
Bijapur	871.7	28.49	29.21
<u>ORISSA</u>			
Sambalpur	376.4	45.70	23.86
Puri	266.5	38.16	18.87
Koraput	291.0	34.17	20.77
<u>KERALA</u>			
Quilon	584.3	31.58	26.24

### 3.4 Comparison of the Two Estimates

Now, if we compare each of these proportions as the proportion of agricultural labour to total agricultural worker as appearing in the census, we find that in all the districts of Assam, in Jalpaiguri in West Bengal, in Jaunpur, Sitapur, Shahajahanpur, Meerut and Agra in Uttar Pradesh, in Hoshiarpur, Hissar and Mohindergarh in Punjab, and in Jhabua and Shivapuri in Madhya Pradesh, both the proportion of gross output given as wages and the proportion of agricultural labour are small. On the basis of these observations it can be concluded with more certainty that these are the regions where the proportion of agricultural labour and thereby the use of hired labour is small.

Similarly, there are regions, namely, Malda, Burdwan and Midnapur in West Bengal, Bhilsa, Durg, Bilaspur, Shajapur and Sagar in Madhya Pradesh, Nagpur and Dhulia in Maharashtra, Bijapur in Bangalore and all the districts in Bihar, Madras, Andhra Pradesh and Gujarat, where both the estimates are high indicating greater use of hired labour in these regions.

There are, however, some regions where on the one hand, proportion of gross produce given as wages is high, on the other, the proportion of agricultural labour is small, for example, Chanda and Kolhapur in Maharashtra, all the districts in Rajasthan, Raisen in Madhya Pradesh and Sambalpur, Puri and Koraput in Orissa.

While there are some other districts where the proportion of agricultural labour is more, as compared to the proportion of gross produce, they are, Palamau in Bihar, Agra, Aligarh and Nainital in Uttar Pradesh, Jalandhar and Bhatinda in Punjab, Satna and Rewa in Madhya Pradesh, Akola, Osmanabad and Parbhani in Maharashtra, and Hassan in Mysore.

This discrepancy may be partly due to the defect of the data and partly due to the way we have arrived at the total amount of wages paid to the hired labour. In the case of some districts, in our calculation for the isolation of wages paid in kind at harvest, the rent paid to landlord and share to co-sharer come out to be more than the total value of disposal immediately after harvest. The districts in which it happens so are, Burdwan, Midnapore, Sitapur, Shahajahanpur, Agra, Mohindergarh, Jaipur, Sawai Madhopur, Shivapuri, Bilaspur, Coimbatore and Malabar. This is thus a limitation of this estimate.

In this chapter thus, we have attempted an indirect estimation of the incidence of the proportion of hired labour in total labour used in terms of the proportion of gross produce given as wages to the hired labours. This, however, is a very crude estimate and we are aware of the assumptions we have made and omissions we have done.

## CHAPTER IV

### NATURE AND EXTENT OF LABOUR INPUT IN CROP PRODUCTION

In the last two chapters we have so far examined two rather indirect sources of data regarding the extent of self-employed labour and hired labour in agriculture and have seen that the extent of the total labour input per acre and the proportion of hired labour input vary greatly from region to region. We shall now turn to a more direct source of data, namely, the Farm Management Studies and discuss in this chapter the extent of labour input per acre, both family and hired, employed in crop production.

#### 4.1 Farm Management Studies

Studies in the economics of farm management was initiated in 1954-55 in six regions of the country, namely, Bombay, Madras, Punjab, Uttar Pradesh, West Bengal and Madhya Pradesh.<sup>1</sup> Actually in Madhya Pradesh it was started one year later, that is, in 1955-56. The results of each year's investigation have been published in the form of annual reports. The first series of studies was continued

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1 Studies in Economics of Farm Management. Directorate of Economics and Statistics, Government of India, Ministry of Food and Agriculture, Department of Agriculture.

until 1956-57. The second series of these studies was started in the States of Andhra Pradesh, Bihar and Orissa from 1957-58, amongst which reports for Bihar have not come as yet, and for Andhra Pradesh and Orissa we have information for two subsequent years only, that is, 1957-58 and 1958-59. The second series of the studies in the economics of farm management for Punjab was initiated in July 1961 in the regions comprising the districts of Karnal and Rohtak and Jhind tehsils of Sangrur district.<sup>1</sup> Reports for all the years, that is, 1961-62 to 1963-64, are available. All these reports are proposed to be made use of as the primary source of data.

#### 4.2 Districts and Crops Selected for the Farm Management Studies

In the first series of studies data were collected, both by cost accounting and survey methods except in Madhya Pradesh, where only cost accounting method was tried. The districts and the major crops selected in the six regions are given in Table 4.1.

Each district was divided into two homogeneous zones and from each zone 10 villages were selected at random both for cost accounting and survey methods. Holdings were the ultimate units and for their selection holdings were arranged

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<sup>1</sup> Studies in Economics of Farm Management in Punjab. The Economic and Statistical Organisation, Government of Punjab.

in order of magnitude; the total number of holdings was then divided into five groups, containing equal number of holdings. From each group holdings were ultimately selected at random, with equal probability, the number being two from each group for villages under cost accounting, four for those under survey method and six for the common villages.

**Table 4.1 : Regions and Crops Selected for Study under First Series**

Years	States	Districts	Major Crops
1954-55 to 1956-57	Bombay	Ahmednagar, Nasik	Wheat, Jute and Bajra
1955-56 to 1956-57	Madhya Pradesh	Akola, Amravati	Jute, Cotton and Groundnut
1954-55 to 1956-57	Madras	Salem, Coimbatore	Paddy, Jute and Cotton
1954-55 to 1956-57	Uttar Pradesh	Meerut, Muzaffarnagar	Wheat and Sugarcane
1954-55 to 1956-57	Punjab	Ferozepur, Amritsar	Wheat and Cotton
1954-55 to 1956-57	West Bengal	24 Parganas, Hooghly	Paddy, Jute

In the second series of studies the data were collected by cost accounting method only. Both in Andhra Pradesh and Orissa, only one district each was selected, namely, West Godavari and Sambalpur respectively. In Punjab the districts

selected were Karnal, Rohtak and Sangrur. In Bihar, again, two districts were selected, namely, Monghyr and Shahabad. The districts and major crops selected in the regions are as follows.

**Table 4.2 : Region and Crops Selected for Study under Second Series**

Year	State	District	Major Crops
1957-58 to 1958-59	Andhra Pradesh	West Godavari	Paddy, Tobacco
1957-58 to 1958-59	Orissa	Sambalpur	Paddy
1957-58 to 1959-60	Bihar	Monghyr, Shahabad	Paddy, Khesari, Maize
1961-62 to 1963-64	Punjab	Karnal, Rohtak, Sangrur	Wheat, Gram and Sugarcane

In each of the reports, there is a separate section for furnishing information on human labour utilization. For the present study only crop enterprise are taken into account because in the regions where farm management studies were conducted and for which the data are presented, crop production is the major enterprise forming about 80 to 90 per cent of the total output. The labour utilization, its extent and nature will be studied with respect to only the major crops mentioned in the two series.

Eight hours of work has been taken as the unit of labour in the farm management studies and all the reports except that of Madhya Pradesh give the labour used in terms of days (8 hours) per acre. Female and child labours have been converted into man-equivalent units in the following ratio.

3 females = 2 males

2 children = 1 male

#### 4.3 Labour Input Per Acre

To begin with we shall examine the total labour inputs per acre employed in crop production. The Tables 4.3 and 4.4 give the number of labour days per acre. The Tables give relevant information for each individual year and sample as well as an average picture of all the years and all the samples for each of the zones or districts in a region and for the combined zones or districts in each of the regions under study.

Data are presented for all the years under both the samples for each zone or district separately, wherever available. For instance, under first series of survey, both in Ahmednagar and Nasik cost accounting sample data for the year 1954-55 are not available. Similarly for Uttar Pradesh, Punjab and Madhya Pradesh data for individual districts are not available. Under second series of survey also data for individual districts separately in the case of Bihar and Punjab are not available.



**Table 4.3 : Employment of Human Labour Per Acre in Crop Production in Different Districts (First Series of Survey)**

Districts/ Zones under study	1954-55		1955-56		1956-57		Average for years and sample
	S.S.	C.A.S.	S.S.	C.A.S.	S.S.	C.A.S.	
Ahmednagar	16.91	-	17.70	20.00	18.10	17.50	17.78
Nasik	14.45	-	17.20	23.70	18.00	22.50	18.59
Combined	16.22	-	17.75	21.77	18.05	21.30	18.11
Salem	72.30	51.90	79.80	51.70	81.10	57.50	67.60
Coimbatore	19.80	30.70	21.00	29.40	21.30	40.20	26.03
Combined	37.40	38.10	40.20	37.30	41.50	46.70	43.70
Akola and Amravati	-	-	-	20.91	-	23.69	22.30
Ferozepur and Amritsar	23.00	21.20	21.20	21.10	20.00	19.50	21.12
Meerut and Musaffar- nagar	-	-	-	44.90	-	57.00	53.14
Hooghly	70.22	67.59	82.69	54.81	86.64	66.29	71.57
24 Parganas	55.74	55.96	60.02	42.97	49.49	43.91	51.49
Combined	60.39	61.87	70.19	48.90	66.22	55.35	60.94

S. S. = Survey Sample

C. A. S. = Cost Accounting Sample

**Table 4.4 : Employment of Human Labour Per Acre-in Crop Production in Different Districts (Second Series of Survey)**

Districts/ Zones	1957- 58	1958- 59	1959- 60	1961- 62	1962- 63	1963- 64	Average
<u>West Godavari</u>							
Paddy Zone	46.17	69.31	-	-	-	-	58.32
Tobacco Zone	66.79	71.08	-	-	-	-	68.89
Combined	55.08	70.12	-	-	-	-	63.38
<u>Sambalpur</u>							
Zone I	52.91	48.28	-	-	-	-	50.32
Zone II	37.09	35.02	-	-	-	-	36.06
Combined	45.67	42.94	-	-	-	-	44.35
Monghyr	59.40	61.96	64.63	-	-	-	61.99
Rohtak, Karnal and Sangrur	-	-	-	18.40	18.83	17.39	18.21

It is observed (Table 4.3) that except in Salem and Coimbatore in Madras and 24 Parganas and Hooghly in West Bengal, the year to year variation in the labour input per acre is small. Both in Salem and Coimbatore there is a wide variation in the number of labour days per acre reported for all the three years. Variation is much more marked between the samples. In the case of Salem, survey sample figures are higher whereas in the case of Coimbatore cost accounting figures are higher. Between the two districts Salem shows larger number of labour days per acre for all the years under both the samples; on an average, 68 labour days per acre are required in Salem as compared to 26 days in Coimbatore.

In Hooghly and 24 Pargana also the year to year variation is considerable, both between the samples and within the sample. For instance, in Hooghly in 1954-55, survey sample reports roughly 70 units of labour per acre and the same in 1956-57 is as high as 88 days per acre. Same is the case with cost accounting sample, the labour input per acre reported is 68 days in 1954-55 and the same is as low as 54 days in 1956-57. Between the samples, figures of labour input per acre are higher in the case of survey sample for all the years.

Other districts under study, however, do not show such marked variation in labour input per acre over years. Hence, in what follows, we have computed an average of all

the samples for the combined districts and henceforth we shall use these average figures for further discussion.

#### 4.4 Distribution of Districts on the Basis of the Labour Inputs Per Acre

From the overall average figures it is seen that the labour input per acre in crop production is very large in the districts of Hooghly, West Godavari, Salem and Monghyr, as compared to the other districts under study. Incidentally, in all these regions, paddy is reported to be one of the major crops. Sambalpur district in Orissa and Meerut-Muzaffarnagar in Uttar Pradesh also show high labour input per acre as compared to the districts of Maharashtra, Madhya Pradesh and Punjab.

If we group the districts on the basis of the labour input per acre, three distinct groups can be formed as follows:

<u>Labour Input per acre in days</u>	<u>Districts</u>
17.00 to 26.00	Ahmednagar, Nasik, Coimbatore, Akola, Amravati, Amritsar, Ferozepur and Rohtak, Karnal, Sangrur.
40.00 to 55.00	Meerut, Muzaffarnagar, 24 Parganas and Sambalpur.
55.00 to 70.00	Salem, Hooghly, West Godavari and Monghyr.

Both in the second and third groups the labour input per acre is high; in contrast, the first group shows much smaller labour input per acre.

#### 4.5 Family and Hired Labour Input Per Acre

The discussion above is based on total labour inputs per acre. We shall now split the total labour inputs into its component parts, namely, family and hired labour inputs, and examine to what extent the hired labour is used in different regions under study. It should be clearly mentioned here that in the Farm Management Studies the family labour includes the labour of the family worker as well as that of permanent farm servants. Table 4.5 and Table 4.6 show the break-up of the total labour input into family and hired and the proportion of hired labour to total labour used.

Data for both cost accounting and survey samples are available for almost all the years for each region except Uttar Pradesh, Punjab and Madhya Pradesh, where separate data for each district are not available. Only the combined district's figures are available for the region as a whole. For Uttar Pradesh, 1954-55 data are not available and for 1955-56 and 1956-57 data are available only under cost accounting sample. For Ahmednagar and Nasik also we do not have data on family and hired labour use for the year 1956-57. Similarly, under second series of survey, districtwise data are not available for Punjab and Bihar.

Table 4.5 : Utilization of Family and Hired Labour Per Acre in Crop Production (First Series of Survey)

Districts/Zones under study	1954-55						1955-56					
	C. A. S.			S. S.			C. A. S.			S. S.		
	Family	Hired	Total	Family	Hired	Total	Family	Hired	Total	Family	Hired	Total
Ahmednagar	-	-	-	-	-	-	13.20	6.80	20.00	14.50	3.20	17.70
Nasik	-	-	-	-	-	-	16.80	6.90	23.70	11.80	5.40	17.20
Combined	-	-	-	-	-	-	14.98	6.70	21.58	13.10	4.65	17.75
Salem	39.40	12.50	51.90	53.50	18.80	72.30	40.20	11.50	51.70	55.00	24.80	79.80
Coimbatore	22.90	7.80	30.70	12.40	7.40	19.80	22.20	7.20	29.40	13.90	7.10	21.00
Combined	28.70	9.40	38.10	25.40	12.00	37.40	28.60	8.70	37.30	27.30	12.90	40.20
Akola	-	-	-	-	-	-	-	-	-	-	-	-
Amravati	-	-	-	-	-	-	-	-	-	-	-	-
Combined	-	-	-	-	-	-	9.68	11.23	20.91	-	-	-
Amritsar- Ferozepur	17.50	3.70	21.20	19.10	3.90	23.00	14.30	6.80	21.10	17.30	3.90	21.20
Meerut- Muzaffarnagar	-	-	-	-	-	-	36.50	8.40	44.90	-	-	-
Hooghly	40.44	27.15	67.59	41.65	28.57	70.22	33.23	21.58	54.81	49.85	32.84	82.69
24 Parganas	36.82	19.14	55.96	24.46	31.28	55.74	29.08	13.89	42.97	45.72	14.30	60.02
Combined	38.66	23.21	61.87	31.18	29.21	60.39	31.16	17.74	48.90	47.57	22.62	70.19

(continued)

C. A. S. = Cost Accounting Sample

S. S. = Survey Sample

Table 4.5 : (continued)

Districts/Zones under study	1956-57						Average for all the years and sample			
	C. A. S.			S. S.			Family	Hired	Total	Per cent Hired
	Family	Hired	Total	Family	Hired	Total				
Ahmednagar	12.30	5.20	17.50	15.30	2.80	18.10	14.27	3.85	18.12	21.25
Nasik	16.20	6.30	22.50	13.00	5.00	18.00	13.72	5.65	19.37	29.17
Combined	15.40	5.90	21.30	14.20	3.90	18.10	14.12	4.75	18.87	25.17
Salem	44.20	13.30	57.50	53.70	27.40	81.10	48.43	19.17	67.60	28.19
Coimbatore	28.90	11.30	40.20	9.50	11.80	21.30	17.38	8.65	26.03	33.23
Combined	34.70	12.00	46.70	24.40	17.10	41.50	30.62	13.08	43.70	29.93
Akola	-	-	-	-	-	-	-	-	-	-
Amravati	-	-	-	-	-	-	-	-	-	-
Combined	10.71	12.98	23.69	-	-	-	10.08	12.22	22.30	54.80
Amritsar-Ferozepur	13.40	6.10	19.50	16.10	3.90	20.00	16.65	4.47	21.12	21.16
Meerut- Muzaffarnagar	47.14	9.86	57.00	-	-	-	42.53	10.61	53.14	24.95
Hooghly	36.38	29.91	66.29	54.54	32.10	86.64	42.79	28.78	71.57	40.21
24 Parganas	29.59	14.32	43.91	35.16	14.33	49.49	33.44	18.05	51.49	35.06
Combined	33.06	22.29	55.35	43.89	22.33	66.22	37.84	23.10	60.94	37.91

Table 4.6 : Utilisation of Family and Hired Labour Per Acre in Crop Production (Second Series of Survey)

District/Zones under study	1957-58			1958-59			1959-60			1961-62		
	Family	Hired	Total	Family	Hired	Total	Family	Hired	Total	Family	Hired	Total
<u>West Godavari</u>												
Paddy Zone	10.56	35.61	46.17	13.05	56.26	69.31	-	-	-	-	-	-
Tobacco Zone	16.77	50.02	66.79	14.70	56.38	71.08	-	-	-	-	-	-
Combined	13.32	41.76	55.08	13.81	56.31	70.12	-	-	-	-	-	-
<u>Sambalpur</u>												
Zone I	27.65	25.26	52.91	26.18	22.10	48.28	-	-	-	-	-	-
Zone II	23.11	13.98	37.09	23.01	12.01	35.02	-	-	-	-	-	-
Combined	25.57	20.10	45.67	24.90	18.04	42.94	-	-	-	-	-	-
Monghyr	44.17	15.23	59.40	45.29	16.67	61.96	47.83	16.80	64.63	-	-	-
Rohtak-Karnal- Sangrur	-	-	-	-	-	-	-	-	-	15.10	3.30	18.40

(continued)



Table 4.6 : (continued)

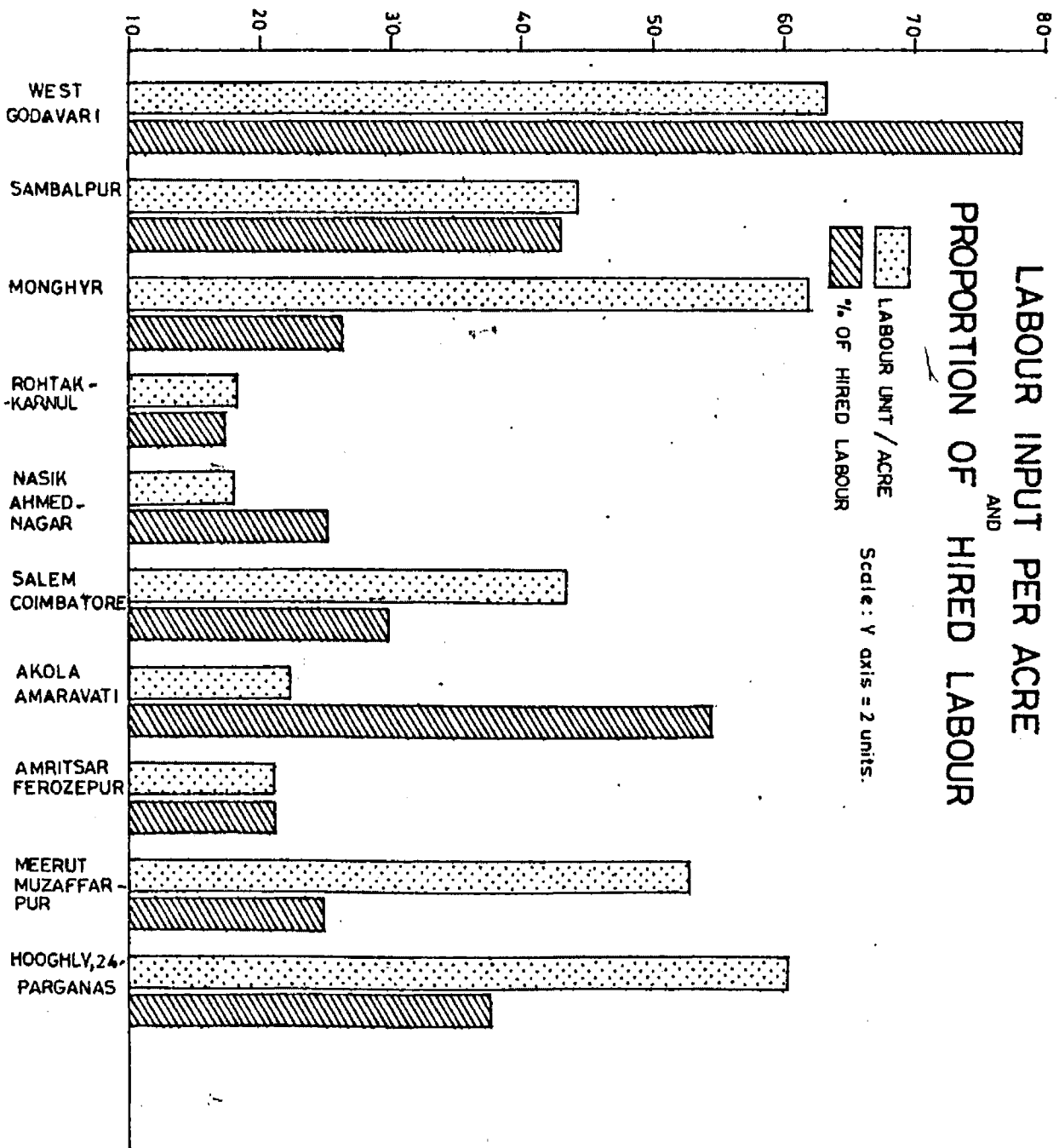
District/Zones under study	1962-63			1963-64			Average			
	Family	Hired	Total	Family	Hired	Total	Family	Hired	Total	Per cent Hired
<u>West Godavari</u>										
Paddy Zone	-	-	-	-	-	-	11.89	46.43	58.32	79.61
Tobacco Zone	-	-	-	-	-	-	15.76	53.13	68.89	77.12
Combined	-	-	-	-	-	-	13.74	49.64	63.38	78.32
<u>Sambalpur</u>										
Zone I	-	-	-	-	-	-	26.83	23.49	50.32	46.68
Zone II	-	-	-	-	-	-	23.06	13.00	36.06	36.05
Combined	-	-	-	-	-	-	25.25	19.10	44.35	43.07
Monghyr	-	-	-	-	-	-	45.76	16.23	61.99	26.18
Rohtak-Karnal- Sangrur	15.65	3.18	18.83	14.43	2.96	17.39	15.06	3.15	18.21	17.35

Firstly, a glance at the Tables shows that West Godavari district is the only district which shows exceptionally high hired labour input. Its proportion to total labour input is as high as 78 per cent. In contrast, in the districts of Rohtak, Karnal, Sangrur (Punjab), the proportion of hired labour inputs is only 17 per cent.

The year to year variation in the hired labour input is not marked in any of the districts except in 24 Parganas and Hooghly in West Bengal and in Salem in Madras. In Hooghly, only in the year 1955-56 under cost accounting sample the hired labour input reported is less as compared to that reported in the other years. In 24 Parganas also, only in the year 1954-55 the survey sample figures for hired labour input are comparatively higher. For instance, in 24 Parganas, in 1954-55, under survey sample the hired labour input per acre amounts to about 32 days whereas in 1955-56 and 1956-57 the same turns out to be as low as 14 days, whereas in Salem, survey sample figures for hired labour input show variation over the years roughly from 18 to 27 days per acre.

Even though there are some marked variations, an average of all the years and both the samples has been computed for each of the combined districts or zones under study in each region and henceforth these average figures given in Tables 4.5 and 4.6, will be used in further discussion.

LABOUR UNITS / ACRE AND % OF HIRED LABOUR →



No. 3

#### 4.6 Distribution of the Districts on the Basis of Hired Labour Input

From the overall average figure it is seen that apart from West Godavari district, there are a few other districts using considerable amount of hired labour input. Those districts are Sambalpur, Hooghly-24 Parganas and Akola-Amravati. Incidentally, all these districts, showing higher proportion of hired labour input, except Akola-Amravati, are rice growing districts. The districts of Punjab, on the other hand, are the only districts showing exceptionally small proportion of hired labour input.

If we group the districts on the basis of the proportion of hired labour days, three distinct groups can be formed:

<u>Proportion of Hired Labour Days</u>	<u>Districts</u>
17 to 26 per cent	Rohtak, Karnal, Sangrur (Combined districts in Punjab, Second Series), Amritsar, Ferozepur (combined districts in Punjab, First Series), Meerut, Muzaffarnagar (Uttar Pradesh, combined), Ahmednagar, Nasik (Maharashtra) and Monghyr (Bihar).
28 to 43 per cent	Salem, Coimbatore (Madras), 24 Parganas, Hooghly (West Bengal) and Sambalpur (Orissa).

<u>Proportion of Hired Labour Days</u>	<u>Districts</u>
Above 50 per cent	Akola, Amravati (Madhya Pradesh) and West Godavari (Andhra Pradesh).

On the whole it is seen that West Godavari is the only district where proportion of hired labour use exceeds 60 per cent, and West Godavari and Akola-Amravati put together are the only regions where more than 50 per cent of the labour used is hired. It may be interesting to note that the estimate of wage paid labour arrived at from the Rural Credit Survey Report also shows Andhra Pradesh as the State using highest proportion of wage paid labour.

It may be broadly concluded that considerable amount of hired labour is used for crop production and that the extent of its use varies from region to region. There are some regions where it is very high while there are some other where it is very low. This chapter, thus, throws information on the extent of family and hired labour employment per acre in crop production. Our purpose is to enquire into and know the reason of the pattern and extent of hired labour inputs used in crop production in different districts or zones under study.

## CHAPTER V

### FACTORS AFFECTING THE NATURE AND EXTENT OF LABOUR INPUT

While discussing the nature of labour inputs in agriculture, in the last sections, it was found that not an inconsiderable amount of hired labour is used for crop production in different regions in India and that the conditions in this respect vary from State to State and district to district.

Utilization of hired labour for crop production depends upon several factors, such as the type of crops grown, the size of the operating unit, availability of family labour on farms, the extent of irrigation and the intensity of cropping.

#### 5.1 Nature of Crops Grown

To start with, we shall examine the cropwise labour utilization in each of the districts under study and then shall go into the details of other factors, e.g., size of operating unit, availability of family labour etc., and shall see if any of the factors mentioned above has any influence on the nature and extent of the labour inputs in general and employment of casual hired labour in particular. An examination of the major crops grown and the labour

requirement of these crops in each region may explain to some extent the nature and the extent of self-employed and hired labour employed in crop production in different regions. Tables 5.1 and 5.2 show a detailed account of the cropwise labour days per acre in different regions. District figures are given wherever available, in other cases figures for the combined districts are given.

As is well known, per acre labour requirement of irrigated crops is much higher than that of unirrigated crops. Therefore, we shall examine the irrigated and unirrigated crops separately and for this reason two separate Tables are prepared for the two types of crops (Tables 5.1 and 5.2).

## 5.2 Irrigated Crops

Taking first irrigated crops into consideration, it is seen that both in Salem and Coimbatore per acre labour requirement for paddy is very high amounting to about 121 and 117 days per acre respectively. It is to be noted that paddy under irrigation is grown in all the three seasons in both Salem and Coimbatore districts. In the third season the crop is grown only when water is available. Labour days required per acre is highest for the third season and lowest for the first season when the crop is partly rain-fed. The data for the three seasons show the

Table 5.1 : Cropwise Labour Days Per Acre (Irrigated)

Regions	Jowar			Wheat			Gram			Paddy		
	Family	Hired	Total	Family	Hired	Total	Family	Hired	Total	Family	Hired	Total
Ahmednagar	24.70	9.56 (27.90)	34.26	36.65	9.01 (19.73)	45.66	22.95	4.85 (17.44)	27.80	-	-	-
Nasik	-	-	-	39.05	4.95 (11.25)	44.00	21.30	2.95 (12.16)	24.25	-	-	-
Combined	24.70	9.56 (27.90)	34.26	37.85	6.98 (15.57)	44.83	22.12	3.91 (15.02)	26.03	-	-	-
Salem	21.60	11.60 (26.85)	43.20	-	-	-	-	-	-	94.28	27.00 (22.26)	121.28
Coimbatore	53.60	10.30 (16.12)	63.90	-	-	-	-	-	-	92.58	24.00 (20.58)	116.58
Combined	43.90	9.60 (17.94)	53.50	-	-	-	-	-	-	90.63	23.00 (20.24)	113.63
Amritsar-Ferozepur	-	-	-	21.20	5.03 (19.18)	26.23	-	-	-	-	-	-
Meerut-Muzaffarnagar	-	-	-	N.A.	N.A.	34.91	-	-	-	N.A.	N.A.	31.39
Hooghly	-	-	-	-	-	-	-	-	-	-	-	-
24 Parganas	-	-	-	-	-	-	-	-	-	-	-	-
Combined	-	-	-	-	-	-	-	-	-	-	-	-
West Godavari	-	-	-	-	-	-	-	-	-	12.45	39.16 (78.68)	51.61
Sambalpur	-	-	-	-	-	-	-	-	-	-	-	-
Rohtak-Karnal-Sangrur	9.34	1.99 (17.55)	11.33	22.72	5.50 (19.49)	28.22	11.17	1.66 (12.93)	12.83	-	-	-

(continued)



Table 5.1 : (continued)

Regions	Cotton			Tobacco			Sugarcane			Potato		
	Family	Hired	Total	Family	Hired	Total	Family	Hired	Total	Family	Hired	Total
Ahmednagar	-	-	-	-	-	-	-	-	-	-	-	-
Nasik	-	-	-	-	-	-	-	-	-	-	-	-
Combined	-	-	-	-	-	-	-	-	-	-	-	-
Salem	59.30	7.20 (10.83)	66.50	-	-	-	-	-	-	-	-	-
Coimbatore	64.70	12.30 (15.97)	77.00	-	-	-	-	-	-	-	-	-
Combined	61.50	8.40 (12.02)	69.90	-	-	-	-	-	-	-	-	-
Amritsar-Ferozepur	26.75	7.84 (22.67)	34.59	-	-	-	-	-	-	-	-	-
Meerut-Muzaffarnagar	N. A.	N. A.	43.00	-	-	-	N. A.	N. A.	76.43	-	-	-
Hooghly	-	-	-	-	-	-	-	-	-	119.09	57.53 (32.57)	176.62
24 Parganas	-	-	-	-	-	-	-	-	-	80.91	38.25 (32.10)	119.16
Combined	-	-	-	-	-	-	-	-	-	101.91	55.66 (35.30)	157.67
West Godavari	-	-	-	23.24	89.18 (79.33)	112.42	-	-	-	-	-	-
Sambalpur	-	-	-	-	-	-	-	-	-	-	-	-
Rohtak-Karnal-Sangrur	-	-	-	-	-	-	51.11	8.24 (13.88)	59.35	-	-	-

(Figures in the parentheses indicate percentage.)

Table 5.2 : Cropwise Labour Days Per Acre (Unirrigated)

Regions	Jowar			Wheat			Gram			Cotton			Maize			Jute		
	Family	Hired	Total	Family	Hired	Total	Family	Hired	Total	Family	Hired	Total	Family	Hired	Total	Family	Hired	Total
Ahmednagar	8.00	2.22 (21.72)	10.22	14.70	3.35 (18.60)	18.05	10.70	2.20 (17.05)	12.90	-	-	-	-	-	-	-	-	-
Nasik	-	-	-	8.30	2.66 (24.27)	10.96	9.85	2.15 (17.92)	12.00	-	-	-	-	-	-	-	-	-
Combined	8.00	2.22 (21.72)	10.22	11.50	3.01 (20.74)	14.51	10.20	2.16 (17.48)	12.36	-	-	-	-	-	-	-	-	-
Salem	15.60	5.70 (26.76)	21.30	-	-	-	-	-	-	17.40	4.20 (19.44)	21.60	-	-	-	-	-	-
Coimbatore	9.70	3.90 (28.68)	13.60	-	-	-	-	-	-	15.80	3.60 (18.55)	19.40	-	-	-	-	-	-
Combined	14.10	5.00 (26.18)	19.10	-	-	-	-	-	-	20.20	4.50 (18.22)	24.70	-	-	-	-	-	-
Amritsar- Ferozepur	-	-	-	10.30	3.90 (27.27)	14.30	-	-	-	-	-	-	-	-	-	-	-	-
Meerut- Musaffarnagar	-	-	-	N.A.	N.A.	26.35	N.A.	N.A.	12.75	-	-	-	N.A.	N.A.	35.00	-	-	-
Hooghly	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	65.90	41.86 (38.85)	107.76
24 Parganas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	49.68	26.64 (34.91)	76.32
Combined	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60.30	38.49 (38.96)	98.79
West Godavari	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sambalpur	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rohtak-Karnal- Sangrur	8.46	0.83 (9.00)	9.29	17.51	2.82 (13.54)	20.33	8.67	1.45 (14.33)	10.12	-	-	-	-	-	-	-	-	-

(continued)

Table 5.2 : (continued)

Regions	Mesta			Wheat-Gram			Bajra			Pulse			Paddy		
	Family	Hired	Total	Family	Hired	Total	Family	Hired	Total	Family	Hired	Total	Family	Hired	Total
Ahmednagar	-	-	-	-	-	-	11.00	2.80 (20.29)	13.80	-	-	-	-	-	-
Nasik	-	-	-	-	-	-	9.75	3.65 (27.24)	13.40	-	-	-	-	-	-
Combined	-	-	-	-	-	-	10.37	3.23 (23.75)	13.60	-	-	-	-	-	-
Salem	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Coimbatore	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Combined	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anritsar- Ferozepur	-	-	-	11.75	2.80 (19.32)	14.49	-	-	-	-	-	-	-	-	-
Meerut- Muzaffarnagar	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hooghly	53.04	25.65 (32.60)	78.69	-	-	-	-	-	-	15.12	4.61 (22.45)	20.53	36.01	18.35 (33.76)	54.36
24 Parganas	51.65	28.86 (35.85)	80.51	-	-	-	-	-	-	19.39	4.09 (17.42)	23.48	35.75	15.27 (29.93)	51.02
Combined	52.15	29.20 (35.89)	81.35	-	-	-	-	-	-	16.66	4.61 (21.67)	21.27	35.87	16.70 (31.77)	52.57
West Godavari	-	-	-	-	-	-	-	-	-	-	-	-	12.27	31.47	43.74
Sambalpur	-	-	-	-	-	-	-	-	-	-	-	-	24.29	17.63 (42.01)	41.92
Rohtak-Karnal- Sangrur	-	-	-	13.31	2.58 (16.24)	15.89	6.99	0.63 (8.27)	7.62	-	-	-	-	-	-

(Figures in the parentheses indicate percentages.)

following picture:

	<u>Family</u>	<u>Hired</u>	<u>Total</u>
First season	81.60	21.00	102.60
Second season	88.40	24.00	112.40
Third season	110.30	23.90	134.20
Weighted average for the three seasons	90.63	23.00	113.63

It is seen that although the inputs of human labour is highest in the third season, the hired labour input remains more or less constant. The higher figures in the third season are probably due to the greater requirement of labour for irrigation, which is met by the family labour and not by the hired labour. The second season is the season in which paddy is largely grown in these districts and its cultivation is intensive.

In other districts, namely, Meerut-Muzaffarnagar and West Godavari, paddy requires, on an average, between 32 to 52 days of labour per acre. Irrigated paddy in West Godavari is grown in two seasons and the average labour days per acre comes to about 52 days.

Tobacco is another high labour consuming crop, grown only in West Godavari district in our study. It requires 112 labour days. Sugarcane and potato are the other major labour intensive crops grown in the regions of Hooghly-

24 Parganas, Meerut-Muzaffarnagar, and Rohtak-Sangrur-Karnal respectively, requiring about 67 and 158 days per acre respectively. Among irrigated crops gram is least labour consuming in all the regions, requiring, on an average about 20 days per acre. While, potato is the most labour intensive crop requiring 158 days per acre, grown only in Hooghly-24 Parganas out of all the regions under study. In general, on an average, the labour requirement of irrigated crops is above 40 days per acre, in all the regions except Rohtak-Karnal-Sangrur districts of Punjab which show remarkably low labour input per acre (25 days) even for the irrigated crops.

Break-up of the total labour days into family and hired components shows that hired labour accounts for a considerable proportion of total labour input in the case of paddy, tobacco and potato, varying between 30 and 40 per cent, except for tobacco and paddy in West Godavari, where the proportion of hired labour use is as high as 78 per cent. In the case of other crops the proportion varies between 20 and 25 per cent, in all the districts, except in the districts of Punjab, where it is still lower, being 15 per cent only. It is seen that there are some crops mentioned above which make considerable use of hired labour and since these crops happen to be the major crops grown in some regions or districts, the proportion of hired labour use is higher in those districts under study. For instance, potato is grown

in Hooghly-24 Parganas (West Bengal) and since this crop uses more of hired labour, its proportion in the total labour input, on the whole, is higher in this region.

Similarly, in West Godavari and Salem-Coimbatore; in Salem-Coimbatore paddy and cotton are the major crops; and in West Godavari, in addition to paddy, tobacco is the other major crop grown. Since all these crops use a great deal of hired labour, the proportion of hired labour input is quite high in these regions.

On the other hand, crops like wheat, jowar, and gram use less of hired labour and these being the major crops grown in Ahmednagar-Nasik, Meerut-Muzaffarnagar and in the districts of Punjab, proportion of hired labour input is quite low in these regions.

### 5.3 Unirrigated Crops

Paddy as unirrigated crop is grown in Hooghly-24 Parganas, Sambalpur and West Godavari. In West Godavari, we have seen that paddy is also grown as irrigated crop. In addition to paddy, jute and mesta are the other major crops in Hooghly-24 Parganas, grown under unirrigated condition. Among the unirrigated crops labour requirement of jute and mesta is very high (about 82 to 100 days per acre). Paddy in all the districts requires about 50 days per acre, on an average. Although these crops are grown on unirrigated land,

they require heavy rain water almost all the time and intensive agricultural operations, for example, transplanting, weeding etc. and that is why the labour requirement per acre is high.

Other unirrigated crops using more labour per acre are jowar, bajra and pulses and wheat to a certain extent, as compared to gram, cotton and wheat-gram mixture. On an average, in the case of unirrigated crops, the labour requirement per acre varies between 15 and 25 days. Districts of Rohtak-Karnal-Sangrur, however, again show much less labour inputs for all the crops under study, being 10 to 12 days per acre.

Break up of the total labour days into family and hired shows that hired labour accounts for about 20 per cent of the total labour used, on an average; and in some cases it is as low as 8 per cent. Since use of hired labour is quite high in paddy, jute and mesta, and since these are the major crops grown in Sambalpur, Hooghly-24 Parganas and West Godavari, proportion of hired labour input is quite high in these regions.

An examination of cropwise utilization of labour days per acre, thus, gives a broad idea of the extent to which the hired labour is used for different crops both under irrigated and unirrigated conditions. At this point if we examine the

irrigation factor in each district, it will give an idea of the proportion of irrigated area in each district and its variation.

#### 5.4 Proportion of Irrigated Area

Table 5.3 gives the proportion of irrigated area in different districts under study.

Table 5.3 : Percentage of Irrigated Area in Different Regions

Regions	Percentage of irrigated area
24 Parganas-Hooghly	12.60
Ahmednagar-Nasik	13.53
Sambalpur	17.70
Salem-Coimbatore	24.18
Rohtak-Karnal-Sangrur	40.42
West Godavari	53.57
Amritsar-Ferozepur	71.00
Meerut-Muzaffarnagar	72.90

The proportion of irrigated area is highest in Uttar Pradesh being 73 per cent (Meerut-Muzaffarnagar) and lowest in West Bengal (Hooghly-24 Parganas), being 12.60 per cent. However, the districts showing more than 50 per cent of the area under irrigated crop are Meerut-Muzaffarnagar (Uttar Pradesh), Amritsar-Ferozepur (Punjab) and West Godavari



(Andhra). Whereas in the districts of 24 Parganas, Ahmednagar-Nasik and Sambalpur less than 20 per cent of the area under crop is irrigated. Akola and Amravati are wholly unirrigated, all the crops grown are rain-fed, so it does not appear in the Table. Using this information and the labour requirement of major crops grown in the district, both irrigated and unirrigated, one can give a broad explanation for the extent and the variation in the use of hired labour in crop production in different districts under study.

#### 5.5 Farm Size

We shall now examine the relation between farm size and the employment of human labour and its break-up into self-employed and hired. Farm size is believed to be one of the important factors influencing the utilization of hired labour. We shall thus begin with the examination of labour employment per acre for crop production under different farm sizes.

In the preceding section we have seen that labour requirement of irrigated crops, in general, is higher than that of the unirrigated crops. Therefore, in order to study the effect of the farm size on the labour requirement we should first allow for the differences in proportion of irrigated area in farms of different sizes.

Table 5.4 gives the proportion of irrigated area under each farm size in different districts under study. By and

Table 5.4 : Proportion of Irrigated Area in the Regions under Study

Size group (acres)	R e g i o n s											
	Meerut- Muzaffarnagar	Amritsar- Ferozepur	Hooghly	24 Parganas	Combined	Ahmednagar	Nasik	Combined	West Godavari	Sambalpur	Rohtak- Karnal- Sangrur	Salem- Coimbatore
0.01 - 1.25	83.97		33.30	1.40	18.80				76.76	10.31		37.95
1.26 - 2.50			30.90	5.50	14.30				73.56			
2.51 - 3.75	81.47	90.00	23.50	2.00	12.20	29.60	26.25	27.93	80.74	16.22	37.38	33.98
3.76 - 5.00			36.10	2.70	15.50							
5.01 - 7.50	75.87	86.00	20.80	2.90	11.10	24.05	20.85	22.45	59.26	24.54	42.50	29.35
7.51 - 10.00	77.20		10.20	3.90	6.60				62.64			
10.01 - 15.00	71.33	76.00	31.40	0.40	10.20	19.15	13.80	16.48	33.77	-	44.01	20.83
15.01 - 20.00	69.90		20.35	12.85	16.60				52.16			
20.01 - 25.00	65.10	64.00				10.35	6.20	8.28			39.34	18.58
25.01 - 30.00			17.85	9.10	13.48							
30.01 - 40.00	70.23	64.00	23.10	-	15.70	15.60	10.50	13.05	55.00	23.45	32.74	13.48
40.01 - 50.00												
50.01 & above		68.00				10.75	8.30	9.53			36.01	
Average	72.90	71.00	25.30	2.00	12.60	15.70	11.35	13.53	53.57	17.70	40.42	24.18

large, the proportion of irrigated area varies inversely with the size of holding. In almost all the cases the smaller holdings have higher proportion of irrigated area. To allow for these differences, we propose to convert the irrigated area into equivalent unirrigated area on the basis of number of labour days required per acre of irrigated crops as compared to unirrigated crops in the district. For instance, if the labour requirement of irrigated crops per acre is twice that of unirrigated crops in the district, then the total irrigated area under crop is inflated two times to bring it on par with the unirrigated area. Equivalent unirrigated area thus obtained, added to the available unirrigated area under crop gives the total area under crop in terms of equivalent unirrigated area.

There is another factor which we must take into account before embarking on size-groupwise analysis, and that is intensity of cropping. As mentioned earlier, to allow for the differences in the intensity of cropping, labour input per acre has been obtained on the basis of gross cropped area. For further illustration and to have an idea as to how intensively the smaller farms are cultivated we shall examine the intensity of cropping by farm size. Intensity of cropping shows the intensity of land use. In other words, it indicates the extent of double or tripple cropping and the magnitude of total cropped area.

It is defined as the ratio of the total cropped area to the net area under cultivation. We shall, therefore, examine the intensity of cropping by farm size in different regions. Table 5.5 gives this information.

It is seen that land is most intensively used in West Godavari in as much as the intensity of cropping is 142, that means, almost half of the net area sown is double cropped. Whereas, in Sambalpur district, the intensity of cropping is as low as 98, because it is a mono-crop area. In Meerut-Muzaffarnagar and in the districts of Punjab also the intensity of cropping is high. It is further seen that in all the regions, with the increase in the size of farm the intensity of cropping regularly decreases, that is to say, smaller farms are more intensively used. It was earlier seen that the proportion of irrigated area is more on the smaller holdings, so, it is quite in fitness of the things that the smaller farms show higher intensity of cropping. In order to take this factor into consideration, in our analysis, labour input per acre is based on gross cropped area.

Having thus eliminated the effect of the irrigation factor and having taken intensity of cropping into consideration, we are in a position to examine the influence of farm size on the employment of human labour, both family and hired. We shall, therefore, begin with the examination of

**Table 5.5 : Intensity of Cropping by Size Group in Different Regions**

Size group (acres)	Sambalpur	Salem-Coimbatore	Hooghly-24 Parganas	Ahmednagar-Nasik	Rohtak-Karnal-Sangrur	Meerut-Muzaffarnagar	Amritsar-Ferozepur	West Godavari
0.01 - 1.25	100.00	137.00	113.00	124.20	158.47	151.70	162.00	199.50
1.26 - 2.50			109.00					169.00
2.51 - 3.75	98.31	129.00	105.00	141.78	146.75	149.00	142.50	165.00
3.76 - 5.00			104.00					
5.01 - 7.50	96.73	116.00	106.00	112.50	135.57	133.35	141.00	131.50
7.51 - 10.00		109.00	97.00					
10.01 - 15.00	92.19	93.00	105.00	108.85	126.24	127.28	132.00	138.00
15.01 - 20.00		82.00	112.25					
20.01 - 25.00	100.00	74.00	91.00	107.73	121.26	121.30	111.00	138.00
25.01 - 30.00		71.00						
30.01 - 40.00	100.00	71.00	91.00	107.73	121.26	121.30	111.00	138.00
40.01 - 50.00								
50.01 & above	107.25	111.41	111.00	111.00	111.00	111.00	111.00	111.00
Average	97.77	101.00	105.00	109.63	131.40	133.32	136.00	142.00

labour input per acre under different farm sizes. There are ten regions under study, since it is not possible to put the data of the above enquiry for all the regions in a single Table, separate Tables have been prepared for each of the regions under study. These Tables are given in the same order in which they are discussed in the following pages.

### 5.6 Labour Input by Farm Size

Tables 5.6 and 5.7 show the total labour days per acre in different size groups and the proportion of hired labour to total in all the regions under study. A Graph to this effect has also been presented <sup>for</sup> further illustration. It is seen in Table 5.6 that in the districts of West Godavari (Andhra Pradesh), Sambalpur (Orissa), Amritsar-Ferozepur (Punjab) and Hooghly-24 Parganas (West Bengal), the total number of labour days per acre do not change much by farm size.

Break-up of the total labour days into family and hired labour shows that the proportion of hired labour increases with the increase in the farm size in these districts. In other words, use of hired labour is more in the bigger farms than in the smaller ones.

There is another set of districts, given in Table 5.7, in which number of labour days per acre shows a decrease

**Table 5.6 : Labour Days Per Acre and Proportion of Hired Labour**

Size group (acres)	West Godavari		Sambalpur		Hooghly- 24 Parganas		Amritsar- Ferozepur	
	Total	Per cent Hired	Total	Per cent Hired	Total	Per cent Hired	Total	Per cent Hired
0.01 - 1.25	26.95	43.27	80.75	6.19	40.24	30.67	13.19	10.39
1.26 - 2.50	29.43	58.68			41.19	35.74		
2.51 - 3.75	21.72	66.90	87.80	21.58	42.50	33.79	12.58	13.67
3.76 - 5.00					35.79	31.63		
5.01 - 7.50	22.04	57.49	78.13	32.63	39.81	36.30	12.61	18.48
7.51 - 10.00	25.32	67.65			36.48	39.94		
10.01 - 15.00	33.53	78.69	65.57	56.15	33.26	63.50	12.20	25.49
15.01 - 20.00	27.77	82.28	82.94	77.25	27.05	57.56		
20.01 - 25.00	23.53	90.75					12.20	25.49
25.01 - 30.00			10.54	47.44				
30.01 - 40.00	10.54	47.44						
40.01 - 50.00			10.54	47.44				
50.01 & above	10.54	47.44						
<b>Average</b>	<b>27.09</b>	<b>78.33</b>	<b>80.56</b>	<b>43.06</b>	<b>38.43</b>	<b>38.07</b>	<b>12.25</b>	<b>22.45</b>

**Table 5.7** : Labour Days Per Acre and Proportion of Hired Labour

Size group (acres)	Ahmednagar- Nasik		Salem- Coimbatore		Akola- Amravati		Monghyr		Rohtak-Karnal- Sangrur	
	Total	Per cent Hired	Total	Per cent Hired	Total	Per cent Hired	Total	Per cent Hired	Total	Per cent Hired
0.01 - 1.25	27.78	22.32	47.99	21.42	32.15	53.51	98.15	12.28	19.73	9.53
1.26 - 2.50										
2.51 - 3.75			30.55	21.27			81.93	15.93		
3.76 - 5.00										
5.01 - 7.50	26.95	19.15	22.08	24.68	27.73	50.02	71.67	20.87	16.20	7.96
7.51 - 10.00			24.23	22.53			54.13	25.90		
10.01 - 15.00	18.05	22.99	17.97	24.37	28.21	40.13	34.57	25.38	15.00	13.40
15.01 - 20.00	18.75	31.95	18.51	29.17	21.93	52.39	49.24	51.12	14.26	18.79
20.01 - 25.00	16.49	22.86	33.73	15.24	19.79	53.06	42.70	54.47	12.42	22.54
25.01 - 30.00	14.85	32.86								
30.01 - 40.00	16.24	40.21								
40.01 - 50.00			24.82	61.68						
50.01 & above	10.25	39.71			21.32	58.49			8.82	63.83
Average	16.50	29.88	23.35	24.63	22.30	54.80	62.00	26.18	15.43	17.30





with the increase in the farm size. The districts are Ahmednagar-Nasik (Maharashtra), Salem-Coimbatore (Madras), Akola-Amravati (Maharashtra), Monghyr (Bihar) and Rohtak-Karnal-Sangrur (Punjab).

If we look into the use of hired labour in these districts we find that the proportion of hired labour shows a regular but small increase with the increase in the farm size except in Salem-Coimbatore.

We, therefore, see that there are some districts in which the smaller holdings use as much labour per acre as the bigger holdings, while there are some other districts where smaller holdings use much more labour than do the bigger holdings. In other words, in some regions the size of farm has no effect on labour employment per acre, irrespective of the size of the farm the labour input per acre remains more or less the same. We shall now examine the situation in each region for further illustration.

#### 5.7 Labour Input by Farm Size in Individual Region

Table 5.8 shows that average labour requirement per acre is about 27 days in the West Godavari district. This does not change very much by farm size, being 27 days in the lowest and 24 in the highest farm size. Break-up of the total labour days into family and hired shows that with the increase in farm size the proportion of hired labour to

total continually increases from 43.27 to 90.75 per cent.

**Table 5.8** : Andhra Pradesh (West Godavari): Labour Days  
Per Acre of Equivalent Unirrigated Area  
(Average 1957-58 and 1958-59)

Size group (acres)	Total labour days	Farm	Hired	Per cent hired to total
0.01 - 1.25	26.95	15.29	11.66	43.27
1.26 - 2.50	29.43	12.16	17.27	58.68
2.51 - 5.00	21.72	7.19	14.53	66.90
5.01 - 7.50	22.04	9.37	12.67	57.49
7.51 - 10.00	25.32	8.19	17.13	67.65
10.01 - 15.00	38.53	8.21	30.32	78.69
15.01 - 20.00	27.77	4.92	22.85	82.28
Above 20.00	23.53	2.22	21.31	90.75
Overall	27.09	5.87	21.22	78.33

In Sambalpur district (Table 5.9) total labour input amounts to about 80 days per acre, and here also it does not change much by farm size. It varies between 88 days and 81 days over all the farm sizes. Hired labour accounts for about 43 per cent of the total labour employed for crop production. Its proportion goes on continually increasing from about 6 per cent to about 77 per cent between the two extreme farm sizes.

**Table 5.9 : Orissa (Sambalpur) : Labour Days Per Acre of Equivalent Unirrigated Area (Average 1957-58 to 1959-60)**

Size group (acres)	Total labour days	Farm	Hired	Per cent hired to total
0.01 - 2.50	80.75	75.75	5.00	6.19
2.51 - 5.00	87.80	68.85	18.95	21.58
5.01 - 10.00	78.13	52.64	25.49	32.63
10.01 - 15.00	65.57	28.75	36.82	56.15
Above 15.00	82.94	18.87	64.07	77.25
All Farms	80.56	45.87	34.69	43.06

The third region where the labour input per acre remains unchanged by farm size is Punjab (Amritsar-Ferozepur), (Table 5.10). It is seen that the total labour input varies between 11 and 13 days per acre over the size groups. Hired labour accounts for roughly 22 per cent of the total labour employed, on an average, and it increases from 10.38 per cent to 47.44 per cent from the lowest to the highest size group.

**Table 5.10 : Punjab (Amritsar-Ferozepur) : Labour Days Per Acre of Equivalent Unirrigated Area (Average 1954-55 to 1956-57)**

Size group (acres)	Total labour days	Farm	Hired	Per cent hired to total
0 - 5	13.19	11.82	1.37	10.39
5 - 10	12.58	10.86	1.72	13.67
10 - 20	12.61	10.28	2.33	18.48
20 - 50	12.20	9.09	3.11	25.49
50 and above	10.54	5.54	5.00	47.44
Overall	12.25	9.50	2.75	22.45

In 24 Parganas and Hooghly also labour input per acre is not much different on the smaller and bigger farms (Table 5.11). It varies only between 40 days and 33 days per acre by farm size with some exceptions. Proportion of hired labour, however, increases with the increase in farm size with lowest and highest size group showing 31 per cent and 58 per cent respectively.

We now come to the districts which show variation in the labour input per acre by farm size. Table 5.12 shows that in Ahmednagar-Nasik total labour days per acre decreases, unlike the aforesaid districts, from 28 days to

**Table 5.11 : West Bengal (Hooghly-24 Parganas): Labour Days Per Acre of Equivalent Unirrigated Area (Average-1954-57)**

Size group (acres)	Total labour days	Farm	Hired	Per cent hired to total
<u>HOOGHLY</u>				
0.01 - 1.25	26.61	17.22	9.39	35.29
1.26 - 2.50	35.95	17.83	18.12	50.40
2.51 - 3.75	33.69	19.63	14.06	41.73
3.76 - 5.00	24.38	18.06	6.32	25.92
5.01 - 7.50	33.39	19.82	13.57	40.64
7.51 - 10.00	31.31	19.41	11.90	38.01
10.01 - 15.00	34.99	13.00	21.99	62.85
Above 15.00	26.94	9.33	17.61	65.37
All Farms	30.09	17.30	12.79	42.51
<u>24 PARGANAS</u>				
0.01 - 1.25	48.75	37.89	10.86	22.28
1.26 - 2.50	40.96	31.20	9.76	23.83
2.51 - 3.75	49.06	39.08	9.98	20.34
3.76 - 5.00	42.46	24.44	18.02	42.44
5.01 - 7.50	37.80	26.72	11.08	29.31
7.51 - 10.00	31.83	24.92	6.91	21.71
10.01 - 15.00	34.39	9.11	25.28	73.51
Above 15.00	29.00	13.44	15.56	53.66
All Farms	41.37	27.94	13.43	32.46
<u>DISTRICT COMBINED</u>				
0.01 - 1.25	40.24	27.90	12.34	30.67
1.26 - 2.50	41.19	26.47	14.72	35.74
2.51 - 3.75	42.50	28.14	14.36	33.79
3.76 - 5.00	35.79	24.47	11.32	31.63
5.01 - 7.50	39.81	25.36	14.45	36.30
7.51 - 10.00	36.48	21.91	14.57	39.94
10.01 - 15.00	33.26	12.14	21.12	63.50
Above 15.00	27.05	11.48	15.57	57.56
All Farms	38.43	23.80	14.63	38.07

**Table 5.12 : Maharashtra (Ahmednagar-Nasik): Labour Days  
Per Acre of Equivalent Unirrigated Area  
(Average 1954-55 to 1956-57)**

Size group (acres)	Total labour days	Farm	Hired	Per cent x hired to total
<u>AHMEDNAGAR</u>				
0 - 5	28.86	22.72	5.54	19.60
5 - 10	23.45	20.14	3.31	14.12
10 - 15	17.09	13.28	3.81	22.29
15 - 20	22.30	13.18	9.12	40.90
20 - 25	13.50	10.73	2.77	20.52
25 - 30	13.57	7.73	5.84	43.04
30 - 50	16.37	10.13	6.24	38.12
50 and above	9.56	6.46	3.10	32.43
<b>Total</b>	<b>15.22</b>	<b>10.36</b>	<b>4.86</b>	<b>31.93</b>
<u>NASIK</u>				
0 - 5	31.48	23.09	8.39	26.65
5 - 10	29.99	23.71	6.28	20.94
10 - 15	20.54	15.60	4.94	24.05
15 - 20	16.87	13.37	3.50	20.75
20 - 25	20.37	15.39	4.98	24.45
25 - 30	17.34	13.11	4.23	24.39
30 - 50	17.27	9.83	7.44	43.08
50 and above	12.95	6.00	6.95	53.67
<b>Total</b>	<b>19.28</b>	<b>13.45</b>	<b>5.38</b>	<b>27.90</b>
<u>COMBINED</u>				
0 - 5	27.78	21.58	6.20	22.32
5 - 10	26.95	21.79	5.16	19.15
10 - 15	18.05	13.90	4.15	22.99
15 - 20	18.75	12.67	5.99	31.95
20 - 25	16.49	12.72	3.77	22.86
25 - 30	14.85	9.97	4.88	32.86
30 - 50	16.24	9.71	6.53	40.21
50 and above	10.25	6.18	4.07	39.71
<b>Total</b>	<b>16.50</b>	<b>11.57</b>	<b>4.93</b>	<b>29.88</b>

10 days with the increase in the farm size. On an average, about 17 labour days per acre are utilized in crop production. Break-up of the total labour days into family and hired labour, however, shows that the proportion of hired labour increases with the increase in farm size, with 22 per cent in the smallest size group, to about 40 per cent in the highest size group.

In Salem-Coimbatore also the smaller farms use more labour as compared to bigger farms (Table 5.13). On an average, about 23 labour days per acre are required for crop production, but, it decreases from 48 days to 19 days per acre with the increase in the farm size. Hired labour, on an average, accounts for about 25 per cent of the total labour use, and does not vary much with the farm size, the variation between the smallest and the biggest farm sizes being 21.42 per cent and 23.68 per cent only.

**Table 5.13** : Madras (Salem-Coimbatore): Labour Days Per Acre of Equivalent Unirrigated Area (Average 1954-55 to 1956-57)

Size group (acres)	Total labour days	Farm	Hired	Per cent hired to total
0 - 2.5	47.99	37.71	10.28	21.42
2.5 - 5.0	30.51	24.02	6.49	21.27
5.0 - 7.5	22.08	16.63	5.45	24.68
7.5 - 10.0	24.23	18.77	5.46	22.53
10.0 - 15.0	17.97	13.59	4.38	24.37
15.0 - 20.0	18.51	13.11	5.40	29.17
20.0 - 25.0	33.73	28.59	5.14	15.24
25.0 and above	19.30	14.73	4.57	23.68
Overall	23.35	17.60	5.75	24.63



In Akola-Amravati, the total number of labour days per acre decreases from 32 to 21 with the increase in farm size (Table 5.14). More than 50 per cent of the total labour used is hired. In almost all the size groups, proportion of hired labour to total is more than 50 per cent, and it does not show much variation with the change in farm size, being 53.51 per cent and 58.49 per cent between the lowest and the highest size groups respectively.

Table 5.14 : Maharashtra (Akola-Amravati): Labour Days Per Acre of Cropped Area (Average 1955-57)

Size group (acres)	Total labour days	Farm	Hired	Per cent hired to total
0 - 5	32.15	14.98	17.17	53.51
5 - 10	27.73	13.86	13.87	50.02
10 - 15	28.21	16.89	11.32	40.13
15 - 20	21.93	10.44	11.49	52.39
20 - 30	19.79	9.29	10.50	53.06
30 - 40	22.20	11.36	10.84	48.83
40 - 50	24.82	9.51	15.31	61.68
50 and above	21.32	8.85	12.47	58.49
All Sizes	22.30	10.08	12.22	54.80

In Monghyr district, Bihar, also the smaller farms use more labour input per acre than the bigger farms (Table 5.15). The variation is considerable and the number of labour days per acre goes down from 98 to 43 with the increase in farm size. On an average, number of labour days required per acre is 62 days.

Table 5.15 : Bihar (Monghyr) : Labour Days Per Acre of Cropped Area (Average 1957-58 to 1959-60)

Size groups (acres)	Total labour days	Farm	Hired	Per cent hired to total
0.01 - 2.50	98.15	86.08	12.07	12.28
2.51 - 5.00	81.93	68.84	13.09	15.93
5.01 - 7.50	71.67	56.71	14.96	20.87
7.51 - 10.00	54.13	40.11	14.02	25.90
10.01 - 15.00	34.57	25.80	8.77	25.38
15.01 - 20.00	49.24	24.07	25.17	51.12
Above 20.00	42.70	19.44	23.26	54.47
<b>Average</b>	<b>62.00</b>	<b>45.76</b>	<b>16.23</b>	<b>26.18</b>

Break-up of the total labour input into family and hired labour shows that hired labour utilization is as low as 26 per cent of the total labour use. Proportion of hired

labour shows an increasing trend with the increase in farm size, with about 12 per cent and 54 per cent in the smallest and the largest size group respectively.

In the last region in our study, comprising Rohtak-Karnal-Sangrur (Punjab), on an average, only 15 days of labour per acre is used for crop production (Table 5.16). Number of labour days per acre decreases from about 20 to 9 with the increase in the farm size. Proportion of hired labour is considerably low. Only 17 per cent of the total labour used is hired. It shows an increase with the increase in farm size, from about 10 per cent to about 64 per cent.

**Table 5.16** : Punjab (Rohtak-Karnal-Sangrur): Labour Days Per Acre of Equivalent Unirrigated Area (Average 1961-64)

Size group (acres)	Total labour days	Farm	Hired	Per cent hired to total
0 - 5	19.73	17.85	1.88	9.53
5 - 10	16.20	14.91	1.29	7.96
10 - 15	15.00	12.99	2.01	13.40
15 - 20	14.26	11.58	2.68	18.79
20 - 30	12.42	9.62	2.80	22.54
30 - 50	10.38	7.18	3.20	30.83
50 and above	8.82	3.19	5.63	63.83
<b>Average</b>	<b>15.43</b>	<b>12.76</b>	<b>2.67</b>	<b>17.30</b>

### 5.8 Distribution of Districts on the Basis of Labour Input

It is thus observed that there is considerable variation both in the total labour use and in the proportion of hired labour to total over size groups in different districts. There are some districts which do not show any marked variation in the per acre total labour use over size groups while there are some which do so. Similarly, the proportion of hired labour to total also varies in the case of some districts and does not in the case of some, with the increase in the farm size.

There are thus three categories of districts, in one category, where, on the one hand labour input per acre remains stationary and on the other proportion of hired labour input increases by farm size, the districts falling are, West Godavari, Sambalpur, Hooghly-24 Parganas, and Amritsar-Ferozepur.

In the second category, where labour input per acre decreases and the proportion of hired labour input increases by farm size, the districts appearing are, Akola-Amravati, Monghyr, and Rohtak-Karnal-Sangrur.

In the third category in which, labour input per acre decreases and the proportion of hired labour input remains more or less the same with the increase in farm size, the districts falling are: Salem-Coimbatore and Ahmednagar-Nasik.

### 5.9 Family Farm Workers

We shall now consider the second factor affecting the use of hired labour, that is, the number of farm family worker in each farm size in different districts. Availability of farm family worker is a factor which influences the extent of self-employment in a farm. We shall, therefore, examine the number of farm family workers per farm, first in the different districts under study and then by the farm size. In farm management studies farm family workers include both the members of the family engaged in agriculture and the permanent farm servants.

Table 5.17 shows the number of farm workers per farm in different districts. Data for the above enquiry are not available for the district of Monghyr, Bihar, in our study. Break-up of the total farm workers into male and female workers is not available in the case of any of the districts except Sambalpur, Akola-Amravati and Hooghly-24 Parganās. But, the proportion of female workers is only 12.05 per cent in Sambalpur, 24.82 per cent in Akola-Amravati and 4.78 per cent in Hooghly-24 Parganas. Although it cannot be generalized, on the basis of this scanty information, we may say that by and large females do not participate in farm work regularly or if they participate, it is not reported. We shall thus deal with the total number of farm workers only in our discussion, without differentiating between male and female.

**Table 5.17 : Number of Farm Workers Per Farm in the Districts under Study**

Regions	No. of farm workers
Sambalpur	1.66
Hooghly-24 Parganas	2.09
Amritsar-Ferozepur	2.25
West Godavari	2.44
Meerut-Muzaffarnagar	2.50
Nasik-Ahmednagar	2.78
Akola-Amravati	2.82
Salem-Coimbatore	2.92
Karnal-Rohtak-Sangrur	2.98

Number of farm workers per farm varies considerably in different districts ranging from 1.66 in Sambalpur to 2.98 in Karnal-Rohtak-Sangrur. It is interesting to note that except Sambalpur district, in all other districts the number of farm worker per farm is more than 2. The average is about 2.50.

#### 5.10 Farm Workers Per Farm by Farm Size

We shall now examine the same by the farm size and see if it varies with the farm size. Table 5.18 gives the detailed information regarding the number of farm workers per farm by farm size in different districts.

**Table 5.18 : Number of Farm Workers Per Farm by Farm Size**

Size group (acres)	Ahmed- nagar- Nasik	Hooghly- 24 Par- ganas	Akola- Amra- vati	Amrit- sar- Feroze- pur	Salem- Coimba- tore	Meerut- Muzaffar- nagar	Sambal- pur	West Goda- vari	Rohtak- Karnal- Sangrur
0.01 - 1.25)		1.52						0.86)	
1.26 - 2.50)	2.18	1.88	2.13	1.39	2.03	2.00	1.51	1.41)	
2.51 - 3.75)		2.26			2.14		1.75	1.60)	
3.76 - 5.00)		2.54			2.14		1.75	1.60)	
5.01 - 7.50)		2.95			2.31		1.40	2.01)	
7.51 - 10.00)	2.38	3.15	2.00	1.84	2.87	2.40	1.40	2.50)	
10.01 - 15.00	2.28	3.48	2.49	2.24	3.15	2.50	2.09	2.89	2.81
15.01 - 20.00	2.85	4.22	2.87		3.62	2.60	2.08	4.97	3.63
20.01 - 25.00	2.70		2.78	4.12	3.30	4.11			
25.01 - 30.00	2.78		2.83	4.22	3.60	3.93			
30.01 - 40.00)	3.30		3.17						2.83
40.01 - 50.00)		3.82	4.22	3.60	3.93				
50.01 & above	4.28	4.12	2.74					3.75	
Average	2.78	2.09	2.82	2.25	2.92	2.50	1.66	2.44	2.98

It is noticed that in all the districts number of farm workers per farm steadily increases with the increase in farm size. The increase is least marked in the case of Sambalpur and most marked in the case of West Godavari. In Sambalpur the smallest farm has 1.51 number of worker and it increases to 2.08 in the largest farm. Whereas in West Godavari the number of farm worker increases from 0.86 in the smallest farm to 4.97 in the largest farm.

No doubt, with the increase in farm size, the size of the family and thereby the number of family workers per farm also increases, but, the increase is not in proportion to the increase in the farm size, consequently, the number of family workers per acre decreases with the increase in the farm size. It can be seen in Table 5.19. This indicates that the supply of farm labour on the larger holdings is most unsatisfactory in contrast to the smaller farms where a part of the labour remains unutilized. It is, therefore, natural that to complete agricultural operations in time the larger farms have to depend more on hired labour than is usually the case on smaller farms.

#### 5.11 Labour Input Per Farm Worker

Let us now examine the input of labour by farm workers in crop production. First, we shall examine the district figures then by the farm size.



Table 5.19 : Number of Family Workers Per Acre by Farm Size

Size group (acres)	Meerut- Muzaffar- nagar	Amritsar- Ferozepur	24 Parganas	Hooghly	Combined	Akola Amravati	Ahmednagar	Nasik	Combined	West Godavari	Sambalpur	Rohtak- Karnal- Sangrur	Monghyr
	*	*	*	*	*	‡	‡	‡	‡	†	†	1/	
0.01 - 1.25	1.40		2.27	2.18	2.21					1.22			4.80
1.26 - 2.50			1.05	1.00	1.04	0.70	0.99	0.77	0.88	0.68	1.05	0.65	1.60
2.51 - 3.75	0.50	0.30	0.72	0.73	0.72					0.47	0.49		0.09
3.76 - 5.00			0.63	0.55	0.59								0.07
5.01 - 7.50	0.40		0.52	0.45	0.49	0.30	0.53	0.40	0.47	0.34	0.19	0.37	0.04
7.51 - 10.00	0.30	0.20	0.38	0.38	0.38					0.23			0.02
10.01 - 15.00	0.20		0.27	0.32	0.29	0.20	0.22	0.22	0.22	0.14	0.16	0.26	0.02
15.01 - 20.00	0.20	0.20	0.27	0.32	0.29	0.10	0.23	0.19	0.21	0.14		0.22	0.03
20.01 - 25.00	0.20						0.15	0.13	0.14				
25.01 - 30.00		0.10	0.40	0.10	0.21	0.10	0.11	0.15	0.13		0.10	0.18	
30.01 - 40.00	0.10					0.09	0.11	0.10	0.11	0.06		0.12	0.02
40.01 - 50.00						0.04							
50.01 & above		0.01				0.03	0.08	0.05	0.07			0.05	
Average	0.20	0.10	0.72	0.74	0.73	0.11	0.15	0.17	0.16	0.19	0.31	0.23	0.06

\* Average of 1954-55, 1955-56 and 1956-57

‡ Average of 1955-56 and 1956-57

† Average of 1957-58 and 1958-59

1/ Average of 1961-62, 1962-63 and 1963-64

Table 5.20 shows the labour input per head of farm workers in the districts under study. A glance at the Table shows that the labour input per farm worker varies considerably between the different districts. In Sambalpur, Amritsar-Ferozepur and Meerut-Muzaffarnagar the number of labour days per worker lies between 150 and 180 days; in other districts it is roughly 70 days per farm worker, with Nasik-Ahmednagar showing 100 days per worker.

**Table 5.20 : Number of Labour Days Put in Per Head of Farm Worker**

Regions	No. of days per worker
West Godavari	64.25
Sambalpur	157.28
Akola-Amravati	73.24
Nasik-Ahmednagar	100.31
Amritsar-Ferozepur	147.91
Salem-Coimbatore	61.02
Hooghly-24 Parganas	61.41
Rohtak-Karnal-Sangrur	88.34
Meerut-Muzaffarnagar	180.30

If we look back at the previous Table, it will be observed that, out of the districts showing larger labour input per farm worker, Sambalpur is the only district

where number of farm workers per farm is small as compared to other districts.

In the other regions, showing large labour input per farm worker, namely, Amritsar-Ferozepur and Meerut-Muzaffarnagar the number of farm workers per farm is comparatively high. In the remaining districts, namely, West Godavari, Akola-Amravati, Salem-Coimbatore, Hooghly-24 Parganas and Rohtak-Karnal-Sangrur the average number of farm workers per farm is roughly more than 2.50 and labour inputs per farm worker varies between 60 and 80 days, except in Nasik-Ahmednagar where it is 100 days. Thus, the variation in the labour input per farm worker cannot be explained as due to differences in the number of farm workers per farm.

#### 5.12 Labour Input Per Farm Worker by Farm Size

We shall now look into the same by farm size and see if it varies with the variation in the latter. Table 5.21 gives the labour input per farm worker in different size groups.

It is observed that in most of the districts number of labour days per farm worker neither regularly increases nor decreases with the increase in farm size, although as we noted earlier the number of farm workers per farm increases with the farm size, Table 5.18. Only the districts

**Table 5.21 : Number of Labour Days Per Farm Worker by Farm Size**

Size group (acres)	Ahmed-nagar-Nasik	Hooghly-24 Par-ganas	Akola-Amra-vati	Amrit-sar-Feroze-pur	Salem-Coimba-tore	Meerut-Muzaffar-nagar	Sambal-pur	West Goda-vari	Rohtak-Karnal-Sangrur
0.01 - 1.25		29.81			64.84	38.34	75.68	73.21	
1.26 - 2.50	51.76	53.28	20.11	88.50	103.47	123.21	128.65	74.25	64.17
2.51 - 3.75		63.51						79.26	
3.76 - 5.00		76.01							
5.01 - 7.50	92.03	83.47	48.65	116.26	94.05	120.80	270.13	98.82	88.68
7.51 - 10.00		86.56						101.90	
10.01 - 15.00	104.18	129.27	79.09	129.77	71.44	165.14	172.48	84.19	104.66
15.01 - 20.00	107.30		59.99		55.01	193.93		69.91	100.74
20.01 - 25.00	102.93	150.92	73.82	148.70	84.53	209.92	207.07		93.70
25.01 - 30.00	122.19								
30.01 - 40.00	109.79		116.11		65.92	235.02		45.38	112.67
40.01 - 50.00		95.37							
50.01 & above	155.79		178.48	232.53					89.76
Average	100.31	61.41	73.24	147.91	61.02	180.30	157.28	64.25	88.34

of Hooghly-24 Parganas, Amritsar-Ferozepur and Meerut-Muzaffarnagar show regular increase in labour input per farm worker with the increase in farm size. Taking individual region for further illustration it is observed that in the case of West Godavari district, the largest size group which has the highest number of farm workers per farm shows the lowest number of labour days per farm workers, being 45 as compared to 102 days shown by the farm size 7.51 - 10.00 acres, having less number of farm workers per farm. In other size groups also labour input per farm worker is comparatively less. In fact, with a few exceptions, the labour input per farm worker goes down with the increase in farm size in this region. It can thus be concluded that by and large farm family workers themselves do not work much on the bigger farms.

Similarly in Rohtak-Karnal-Sangrur also with a few exceptions, though the number of farm workers per farm increases by farm size the labour input does not show any regular increase, rather it registers a small decrease. The size-group 50 and above acres, although has more farm worker per farm, the labour input by the worker is considerably less, being roughly 90 days.

In Salem-Coimbatore, however, the labour input per worker remains more or less constant in almost all the farm size-groups, with a few exceptions. This indicates

that irrespective of farm size, a farm worker puts in same amount of work on his farm.

In Akola-Amravati the labour input per farm worker increases very slowly by the farm size upto the size-group 20.00 to 30.00 acres and then suddenly increases in the size-groups 30.00 to 40.00 acres and 50.00 acres and above.

In Ahmednagar-Nasik, number of labour days per farm worker shows a big increase from the smallest to the next higher size-group, but, subsequently the increase in labour input per farm worker by farm size is very small indicating that on bigger holdings farm workers put in almost same amount of work.

Sambalpur district shows a regular increase in the labour input per farm worker by farm size, except the size-group 10.00 to 15.00 acres where it goes down suddenly very much, but, by and large the labour input per worker is higher on bigger farms.

In Hooghly-24 Parganas there is a regular increase of labour input per farm worker by farm size, but, the increase is less marked upto the size-group 7.50 to 10.00 acres. In the size-groups 10.00 acres and above the labour input per farm worker is considerably high indicating that the farm workers on bigger holdings work intensively in crop production.

Amritsar-Ferozepur and Meerut-Muzaffarnagar show a regular increase in the labour input per farm worker with the increase in the size of the farm. In bigger farms, farm workers do put in intensive labour inputs in crop production.

There are, therefore, some districts, e.g., Sambalpur, Ahmednagar-Nasik, Meerut-Muzaffarnagar, Amritsar-Ferozepur, and Hooghly-24 Parganas where the bigger holdings show larger labour input per worker. The extent of self-employment appears to be comparatively high in these regions in the sense that the farm workers do work and employ themselves on farm for crop production to a considerable extent.

The districts under study can thus be classified into two groups, on the basis of the labour days put in by a farm worker in different farm sizes. In the first group fall the districts of West Godavari, Akola-Amravati, Salem-Coimbatore, and Rohtak-Karnal-Sangrur where the bigger farms by and large show smaller labour input per worker. The extent of self-employment appears to be less in crop production in bigger farms in these districts.

The other group comprising the districts of Ahmednagar-Nasik, Amritsar-Ferozepur, Meerut-Muzaffarnagar, Hooghly-24 Parganas and Sambalpur, shows variation in the labour days put in by a farm worker over size groups, indicating

progressively larger number of labour days per farm worker on bigger farms. Thus, the extent to which the farm workers work in their own farms appears to be higher in these districts.

5.13 Labour Input Per Farm Worker and Incidence of Hired Labour

We shall now go back and look into the figures of proportion of hired labour used in different regions under different farm size-groups and examine if the regions showing lower labour input per farm worker on bigger farms show higher proportion of hired labour input on these farms.

West Godavari appears to be the most striking example of this particular phenomenon. Hired labour accounts for about 78 per cent of the total labour used in the region as a whole; and on an average, labour input per worker comes to about 64 days. Further, it is seen that on the bigger farms farmers do not lend themselves to actual physical work. It is, therefore, quite natural that on bigger holdings the proportion of hired labour in West Godavari is so high (Table 5.6). In this region the farmers having bigger holdings do not associate themselves with the actual physical work on the farm, they may be doing mostly managerial and supervision work, employing hired labour for crop production. The other possible reason of not participating in the actual work may be the caste system.



and other social pride and prejudices, prevailing in the villages.

Akola-Amravati, Salem-Coimbatore and Rohtak-Karnal-Sangrur are the other regions where bigger farms by and large show smaller labour input per farm worker. However, the proportion of hired labour does not show a very marked increase by farm size except in the biggest size-group in Akola-Amravati and Rohtak-Karnal-Sangrur (Table 5.7). In these regions, therefore, both the factors, namely, labour input per farm worker and proportion of hired labour are at lower level on bigger farms.

The regions showing progressively higher labour input per worker by farm size are Hooghly-24 Parganas, Sambalpur, Meerut-Muzaffarnagar, Amritsar-Ferozepur and Nasik-Ahmednagar. Out of these regions, Sambalpur and Hooghly-24 Parganas show high proportion of hired labour use and its proportion increases markedly with the increase in farm size. In other words, in these regions, even though the farm workers on bigger farms work more intensively there is considerable use of hired labour. Nature of crops grown and the operations involved in its growing may be the reason for such occurrence. Paddy is the major crop of both the regions and the operations like transplanting, weeding and harvesting require very intensive labour for a short period, which in a way compel the

farmers to hire outside labour, as they cannot cope up with the rush with which certain operations are to be performed.

In the other two regions, namely, Amritsar-Ferozepur and Meerut-Muzaffarnagar, showing higher labour input per farm worker, proportion of hired labour used is less. This indicates that the farm family workers engage themselves in actual physical work of crop production very intensively, particularly on the bigger farms and consequently use lesser and lesser proportion of hired labour.

#### 5.14 Seasonal Distribution of Labour Input of Farm Family Workers over Months

We have seen that hired labour is employed for crop production even on the smallest size of holding, where there is abundance of family workers as compared to the land available for cultivation. Nature of crops grown and the seasonality of operations in raising such crops are believed to be the reasons for such occurrence. Hence, we shall now examine the seasonality of employment of the farm workers engaged in crop production and see if this has got any influence on the use of hired labour. In this regard data on monthly utilization of labour input would indicate how far there is seasonality of employment in a year. But, we do not have data and other information on the

monthwise utilization of total labour input as well as hired labour input. However, we have data on monthly utilization of labour input of farm family workers; and we shall, therefore, proceed with the examination of that.

#### 5.15 Busy and Lean Period in Each Region

Table 5.22 shows the percentage distribution of family farm labour input over months. Salem-Coimbatore, Akola-Amravati and Monghyr do not give any information in this regard. It is seen that the variation in the farm labour input used is maximum in Sambalpur and minimum in Ahmednagar-Nasik. The other regions show moderate variation in the employment of farm labour from month to month. In some regions peak period of employment is very much marked, thereby indicating the prominence of seasonality of employment. For further illustration we shall examine the individual regions. A Graph to this effect has also been drawn.

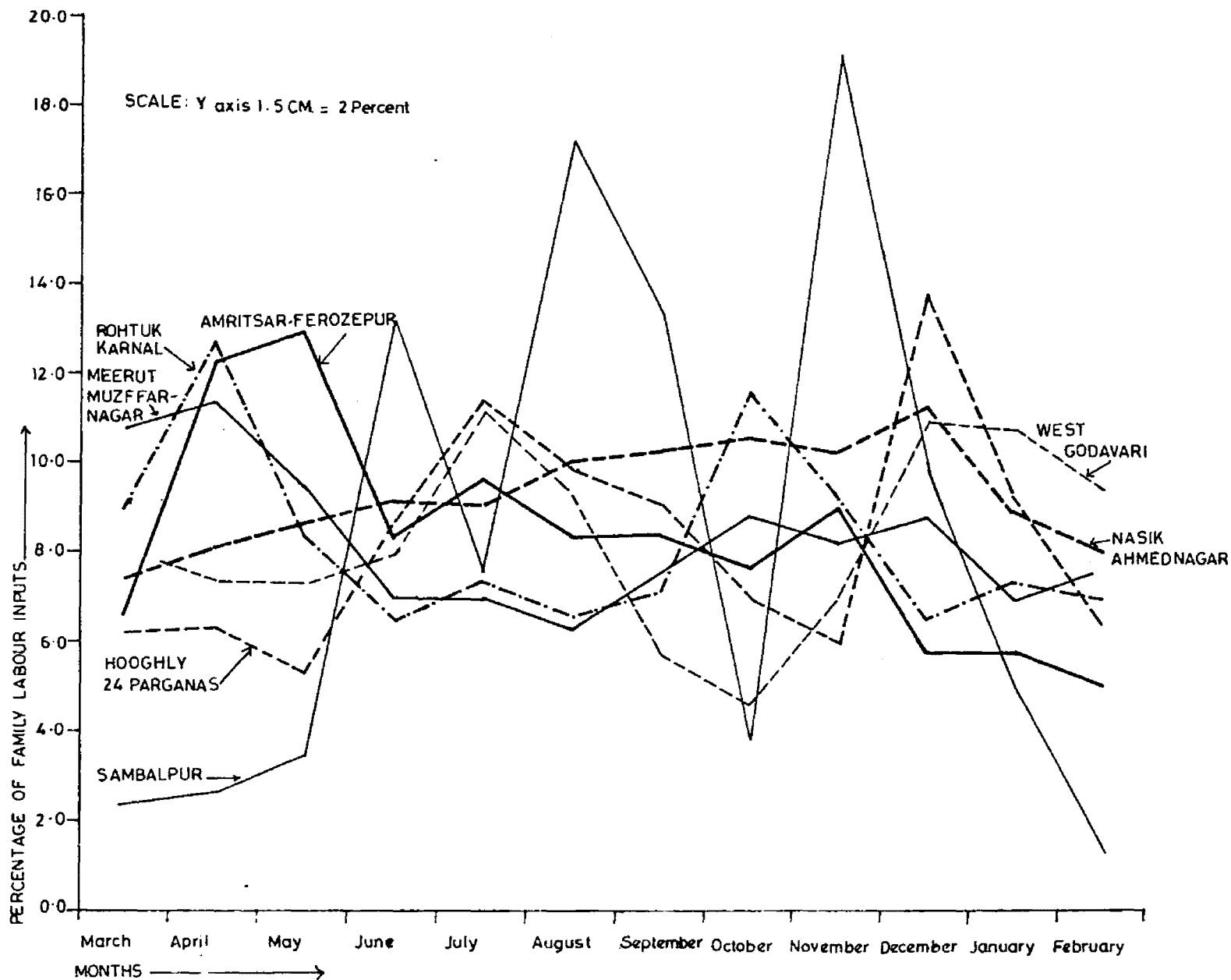
It is observed that in Sambalpur, except in the months of June, July, August, November and December, only 2 to 4 per cent of the farm labour is used in other months of the year. The labour use, thus, is largely concentrated in the months of June, July, August, November and December in as much as roughly 9 to 20 per cent of the farm labour used is reported in these months.

L. C.

**Table 5.22 : Percentage Distribution of Farm Labour Input Over Months**

Months	Regions						
	Hooghly- 24 Parganas	Ahmednagar- Nasik	Meerut- Muzaffar- nagar	Amritsar- Ferozepur	Sambal- pur	West Godavari	Karnal- Rohtak- Sangrur
March	6.19	9.06	10.78	6.45	5.66	8.11	9.07
April	6.25	7.90	11.39	12.24	5.73	7.40	12.88
May	5.28	6.55	9.49	12.90	7.68	7.35	8.40
June	8.62	8.17	6.96	8.39	9.08	8.09	6.50
July	11.74	8.86	6.96	9.68	10.49	11.29	7.66
August	9.86	7.71	6.33	8.39	17.69	9.30	6.45
September	9.35	5.74	7.59	8.39	8.03	5.76	7.16
October	7.07	7.72	8.86	7.74	1.58	4.63	11.66
November	6.05	9.09	8.23	9.03	20.09	7.07	9.34
December	13.91	9.29	8.86	5.81	9.29	10.92	6.52
January	9.24	10.40	6.96	5.81	3.00	10.55	7.40
February	6.44	9.51	7.59	5.17	1.66	9.53	6.94
<b>Total</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

## PERCENTAGE DISTRIBUTION OF FAMILY LABOUR INPUT OVER MONTHS.



Sambalpur is a mono-crop area, paddy being the only major crop grown there. There are two busy and labour intensive operations in paddy, namely, transplanting and harvesting with one or two weeding in between, requiring fairly good amount of labour. The month of June is reported to be the main transplanting period and July and August to be the period of weeding and late transplanting. These three months, therefore, show high percentage of labour input. Similarly, in the months of November and December harvesting operation takes place, making these two months busy for the farm worker. Since paddy is the only crop grown, apart from the above-mentioned busy period, employment is almost negligible for the rest of the year, particularly during the months of February, March and April.

The seasonality of employment is, thus, quite prominent in this region and the farm worker is practically left with no work intermittantly for about 5 to 6 months in a year.

Hooghly-24 Parganas also show variation in farm labour input used over months but, of a lesser extent. Months of July, August, September, December and January are the months having high proportion of labour input, varying between 9 and 14 per cent. On an average, the labour input is 6 per cent in other months with months of June and October showing 8.62 and 7.07 per cent respectively.

Paddy and jute are the major crops grown in the region. Transplanting and harvesting operations in paddy make the months of July, August, September and the months of December, January respectively busy and labour intensive. Similarly, the labour intensive operations in June, July, and December, January for the jute crop also make these months busy. For the rest of the year the labour input varies between 5 and 7 per cent of the farm labour used in crop production.

The farmers in this region are thus noted to be experiencing to a considerable extent the peak periods of employment during the months of July, August, September, December and January, although the extent of it is not as much as it is in Sambalpur.

In Amritsar-Ferozepur labour input appears to be comparatively higher during the months of April, May, July and November. Roughly about 9 to 13 per cent of the total farm labour input is reported to be used in these months. For the rest of the months during the year, it varies between 5 and 8 per cent. However, the months of December, January, February and March appear to be lean period for work, in as much as only 6 per cent of the farm labour input is used during this period. Wheat and cotton are the major crops grown in this region. In wheat, sowing and harvesting are labour intensive operations. It is sown in the month

of November which shows high labour input and it is harvested in the months of April, May which again show high proportion of labour used. Cotton is sown in the months of August, September and the picking operation starts in the month of June, that is why these months also show higher percentage of labour input. For the rest of the year farmers are less busy because they have not much to do except some weeding operations in cotton and wheat.

It can thus be inferred that the farmers are moderately less busy during the months of December, January, February and March as compared to the rest of the year.

In Meerut-Muzaffarnagar the percentage distribution of labour input over months in a year is almost uniform except in the months of March, April and May. The months of March, April and May show about 10 to 11 per cent of labour input, while during the other months it varies roughly between 7 and 9 per cent. Thus, it is seen that the variation over months is not much. Wheat and sugarcane are the two major crops grown in this region. Sugarcane is a crop of an year's duration and right from the stage of planting it requires constant care because of which it keeps the labour fairly busy throughout the year. Over and above operations in sugarcane, wheat is harvested during the months of March, April and that is why probably these months show high labour input.



It is thus noted that the farmers are moderately busy throughout the year with March, April and May as more busy periods; and without any considerable lean period. Seasonality phenomenon, therefore, appears to be quite less in this region.

In West Godavari, the months showing comparatively high proportion of labour inputs are July, December and January, being 11 per cent and the months showing low proportion of the same are September and October, being roughly 5 to 6 per cent. Paddy and tobacco are the two major crops grown there. Cultivation of paddy makes the month of July, August for transplanting and the months of December, January for harvesting, fairly busy. Tobacco is a very labour intensive crop and requires much care. Except during the months of September and October, the farmers are fairly busy with some operation or the other in tobacco, throughout the year.

The months of September and October are the lean periods in this region and the farmers are considerably less busy during this period. Otherwise for the rest of the months they are, more or less, uniformly busy.

In the region of Rohtak-Karnal-Sangrur the percentage of farm labour input is seen to be fairly distributed over the months. Only the months of April and October show

a slightly higher proportion of labour input (about 12 per cent). The major crops grown in this region are wheat, gram, bajra and sugarcane. Months of October and April are the sowing and harvesting periods respectively in wheat crop and since these operations are labour intensive, we find higher proportion of labour inputs during these two months. Otherwise the nature of crops grown is such that the activities are fairly uniformly spread throughout the year. Sugarcane is one year crop with many operations, bajra is grown in kharif and in rabi, over and above wheat, gram is also grown. The farmers are, therefore, fairly busy throughout the year.

Seasonal peak period, though exists, is not very pronounced in this region. Months of June, August and December appear to be the periods of less work.

Ahmednagar-Nasik show the most uniform distribution of the percentage of labour input used over months in a year. In almost all the months the labour input varies between 8 and 10 per cent, with only the month of September showing 5.74 per cent. The major crops grown in this region are wheat, bajra and jowar which keep the farmer moderately busy throughout the year.

There is no prominent lean period and variation in labour input over months arising out of seasonality appears to be least in this region.

On the whole, it can be said that there is seasonal peak and lean periods of employment in different regions and that they vary from one region to the other depending upon the cropping pattern. There are some regions where it appears to be very prominent while there are some other regions where the employment is fairly uniformly distributed throughout the year, making the seasonal variation in labour input used less.

#### 5.16 Peak Periods of Employment and Use of Hired Labour

Having examined this, we shall now see if the regions showing marked seasonality of employment or, in other words, with marked peak periods, use higher proportion of hired labour in crop production. Sambalpur is found to be the region showing very much marked seasonal variation in farm labour input. Proportion of hired labour used is about 43 per cent in this region. Paddy is the only major crop grown in this region. Peak periods of family labour employment for transplanting and harvesting of paddy must be requiring enough of hired labour also to finish the operations in time.

Similarly in West Godavari also the peak periods of employment for paddy and tobacco necessitate the intensive employment of casual hired labour also. Here the proportion of hired labour use is as high as 78 per cent. However,

the tobacco crop requires intensive care and labour throughout its growing period and that may be the additional reasons for greater use of hired labour, more particularly so when farm workers are found lacking in lending themselves to actual physical work.

Hooghly-24 Parganas is the other region showing considerable variation in farm labour input over months. The proportion of hired labour use is about 38 per cent in this region. Here also the labour intensive operations in paddy and jute possibly necessitate the use of hired labour during the peak periods.

In Amritsar-Ferozepur also the seasonal variation in farm labour input over months is considerable, but, the proportion of hired labour use is as low as 22 per cent in this region. It seems that during peak periods the farm family workers put in very intensive labour themselves, requiring little help from the hired labour. If we look back at Table 5.20 it will be noticed that the number of labour days put in per head of farm worker is very high in this region; that means farm family workers lend themselves intensively to actual physical work of crop production thereby requiring less of hired labour.

In the foregoing pages we discussed the nature and extent of labour inputs used in crop production. Nature of

labour input indicates the source of labour, that is, family and hired labour inputs used whereas the extent shows their magnitude. It is noted that there is considerable variation in the total labour input per acre used in crop production from region to region. It is further noted that in some regions the small farmers use as much labour per acre as the big farmers, however, the family labour input per acre is found to be higher on smaller farms, as compared to bigger farms in almost all the regions.

Farming in India is mostly described as family farming, but, it is noted that even on the smallest size of holding there is considerable use of hired labour and in some cases it is high, even though there is believed to be an abundance of farm family labour. Nature of crops grown and the simultaneous arrival of some operations, for example, transplanting or harvesting, for all the farmers, necessitates the use of hired labour even on the smaller farms. Other factors affecting the use of hired labour are size of farm and the number of farm family workers per farm, and the labour input put in by them.

## CHAPTER VI

### SEASONAL UNEMPLOYMENT OF FARM FAMILY WORKERS

In the last chapter we have examined the nature and extent of labour input, both family and hired in crop production, and the factors affecting their utilization. We have seen in the last section of the last chapter that there is seasonal variation in the farm labour input used in crop production over months in a year in different regions under study and that in some regions the variation is quite large. This leads us to the problem of seasonal unemployment of farm family worker.

There are periods of heavy and light work, the extent of which is generally found to depend largely upon the nature of crops grown. During the busy periods, the farmers are so hard pressed with work that they seem to be unable to cope up with the rush with which certain operations have to be finished and consequently hire in some labour from outside; but, as soon as the busy period is over, for the rest of the months in the year either they are very lightly engaged or they are completely idle. Labour force of the farmer and his family worker thus suffer from seasonal unemployment.

### 6.1 Distribution of Labour Days over Months

We shall then examine the same data (Table 5.22) of the farm labour input over months to measure approximately the extent of seasonal unemployment. Data in Table 5.22 are given in terms of percentages, we now convert them in absolute figures and analyse. Table 6.1 gives the data on the monthly utilization of labour days of farm family worker in different regions under study.

As seen earlier Sambalpur appears to be the region showing acute busy and lean periods. Months of October, January and February are the months when the farmers in this region are practically left with no work, whereas the month of November seems to be a very busy period. The other region showing considerable variation in family labour input over months is Hooghly-24 Parganas. In the region of Nasik-Ahmednagar seasonal variation in the employment appears to be the least.

### 6.2 The Measure

We shall now try to construct an index to measure the extent of seasonal unemployment in different regions under study. Data on monthly utilization of farm family labour days given in Table 6.1 are made use of in this measure. An average of the labour days appearing in two or three busiest months for each region has been assumed to be the number of labour units available in other months

**Table 6.1 : Distribution of Labour Inputs of Farm Family Workers in Different Months of the Year**

Months	West Godavari	Sambalpur	Hooghly- 24 Parganas	Nasik- Ahmednagar	Amritsar- Ferozepur	Meerut- Muzaffar- nagar	Rohtak- Karnal
March	12.71	14.78	7.94	25.26	21.47	48.59	23.88
April	11.60	14.96	8.02	22.03	40.73	51.34	33.91
May	11.80	20.05	6.78	18.27	42.93	42.78	22.11
June	12.68	23.71	11.06	22.78	27.92	31.37	17.11
July	17.70	27.39	15.07	24.71	32.22	31.37	20.16
August	14.58	46.19	12.66	21.50	27.92	28.53	16.98
September	9.03	20.96	12.00	16.01	27.92	34.21	18.85
October	7.26	4.13	9.07	21.53	25.76	39.94	30.69
November	11.08	52.45	7.77	25.35	30.05	37.10	24.59
December	17.12	24.25	17.85	25.91	19.34	39.94	17.16
January	16.54	7.83	11.86	29.00	19.34	31.37	19.48
February	14.90	4.33	8.27	26.52	17.21	34.21	18.27
<b>Total</b>	<b>157.00</b>	<b>261.00</b>	<b>128.35</b>	<b>278.86</b>	<b>332.80</b>	<b>450.75</b>	<b>263.20</b>



as well. Total available labour supply is thus computed on the basis of the average labour days obtained from the two or three busiest months. The second step is to compare the utilized portion with the total available. This provides the necessary measure of seasonal unemployment. Thus,

$$S = \frac{\sum_{i=1}^{12} (X_{\max} - X_i)}{12 X_{\max}}$$

$$= 1 - \frac{\sum X_i}{12 X_{\max}}$$

where,

- $S$  = Proportion of seasonal surplus
- $X_{\max}$  = Average number of labour days employed in two or three busiest months
- $X_i$  = Number of labour days in each of the twelve months
- $12 X_{\max}$  = Total available labour days in a year

The measure will give a gross estimation of the seasonal unemployment in terms of proportion of total farm labour remaining unemployed during the whole year.

### 6.3 The Extent of Seasonal Unemployment

The surplus labour arising out of seasonal nature of agricultural operations has been computed on the basis of the measure described above, and is given in the Table 6.2.

**Table 6.2 : Proportion of Surplus Labour due to Seasonality in Different Regions**

Steps	West Godavari	Sambalpur	Hooghly- 24 Parganas	Ahmednagar- Nasik	Meerut- Musaffar- nagar	Amritsar- Ferozepur	Rohtak- Karnal- Sangrur
$X_{max}$	17.12	49.32	16.46	26.41	49.97	41.83	32.30
$12 X_{max}$	205.44	591.84	197.52	316.92	599.64	501.96	387.60
$\Sigma X_i$	157.00	261.00	128.35	278.86	450.75	332.80	263.20
$1 - \frac{\Sigma X_i}{12X_{max}}$	0.24	0.56	0.38	0.12	0.25	0.33	0.32
Percentage of Seasonal Surplus	24.00	56.00	38.00	12.00	25.00	33.00	32.00

The figures in the Table 6.2 show the percentage of unemployed days of the total available labour days. It is noted that the seasonal unemployment in terms of proportion of surplus labour to total available labour in a year appears to be maximum in Sambalpur in as much as about 56 per cent of the available labour days is unemployed. This region is followed by Hooghly-24 Parganas, where it is 38 per cent. The extent of seasonal unemployment is lowest in Ahmednagar-Nasik, being 12 per cent only. In the regions of Punjab, namely, Amritsar-Ferozepur and Rohtak-Karnal-Sangrur the extent appears to be fairly high.

An examination of the cropping pattern of the regions under study brings out the reason for the variation in the extent of seasonal unemployment amongst different regions. It is noted that paddy is the only major crop, occupying about 92 per cent of the total cropped area, grown in Sambalpur. In paddy labour requirement is very high only for sowing and harvesting operations, the labour force during the other part of the year remains almost unutilized and this leads to the inevitable high seasonal unemployment in this region.

Similarly in Hooghly-24 Parganas, paddy accounts for about 75 per cent of the total cropped area and apart from paddy, jute is the other major crop of the region. Transplanting and harvesting operations in paddy are very much

labour intensive which make the months of July, August, September, December and January very busy. For the rest of the year the farmers are left with very little work thereby making them seasonally unemployed to such an extent.

In Amritsar-Ferozepur wheat and cotton are the major crops. In wheat, sowing and harvesting are labour intensive operations indicating two peak periods. Picking operation in cotton is also labour intensive indicating another peak period. These crops do not require much of labour input during other parts of the year. This is the reason why farmers are considerably unemployed due to seasonality of operations in this region.

In Rohtak-Karnal-Sangrur the major crops are wheat, gram, bajra and sugarcane. The labour intensive operations in wheat and bajra keep the <sup>farmers</sup> busy for quite some time during the year. Operations involved in sugarcane, however, keep the farmers engaged throughout the year; but, since the area under sugarcane is not much the available labour inputs of the farmer and his family worker remain considerably unutilized.

Wheat and sugarcane are the two major crops grown in Meerut-Muzaffarnagar, accounting for about 65 per cent of the total cropped area. The operations involved in these two crops keep the farmers almost uniformly busy throughout the year, and that is the reason why the extent of seasonal unemployment is less in this region.

In West Godavari paddy and tobacco are the major crops grown. Transplanting and harvesting operations in paddy are labour intensive. Cultivation of paddy makes the months of July, August for transplanting and months of December, January for harvesting fairly busy. Tobacco is very labour intensive crop and requires much care. Except during the months of September and October, the farmers are fairly busy with some operation or the other in tobacco throughout the year. Nature of crops grown and the operations involved in them thus make the extent of seasonal unemployment considerably less in this region.

Ahmednagar-Nasik shows the most uniform distribution of labour input used over months in a year. The major crops grown are wheat, bajra and jowar. Although the operations involved in growing these crops are not labour intensive, in almost all the months the labour input of the family workers remain more or less constant, thereby making the extent of seasonal unemployment very less.

#### 6.4 Labour Input Per Worker during Full Employment Period

On the whole it is seen that the cropping pattern of the farmer and the nature of crops grown on the farm have a bearing on the extent of seasonal unemployment. As mentioned earlier an average of the labour days in two or three peak periods has been taken as the available labour

days in each month and it is further assumed that during the peak periods the farm family workers are fully employed. It would be interesting now to examine the number of days a farm family worker works in a month during the busy periods when he is supposed to be fully employed. We shall, therefore, now examine the same and compare it with the employment per worker during the other months. (Table 6.3)

It is observed that out of all the regions Sambalpur is the only region where the farm workers are employed for almost all the days in the month during busy periods, when there is assumed to be a full employment. In fact, in the month of November the farm workers over-work to some extent. In the month of August also they work fully but under-work considerably during the other months. In West Godavari, Hooghly-24 Parganas, Nasik-Ahmednagar and Rohtak-Karnal-Sangrur, a farm worker is engaged only for 8 to 10 days even during the busy periods when he is supposed to be fully employed. This indicates that the farm workers in these regions do not lend themselves intensively to actual physical work of crop production. Thus, in these regions even during the busy period farmers are left with no work for roughly about 20 days in a month. In Amritsar-Ferozepur and Meerut-Muzaffarnagar a farm worker works for about 20 days a month during the busy period, when he is supposed to be fully employed. The peak periods thus keep the farmers almost fully busy in terms of the labour input put by them

**Table 6.3 : Distribution of Labour Input Per Worker Over Months**

Months	West Godavari	Sambalpur	Hooghly- 24 Parganas	Ahmednagar- Nasik	Amritsar- Ferozepur	Meerut- Muzaffar- nagar	Rohtak- Karnal- Sangrur
March	5.21	8.90	3.80	9.09	9.54	19.44	8.01
April	4.75	9.01	3.84	7.92	18.10	20.54	11.38
May	4.84	12.08	3.24	6.57	19.08	17.11	7.42
June	5.20	14.28	5.29	8.19	12.41	12.55	5.74
July	7.25	16.50	7.21	8.89	14.32	12.55	6.77
August	5.98	27.83	6.06	7.73	12.41	11.41	5.70
September	3.70	12.63	5.74	5.76	12.41	13.68	6.33
October	2.58	2.49	4.34	7.74	11.45	15.98	10.30
November	4.54	31.60	3.72	9.12	13.36	14.84	8.25
December	7.02	14.61	8.54	9.32	8.60	15.98	5.76
January	6.78	4.72	5.67	10.43	8.60	12.55	6.54
February	6.31	2.61	3.96	9.54	7.65	13.68	6.13
<b>Total</b>	<b>64.25</b>	<b>157.26</b>	<b>61.41</b>	<b>100.30</b>	<b>147.93</b>	<b>180.31</b>	<b>88.33</b>

during that period. In rest of the months during the year, the farmers under-work.

It is thus noted that even during the busy periods a farm worker is engaged on his farm, only for 8 to 10 days per month in the regions of West Godavari, Hooghly-24 Parganas, Nasik-Ahmednagar and Rohtak-Karnal-Sangrur. In some regions, however, they over-work during that period and in some other they engage themselves fully. It has further been noted earlier that the extent of seasonal unemployment is least in Nasik-Ahmednagar (only 12 per cent). It must be made clear at this stage that the extent of seasonal unemployment arrived at is an estimate of the surplus labour days arising out of the lean period and period of inactivity in crop production on own farm. The number of days reported in one or two busiest periods is taken as the available labour days per month. Thus, the extent of seasonal unemployment depends upon the variation of labour input used over months in a year. Wherever the variation is less its extent is also less. That is why we see that in Nasik-Ahmednagar the extent of seasonal unemployment is very low although the labour input per worker per month even during the busiest period is hardly 10 days. That is to say unemployed days arising out of seasonal nature of operations in growing crop are few, but, the employment provided to farm workers on their own farm is nevertheless quite small.



### 6.5 Hired Out Labour Input Per Farm Worker

We, therefore, come to realize that the farmer may be utilizing part or whole of such surplus labour days, or, in other words, days not worked in his farms, by hiring himself out during the period in question. We shall, therefore, examine the number of days hired out by a farm family worker in the regions under study. It is to be mentioned here that the monthwise data for the number of labour days hired out are not available except for the regions of Nasik-Ahmednagar and West Godavari. So, we shall examine the total labour days hired out per worker in each region.

Table 6.4 : Hired Out Labour Days Per Worker

Sambalpur	West Godavari	Hooghly-24 Parganas	Ahmed-nagar-Nasik	Amritsar-Ferozepur	Meerut-Muzaffar-nagar
37	47.50	39	27	1	3

It is seen that the number of labour days hired out is highest in West Godavari; a farmer hired himself out for about 48 days in a year. A part of the surplus labour days arising out of seasonality is thus taken care of by a farmer by hiring himself out. Similarly, in Hooghly-24 Parganas also about 39 days are hired out by a farm worker. In Sambalpur about 37 days are hired out. The above mentioned

are the three regions where hired out labour days are high; these regions are mainly rice growing, and the operations involved in transplanting and harvesting require labour in abundance thereby necessitating the use of hiring outside labour on wages.

In Meerut-Muzaffarnagar and Amritsar-Ferozepur, the hired out labour days are very small. It is believed that the practice of working on wages on others farm is not common in these regions.

We shall now examine the number of labour days hired out per month per worker in the regions of Ahmednagar-Nasik and West Godavari for which this information is available.

**Table 6.5 : Labour Days Hired Out Per Month Per Worker**

Months	West Godavari	Ahmednagar-Nasik
June	3.69	1.80
July	3.64	1.80
August	2.63	2.00
September	2.17	1.70
October	2.77	1.90
November	4.83	1.90
December	5.28	2.90
January	4.67	2.70
February	4.81	2.70
March	4.45	3.00
April	4.31	2.90
May	4.24	1.80
<b>Total</b>	<b>47.31</b>	<b>26.80</b>

The number of labour days hired out over months in these two regions is fairly evenly distributed with only the month of December in West Godavari and the month of March in Nasik-Ahmednagar showing comparatively high labour input per worker hired out.

It will not be out of place at this stage to examine the hired out labour days per farm worker by size-groups.

Table 6.6 : Labour Days Hired Out Per Worker by Farm Size

Size Group (acres)	West Godavari	Sambal- pur	Ahmed- nagar- Nasik	Hooghly- 24 Parganas	Amritsar- Ferozepur
0.01- 1.25	111.61)	101.00)	38.62	60.37 )	6
1.26- 2.50	68.71)			48.22 )	
2.51- 3.75)	52.53)	50.00)	37.00 )		
3.76- 5.00)			30.11 )		
5.01- 7.50	47.48)	21.00)	34.34 )	1	
7.51-10.00	60.23)		11.82 )		
10.01-15.00	2.23	16.00	18.72	11.87	1
15.01-20.00	10.97)		12.88)		-
20.01-25.00 )	}	}	24.99)	}	-
25.01-30.00			18.23)		
30.01-40.00			-		-
40.01-50.00			8.55)		-
50.01 & Above)			1.60)		1
Average	47.50	37.00	26.80	39.16	1

On the whole it is seen that the labour input hired out per farm worker decreases with the increase in the farm size. It is observed from the Table that the farmers belonging to the size group below 5 acres hired out their family labour to the largest extent. On the contrary the farmers belonging to the size group of 30 acres and above hire out their family labour to the least extent. The small farmers have the obvious necessity to hire themselves out to earn their livelihood to an extent.

#### 6.6 Annual Employment of a Farm Worker

In view of the small amount of employment provided to farm workers on their own farm and as hired workers on other farms, we shall examine below the annual employment of a family farm worker in various activities.

Table 6.7 : Annual Employment of a Farm Worker in Days

Regions	Crop Produc- tion	Other Farm Work	Hired Out	Social and Family Affairs	Un- employed
West Godavari	116 (35.91)	56 (17.34)	47 (14.55)	22 (6.81)	82 (25.39)
Sambalpur	157 (43.85)	20 (5.59)	37 (10.34)	70 (19.55)	74 (20.67)
Ahmednagar- Nasik	101 (32.37)	80 (25.64)	27 (8.65)	45 (14.42)	59 (18.91)
Hooghly- 24 Parganas	63 (17.21)	13 (3.55)	39 (10.66)	135 (36.89)	116 (31.69)
Meerut- Muzaffarnagar	158 (43.17)	108 (29.50)	3 (0.82)	30 (8.20)	67 (18.31)
Amritsar- Ferozepur	150 (42.98)	106 (30.37)	1 (0.29)	22 (6.30)	70 (20.06)

(Figures in the parenthesis indicate percentage.)

It is seen that the labour days on crop production consume about 40 per cent of the total labour days available in all the regions except in Hooghly-24 Parganas. Crop production and other farm work together account for about 65 per cent of the total available labour days reported on different activities. Other farm work includes cattle grazing, fencing and repairing and maintenance of implements and draught and milch animals. These works account for about 20 to 25 per cent of the total labour days. Such a large amount of labour utilization in these works, when livestock enterprise is not at all an important enterprise in farm business as a whole shows that there is open surplus labour which is utilized in a leisurely manner in not so productive work as this.

Proportion of hired out labour days is large in West Godavari, Hooghly-24 Parganas and Sambalpur. Labour days spent on social and family affairs account for about 7 to 8 per cent in all the regions except in Hooghly-24 Parganas and Sambalpur. In both the regions the same is approximately 38 and 27 per cent respectively. Completely unemployed labour days account for about 20 to 25 per cent of the total labour days reported under various activities, except in Ahmednagar-Nasik and Meerut-Muzaffarnagar, where it is comparatively less.

On the whole, Hooghly-24 Parganas appears to be the most affected region in terms of productive employment, in

as much as roughly only 35 per cent of the labour days spent on various activities is reported under productive work. Whereas in Meerut-Muzaffarnagar and Amritsar-Ferozepur productive work accounts for about 72 per cent of the total labour days spent on various activities.

### 6.7 Definitions and Measures Adopted by Others

It will not be out of place if we at this stage review the work done on this aspect and the methods followed thereby by some economists. A few people have tried to examine the concept and to measure the extent of seasonal unemployment in its micro aspect, notable among them are N. A. Majumdar, J. P. Bhattacharjee and S. S. Gill. All these studies draw heavily upon Italian Economists, Rosenstein Rodan's approach on disguised unemployment and under-employment in agriculture.<sup>1</sup>

Majumdar, in his study on some problems of under-employment has dealt with the seasonality aspect in considerable detail.<sup>2</sup> According to him, taking into consideration the uncertain and varying nature of seasonality, it is not possible to obtain the number of days on which the cultivator is, on an average, unemployed during all the

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1 P.N. Rosenstein Rodan, "Disguised Unemployment in Agriculture," Monthly Bulletin of Agricultural Economics and Statistics, Vol. VI, July-August 1957, p. 4.

2 N.A. Majumdar, Some Problems of Underemployment : An Analytical Study of Under-employment in the Agricultural Sector. Bombay: Popular Book Depot, 1961.

twelve months, for an investigation carried out at a point of time. Hence, the state of seasonal unemployment has to be examined from what has been termed, "the usual features", without particular reference to any short period or point of time. It has to be assessed on the basis of the usual working season of the village with the help of the cultivators interviewed and crop calendar.

But, this would give a very rough and gross estimate of the magnitude of the seasonal unemployment for the region as a whole. Instead, monthly utilization of human labour in days for individual holding, if obtained, would furnish a more readymade and suitable data for finding out the extent of seasonal unemployment. Apart from this, Majumdar's concept of two components of seasonal unemployment, namely, unemployment during off season and dead season and the intermittant seasonal unemployment, is quite convincing. What he means by dead season, is, in fact, period of no work, for instance, the period immediately after rabi harvest. The farmer is not tied, he is free to go anywhere being in a state of complete unemployment. Whereas seasonal unemployment arising due to the periods of heavy and light work, makes a self-employed farmer tied to the land and is not free to move.

The other study, made by Bhattacharjee, on the "under-employment among farmers", gives a measure of seasonal

unemployment.<sup>1</sup> He has broken down the under-employment of the proportion of available labour supply into three component parts, namely, disguised removable unemployment, disguised fractional unemployment and seasonal unemployment. The seasonal part of this total under-employment is obtained by deducting from the annual figure the degree of under-employment in the month in which the proportion of employment is highest. In other words, the difference between the proportion of employment in the peak month and the average annual employment represents the degree of seasonal under-employment of available labour supply. The figures for the available labour supply has been arrived at by taking into account the working conditions and availability of each working members in each month in terms of male equivalent hours of work.

This step, no doubt, takes real situation into account, but, the magnitude of seasonal unemployment computed on the basis of the total available labour supply in author's sense, includes in its fold the idle manpower also, who are in state of complete unemployment due to want of work and not because of seasonality, and to that extent it over-rates the size of the problem.

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1 J. P. Bhattacharjee, "Under-employment among Indian Farmers," Artha Vijnana, Vol. 3, No. 3, 1961, p. 260.



Bhattacharjee's study based on data for Bihar, shows the degree of seasonal unemployment to the tune of 27 per cent of the available supply of family labour.<sup>1</sup>

Majumdar's study gives the magnitude of seasonal unemployment in terms of the duration of dead season in different months for the selected area under investigation.<sup>2</sup>

A study made by Agarwal referring to a small village, Birpur in Uttar Pradesh, on some aspects of rural employment, deals with the seasonality aspect also.<sup>3</sup> Fixing a norm of 56 hours per week the study brings out that all the economic groups overwork in May, near norm work in November and underwork to a considerable extent in July. The worst month of July hits the small and medium cultivators most, and in the month of May there appears a shortage of labour to the extent of 19 per cent.

Our finding for Meerut-Muzaffarnagar in Uttar Pradesh, based on farm management data is, in general, in agreement with the findings of Agarwal. In our study also we find that the months of April and May are the busiest months and that in the months of July and August, farmers are left with little work.

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1 J. P. Bhattacharjee, *ibid*, p. 263.

2 N. A. Majumdar, *op.cit.*, p. 64.

3 A. L. Agarwal, "Some Aspects of Rural Employment," *Indian Journal of Economics*, Vol. XLVIII, April 1968, pp. 365-86.

## 6.8 To Sum Up

The seasonal surplus arrived at in this chapter is, however, a rough estimation with the assumptions and limitation implicit in the measure. Holdingwise and size groupwise data on monthly utilization of farm labour in crop production are not available in the farm management reports, so it was not possible to measure the seasonal unemployment for each holding and subsequently for each size group. The picture will be slightly different if attempts are made to estimate the above from the labour availability and the utilization figures in each month for the individual holding. In this case it is an aggregative figure of the same for the individual region as a whole taking all the size groups together into account.

If the cropwise data for the monthly utilization of labour were available separately for irrigated and un-irrigated land, a detailed information about the magnitude of the seasonal unemployment for each crop could be computed. We do not know, if the surplus labour arising out of seasonality of operation in agriculture is utilized somewhere else, as this statement cannot be substantiated fully. But, at least this much can be indicated that this is the number of labour days which remains unutilized during certain period of the year and a part of it is hired out by the farmers for work on others farm on wages. However,

even a thorough structural change may not be able to eliminate completely the rigidity of the time pattern of primary production. Further, it is also seen in this chapter that in some regions labour spent on social and family work is considerably high indicating thereby that there is enough open surplus labour utilized in unproductive activities.

## CHAPTER VII

### UNDER-EMPLOYMENT OF FARM WORKERS

Seasonality of unemployment gives an idea of the periods when agricultural workers have either no work or have very little work. But, there is another aspect of unemployment, that is, disguised unemployment or under-employment, which states that although all the workers appear to be engaged fully in agricultural operations during the normal busy season, some or all of them may be partially employed. In other words, the agricultural operations which could be performed by a few workers is being shared by many workers in the family thereby making almost everyone under-employed and a few dispensable.

There are, thus, two aspects of unemployment, seasonal unemployment and disguised unemployment. Having discussed seasonality of unemployment in the last chapter, we now attempt to discuss the aspect of under-employment or disguised unemployment. But, before entering into the actual situation and examining the data to see if there is any evidence of disguised unemployment in our study, we shall deal with its concept and its magnitude in its macro aspect.

## 7.1 Background

The major employment problem in an under-developed agricultural country like ours is not that of so many persons out of job, but that of under-employment of labour force engaged in production. This form of unemployment is fundamentally different and peculiar in itself and that is the reason why the study of the causes, nature and extent of this peculiar form of unemployment should be undertaken specifically in the context of an under-developed economy. An under-developed economy is characterized by low saving, lack of capital, low output and a vast amount of unutilized and under-utilized manpower. In rural areas, particularly in agricultural sector of such an economy, the working population is believed to be largely under-employed. Most of them are engaged in agricultural activities and in the absence of alternative avenues of employment, the available opportunities are believed to be shared by more persons than could normally be absorbed at an optimal level of employment. Dantwala, in his notes on Some Aspects of Rural Employment says, "it is contended that due to the peculiar nature of under-developed economies, the unemployment of labour force does not express itself as so many people out of job, but, lack of enough continuous work for those attached to some jobs and are therefore not in the labour market seeking employment."<sup>1</sup>

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<sup>1</sup> M.L. Dantwala, "Some Aspects of Rural Employment," Indian Journal of Agricultural Economics, Vol. VIII, No.2, August 1953, pp. 19-32.

The concept of disguised unemployment or under-employment has been a recurring one in the literature on under-developed countries. The belief is that the agricultural economy of an under-developed country is largely characterized by not so much open unemployment as by disguised unemployment. In general, disguised unemployment or under-employment is conceived of as that part of the surplus labour force which can be removed from one sector of the economy to the other without adversely affecting the output of the sector from where it is removed, all other things remaining the same. In simple term it means nominal employment with very little or no contribution to productivity. It is believed that increasing pressure of population on land with low level of capital causes diminishing return to set in and further addition of labour goes on decreasing the marginal productivity of labour upto the point of zero, even negative and thus those labour with marginal productivity zero or negative seem to be working, but do not thereby increase the total output. Therefore, such employment of labour is regarded as being no better than no employment at all.

The number of characteristics attributed to it are as follows:

- (1) It is a concept which applies more easily to self-employed labour.

- (2) It indicates a state of economy where marginal productivity of a part of labour is zero or near zero.
- (3) Consequently it indicates a state of economy from which a part of labour force can be withdrawn without reduction of output, under ceteris paribus condition.

On this particular aspect of the problem there are two schools of thought. One school of thought comprising J. Viner, G. Haberler, Theodore Schultz, Yang Sam Cho, N.V. Sovani and others says that the marginal productivity of labour employed in agriculture cannot be zero and to that extent there is no surplus labour. The other school consisting of Nurkse, Arther Lewis, Buck, Raj and many others believes that the marginal productivity of labour engaged in agriculture does reach zero and that there exists a considerable amount of removable surplus. There are some other economists who do not enter into the controversy of zero marginal product of labour and define under-employment as the surplus labour arising out of excess of total available labour supply over labour used in production.

The concept of zero marginal productivity of labour and the consequent disguised unemployment owe its origin to

Joan Robinson.<sup>1</sup> We shall, however, not go into the various theories and concepts put forth on this particular aspect, neither we shall enter into the controversy of the existence of zero marginal productivity of labour.

## 7.2 Micro Aspect of the Problem

Having discussed the phenomenon of disguised unemployment in general, we now come back to our study and examine the phenomenon in its context. We are here dealing with the data for farms in different farm size groups. For this micro study we consider under-employment as that part of the labour used in crop production in each farm size group, which do not bring about any increase in the production by their application. In other words, we shall examine if the per acre labour input with respect to output is more on the smaller farms as compared to the bigger ones. If so, then there is some evidence of under-employment on smaller farms. We shall be using the terms under-employment and disguised unemployment as synonymous terms.

The concept of under-employment applies more easily to self-employed labour. Hence, we shall discuss this phenomenon with respect to farm family labour only. The data to be examined for this are the labour inputs per acre,

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<sup>1</sup> Joan Robinson, Essay in the Theory of Employment (Oxford: Basil Blackwell, 1947) pp. 61-2.



by farm size group in different regions under study. Since the labour requirement of irrigated crops is much higher than that of unirrigated crops and since the percentage of irrigated area to the total area is not the same in different farm size groups, the irrigated area is converted into an equivalent unirrigated area and the labour input per acre is expressed in terms of equivalent unirrigated area.

### 7.3 Distribution of Labour Inputs Over Farm Size Group

It has been noted from Tables 5.6 and 5.7 that there are some regions, namely, West Godavari, Sambalpur, Amritsar-Ferozepur and Akola-Amravati where the total labour input per acre does not show any marked decrease with the increase in farm size. The decrease in per acre family labour input with the farm size is made up by the increase in the hired labour input per acre. Therefore, although in the smaller farms number of farm family labour days is higher, it cannot be said that the labour input on smaller farms is comparatively higher, because the total labour input per acre remains the same by farm size. On bigger holding the hired labour substitutes for the family labour. In these regions, therefore, the data on labour input do not throw any light on the question of under-employment or disguised unemployment.

There are some other regions in our study which show

a different picture. We shall again examine the Table 5.7 here and shall see if there exists any evidence of under-employment in these regions.

It is noted from the Table 5.7 and the graph drawn that the total labour days per acre generally decrease with the increase in farm size in Salem-Coimbatore, Hooghly-24 Parganas, Nasik-Ahmednagar and Rohtak-Karnal-Sangrur. In each of these regions, the family labour input per acre decreases with the increase in farm size and hired labour days per acre remains more or less the same or registers smaller increase.

It appears, therefore, that the smaller farms use higher labour inputs per acre as compared with bigger farms. Family labour input is much higher on smaller farms as compared to the bigger farms and the bigger farms do not make up the smaller family labour input by using more of hired labour input.

Taking individual regions into consideration it is seen that in Salem-Coimbatore farm family labour input goes down regularly except in the size group 20.00 to 25.00 acres. The first two size groups (0.01 to 2.50 and 2.51 to 5.00 acres) show considerably higher farm labour inputs per acre. Hired labour input, on the other hand, remains more or less constant in all size groups except in the first group, where it is comparatively high.

In Hooghly-24 Parganas the family labour input registers a very small decrease upto the size group 7.51 to 10.00 acres. Hired labour input per acre too remains more or less the same. In the last two size groups, however, family labour input per acre drops very much and is not fully made up by hired labour input. Therefore, there appears to be higher labour input per acre on smaller farms.

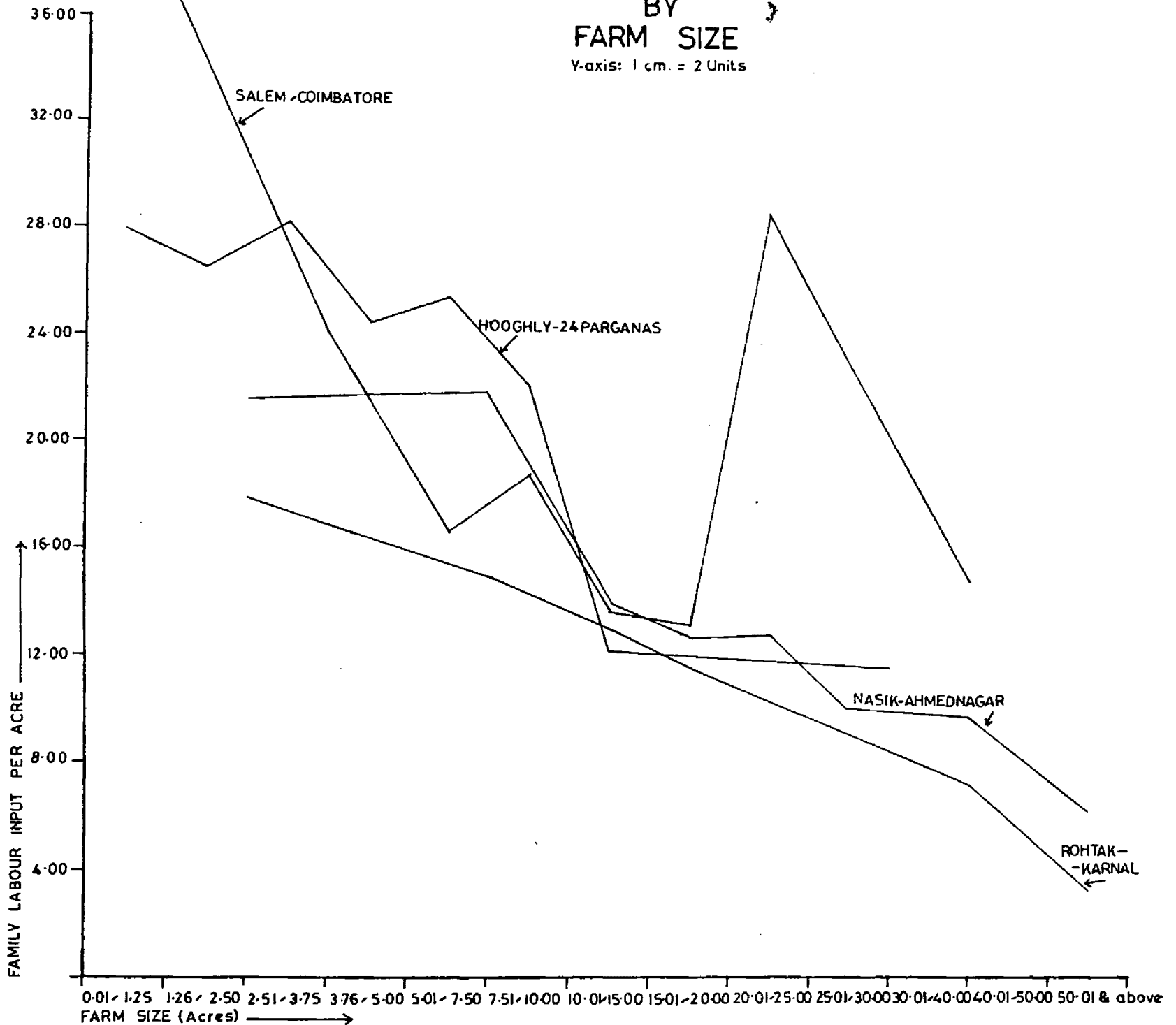
In Ahmednagar-Nasik the family labour input regularly decreases by farm size, from 21.58 to 6.18 days per acre. Whereas hired labour input per acre remains more or less the same by farm size. The first two groups show considerably higher family labour input per acre. In this region also, therefore, the small farmer uses high farm labour input per acre.

In Rohtak-Karnal-Sangrur also there seems to be a regular decrease in per acre family labour input with the increase in farm size, from 17.85 days to 3.19 days per acre. Hired labour input per acre increases by farm size but not to the extent to compensate fully for the smaller number of family labour days per acre. First few size groups show considerably higher farm labour input.

We have thus seen that in the abovementioned regions the farm labour inputs decrease with the increase in farm size and the bigger farmers do not use comparably higher

# FAMILY LABOUR INPUT PER ACRE BY FARM SIZE

Y-axis: 1 cm. = 2 Units



amount of casual labour, to compensate for the smaller input of farm family labour. In other words, labour input per acre on smaller holdings is considerably higher than that on the bigger holdings.

#### 7.4 Output Per Acre in Different Farm Size Groups

But, of course, this fact, higher labour input per acre, alone is not evidence of under-employment in smaller farms. For this purpose, we must relate employment to output. Thus, provided all other factors are alike, if a cultivator on bigger holding gets an output per acre not less than that on a smaller holding, this may be taken as an evidence of under-employment or disguised unemployment on smaller farms.

When we say other factors are alike, we examine the technique of cultivation and other material input used in different farm size. It is found that the technique of cultivation and the cropping pattern is same in all the farms in each of the regions. The amount of fertilizer used and bullock labour days used vary very slightly and in any case bigger holdings show comparatively smaller amount spent on manures and fertilizer and in smaller input of bullock labour. Proportion of irrigated area has already been taken into account. Further, we are examining labour input on the basis of total cropped area, so that the intensity of cropping is also taken into consideration.

We shall now examine the output data to see whether output per acre of equivalent unirrigated area remains almost constant throughout with the increase in farm size.

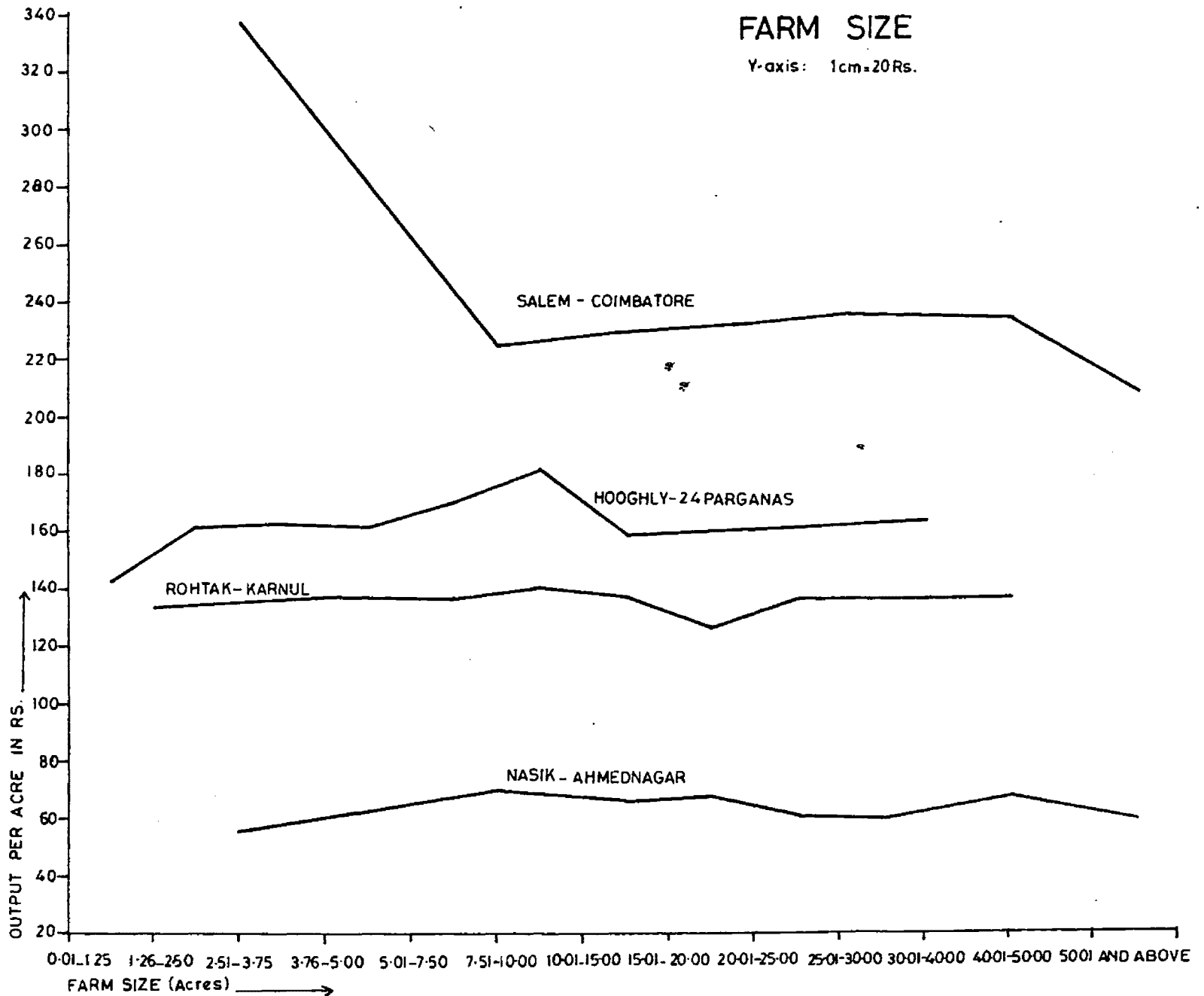
**Table 7.1 : Output Per Acre of Equivalent Unirrigated Area in Rupees**

Size Group (acres)	Salem-Coimbatore	Hooghly-24 Parganas	Rohtak-Karnal-Sangrur	Nasik-Ahmednagar
0.01 - 1.25)	133.15	142.35	337.25	57.26
1.26 - 2.50)		161.29		
2.51 - 3.75)	136.19	162.59	225.34	68.96
3.76 - 5.00)		160.95		
5.01 - 7.50	136.66	169.96	230.21	66.18
7.51 - 10.00	139.93	181.17		
10.01 - 15.00	137.12	159.36	232.04	66.69
15.01 - 20.00	126.26	164.23		
20.01 - 25.00	137.16		236.34	60.96
25.01 - 30.00)	137.96	235.80		
30.01 - 40.00)			229.27	59.16
40.01 - 50.00)	246.17	63.23		
50.01 & above)				
Average	134.54	163.35	246.17	63.23

We see that in all the size groups in all the regions there is not much of variation of output per acre, except for a few.

## OUTPUT PER ACRE BY FARM SIZE

Y-axis: 1cm=20Rs.



In Salem-Coimbatore the output per acre in the first five groups stays almost constant with a slight rise in the fourth group, but, again in the sixth group, it goes down a little.

In Hooghly-24 Parganas the output per acre increases upto the sixth size group, but, then falls in the last but one size group.

In Karnal-Rohtak-Sangrur, the first size group shows very high output per acre. In the other groups the output per acre is almost constant.

In Ahmednagar-Nasik also the output per acre remains more or less the same except in the last size group. The smallest size group shows the lowest output per acre. In the higher size groups, the output per acre is more or less constant.

#### 7.5 Incidence of Under-employment

So, on the whole it is noted that as the farm size increases, the labour input per acre decreases, while output per acre remains more or less constant. In other words, we can say that to produce the same amount of output per unit of land, the smaller farms require more labour input as compared to that required by the bigger farms, all other factors remaining the same. On smaller farms, therefore, the employment of farm family labour is believed to be pushed



to such a point where their application does not result in an increased output. There is, therefore, evidence of disguised unemployment or under-employment among the family farm workers engaged in crop production on smaller holdings.

#### 7.6 Return to Input of Family Labour

Return to input of family labour is the remuneration for the utilization of the labour of the farmer and his family workers and it gives an idea as to how much a farm family worker earns as return for its labour on the farm. This is obtained by dividing the net output by the total number of labour days put in by the farmer and his family worker in each farm size group. Net output is obtained after deducting from the gross output all the expenses in cash and kind including payment to hired labour.

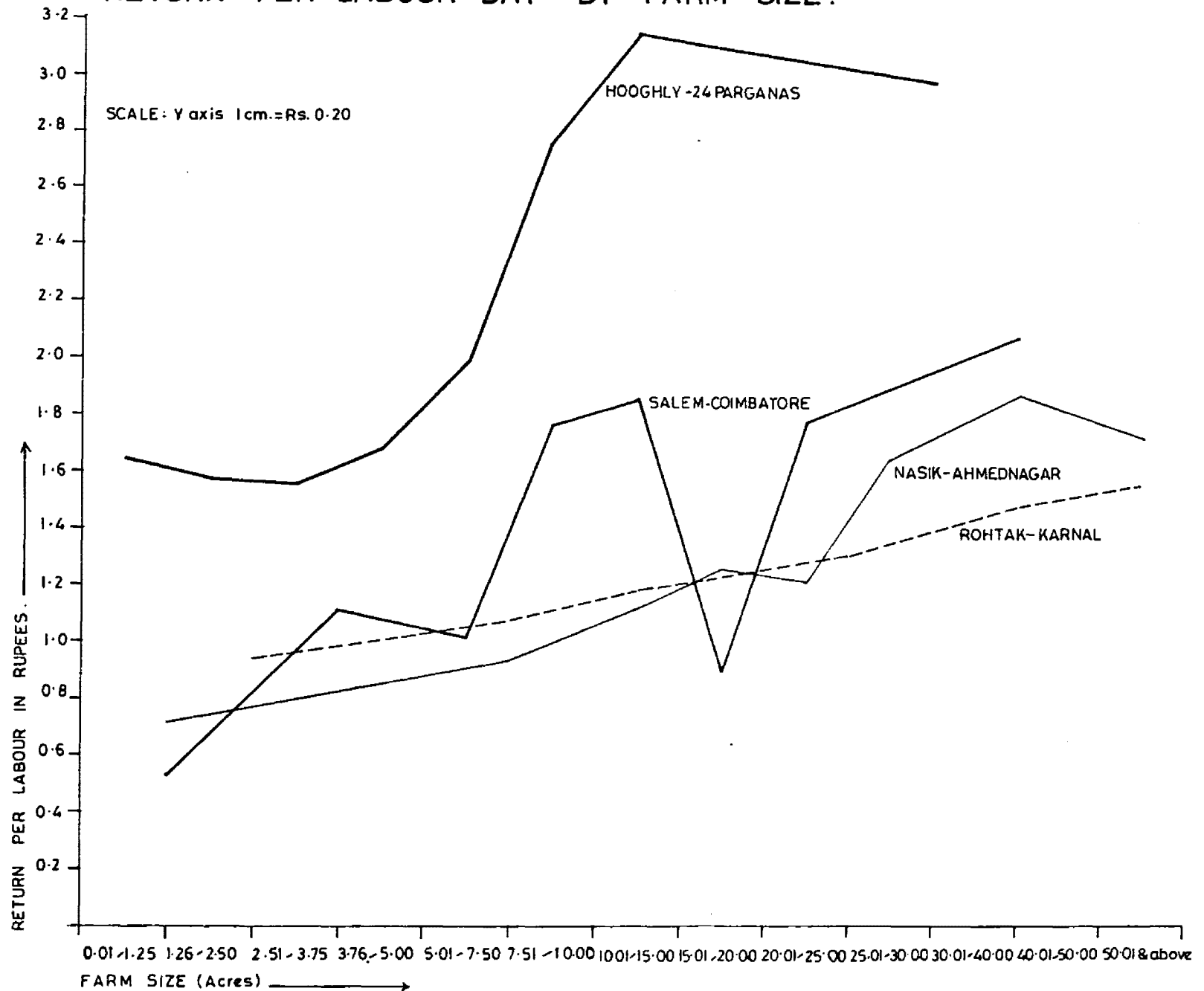
Table 7.2 gives the return per labour day in different farm size groups in the regions under discussion. It is noted that the return per labour day is lowest in Salem-Coimbatore and highest in Hooghly-24 Parganas, being Rs.1.07 and Rs. 1.81 respectively. It is further observed from the Graph as well that the return per labour input generally increases with the increase in farm size in all the regions. This indicates that the farm workers earn more per unit of labour (8 hours) on bigger farms as compared to that on smaller farms.

**Table 7.2 : Return Per Labour Day of Farm Worker (in Rupees)**

Size Group (acres)	Salem- Coimbatore	Hooghly- 24 Parganas	Rohtak- Karnal- Sangrur	Nasik- Ahmednagar
0.01 - 1.25	0.53	1.64	0.94	0.72
1.26 - 2.50		1.57		
2.51 - 3.75	1.11	1.55	0.94	0.72
3.76 - 5.00		1.68		
5.01 - 7.50	1.02	1.98	1.08	0.94
7.51 - 10.00	1.76	2.76		
10.01 - 15.00	1.85	3.15	1.19	1.12
15.01 - 20.00	0.90	2.98	1.23	1.24
20.01 - 25.00	1.78		1.31	1.21
25.01 - 30.00	2.08	2.98	1.48	1.65
30.01 - 40.00				1.88
40.01 - 50.00	2.08	2.98	1.48	1.73
50.01 & above				1.73
Average	1.07	1.81	1.16	1.28

Taking individual region for further illustration it is seen that in Salem-Coimbatore, return per labour input, in general, increases by the farm size, except in the farm size groups 5.01 to 7.50 acres and 15.01 to 20.00 acres. A farm worker earns as low as Rs. 0.53 per unit of

## RETURN PER LABOUR DAY BY FARM SIZE.



labour on the smallest farm and as high as Rs. 2.08 per unit of labour on the biggest farm.

In Hooghly-24 Parganas also the return per unit of farm labour increases with the increase in farm size. On smaller farms, between 0.01 acres and 5.00 acres the return per unit of labour varies between Rs. 1.55 and Rs. 1.70, whereas on farms bigger than that it goes on increasing upto about Rs. 3.00 per unit.

Rohtak-Karnal-Sangrur show a regular increase in income per labour unit by the farm size. A farm worker earns about Re. 1.00 per labour day on the smallest holding as against about Rs. 1.50 on the largest holding.

In Ahmednagar-Nasik also there is almost a regular increase in the return per labour day with the increase in farm size, indicating that a farm worker earns more per labour unit on bigger farms than on smaller farms.

On the whole, it is noted that a farm worker in smaller farms earns less for his labour per day in crop production than that earned by a farm worker in bigger farm. In other words, the farmers on larger farms get more remuneration as return for his labour on the farm. This may also be taken as evidence of under-employment in small farms, in the sense that the high labour input used on small farms does not lead to significant increase in production on those farms.

## 7.7 Review of Other Studies

Some studies have been made to measure the extent of disguised unemployment or under-employment from the farm management data, based on Italian Economist, Rosenstein Rodan's approach.<sup>1</sup> S. S. Gill, attempted such an estimate of under-employment of permanent farm workers.<sup>2</sup> The data used were from the Farm Management Report for Punjab (Amritsar-Ferozepur), pertaining to the year 1954-55. For the estimation of under-employment 'standard labour-input' was computed and the result showed that about 28 per cent of the total available labour days is surplus and removable.

This 'standard labour-input' arrived at, is very rough and arbitrary and that in itself may have some disguised unemployment. Apart from that number of labour days available was obtained by multiplying the number of farm workers in each size group by 315 days. This would, therefore, include in its fold not only the workers engaged in crop production and under-employed, but, also the workers who were openly unemployed and not engaged in crop

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1 P. N. Rosenstein Rodan, "Disguised Unemployment and Under-employment in Agriculture," Monthly Bulletin of Agricultural Economics and Statistics, Vol. VI, July-August 1957, p. 7.

2 S. S. Gill, "Unemployment and Under-employment of Permanent Farm Workers," Artha Vijnana, Vol. 2, No. 4, December 1960, pp. 249-62.

production. To that extent, therefore, the study seems to over-estimate the extent of under-employment.

Another such attempt was made by Bhattacharjee with the farm management data collected from farmers in North and South Plains regions of Bihar.<sup>1</sup> The disguised removable under-employment worked out to be 15 and 23 per cent in the two zones. This work appears to be more nearer to the real situation in as much as the total available labour supply was estimated on the basis of total number of labour hours of work available per month from the members working on the farm.

#### To Sum Up

Among the regions included in the study all do not show evidence of under-employment or disguised unemployment, only a few of them do so, they are: Salem-Coimbatore (Madras), Hooghly-24 Parganas (West Bengal), Rohtak-Karnal-Sangrur (Punjab), and Ahmednagar-Nasik (Maharashtra). In these regions data on labour input with respect to output throw some light on the incidence of under-employment on small farms. Lower return per labour input on smaller farms

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<sup>1</sup> J. P. Bhattacharjee, "Under-employment Among Indian Farmers: An Analysis of Its Nature and Extent Based on Data for Bihar," Artha Vijnana, Vol. 3, No. 3, September 1961, pp. 246-78.

also seems to be an evidence of under-employment on these farms, in the sense that high labour input on smaller farms does not lead to increased production.

Some gross estimates of the extent of under-employment have been made, but they appear to be over-rating its extent. According to National Sample Survey, if we consider a person as under-employed only when he is working less than the normal hours as well as available and willing to take up additional work, the extent of under-employment appears to be very less. Most of the studies do not consider this aspect of availability and willingness to work in their attempt to measure the extent of under-employment.

It can thus be concluded that there are some regions where the data on labour input show some evidence of disguised unemployment or under-employment. But, all the same there are some regions where smaller farms use as much labour per acre as the bigger farms and to that extent the data on labour input per acre do not show evidence of disguised unemployment in those regions. It is generally believed that the small farmers are affected too much by disguised unemployment and that it is chronic in agriculture. But, our analysis based on farm size groupwise labour input data does not seem to contribute to such belief. It indicates that there is evidence of under-employment of

farm worker on smaller farms in some regions, but it is not chronic and cannot be visualized as idle surplus labour force. During the peak season, the workload is so much that even the smallest farm has to employ some hired labour. Therefore, under-employment in terms of surplus labour available for transfer from one sector of the economy to the other, appears difficult to be visualized.



## CHAPTER VIII

### SUMMARY AND CONCLUSION

In the foregoing chapters we discussed the nature and extent of labour inputs in agriculture, in general, and in crop production in particular, and also the two aspects of unemployment; namely, seasonal and disguised unemployment of the labours, engaged in crop production. We are now in a position to summarise briefly the whole discussion on these aspects as follows.

1. There has been a regular increase in the proportion of the working force engaged in agriculture since 1900 and in 1961 the ratio stood at 69.51 per cent as compared to 62.50 per cent in 1901. The ratio of agricultural workers to total cropped area, when examined shows that it varies widely from State to State. The extent of variation is from 0.13 per acre in Rajasthan to 0.43 per acre in Jammu and Kashmir. The States showing low density of agricultural workers per cropped area are Gujarat, Maharashtra, Madhya Pradesh, Mysore, Punjab and Rajasthan. Assam and Jammu and Kashmir are the only regions where density is very high. In Bihar, Madras, Uttar Pradesh, West Bengal and Himachal Pradesh also the density is comparatively high.

2. Agricultural workers consist of cultivators and

agricultural labour. Proportion of agricultural labour to agricultural workers also shows a wide variation from State to State. The proportion is very small in Jammu and Kashmir (2.06 per cent) and Himachal Pradesh (2.12 per cent). If we exclude these two hilly areas which incidentally have special soil climatic features, the States showing the lowest and highest proportion of agricultural labour turn out to be Rajasthan and Kerala, where it is 5.19 per cent and 36 per cent respectively. Broadly examined, Kerala, Andhra Pradesh, Maharashtra, Bihar, Madras, West Bengal and Orissa are the States where there is a high incidence of agricultural labour in total agricultural worker, while Assam, Rajasthan, Uttar Pradesh and Punjab are the regions where its incidence is small.

3. Considering the two factors together, namely, density of agricultural workers per cropped area and the incidence of agricultural labour among agricultural workers it is seen that, except in the States of Kerala, Andhra Pradesh, Gujarat, Punjab, Madhya Pradesh and Mysore the density of agricultural workers per cropped area is not directly related to the proportion of agricultural labourers. Hence, the general impression that wherever the density of agricultural worker per acre of cultivated area is high the proportion of agricultural labour is also high, does not seem to hold good.

4. An examination of the wages paid to the hired labour and the proportion that it forms of the gross produce, obtained from the All India Rural Credit Survey brings out that the proportion of gross produce paid as wages to hired labour compares favourably with the proportion of agricultural labour obtained from the earlier estimate. A comparison of each of these proportions as the proportion of agricultural labour to total agricultural worker as appearing in the census, shows that excepting in a few regions, the proportion of gross output given as wages is high in the regions where proportion of agricultural labour is also high and vice versa.

5. An analysis of more direct source of data on the utilization of labour input in crop production indicates that in the regions of Hooghly-24 Parganas, West Godavari, Monghyr, Salem and Sambalpur, labour input per acre in crop production is considerably high. Incidentally, in all these regions, paddy is reported to be one of the major crops. The regions where labour input per acre is small are Ahmednagar-Nasik, Coimbatore, Akola-Amravati, Amritsar-Ferozepur and Rohtak-Karnal-Sangrur. This is about the total labour input per acre of cropped area used in crop production. Proportion of hired labour input in it shows a different picture. West Godavari appears to be the region using exceptionally high amount of hired labour input. In contrast, in the districts of Rohtak-

Karnal-Sangrur, the proportion of hired labour input is very low. Apart from West Godavari district, there are a few more districts using considerable amount of hired labour input. These districts are Sambalpur, Hooghly-24 Parganas and Akola-Amravati. Incidentally, all these districts showing higher proportion of hired labour input, except Akola-Amravati, are rice growing. Regions showing smaller proportion of hired labour are Rohtak-Karnal-Sangrur, Amritsar-Ferozepur, Meerut-Muzaffarnagar, Ahmednagar-Nasik and Monghyr.

6. Nature of crops grown is one of the factors affecting the use of labour input in crop production. It is observed that among irrigated crops gram is least labour consuming in all the regions, while, potato is the most labour intensive crop, grown only in Hooghly and 24 Parganas out of all the districts under study. Proportion of hired labour use is found to be high in the case of paddy, jute, potato and tobacco. Regions showing high proportion of hired labour in crop production are found to grow some or all of these crops. Among unirrigated crops, jowar, bajra and pulses and wheat to a certain extent use more labour per acre. It is found that, on an average, the labour requirement for irrigated crops is three to four times that for the unirrigated crops. An examination of cropwise utilization of labour days per acre thus gives an idea of the extent to which the hired labour is used for different

crops both under irrigated and unirrigated conditions. This, in turn, together with the area under irrigated and unirrigated crops, explains partly the regional variation in labour input per acre, both hired and total.

7. Among other factors, farm size is believed to be one of the important factors influencing the utilization of hired labour. It is found that in the districts of West Godavari, Sambalpur, Amritsar-Ferozepur and Hooghly-24 Parganas, the total number of labour days per acre do not change much by farm size. Use of hired labour, however, is found to be more in the bigger farms than in the smaller ones. There is another set of districts in which labour input per acre shows a decrease with the increase in the farm size. The districts are Ahmednagar-Nasik, Salem-Coimbatore, Akola-Amravati, Rohtak-Karnal-Sangrur and Monghyr. Proportion of hired labour input, in these districts shows a small but regular increase with the increase in farm size. General notion of inverse relationship between farm size and labour input per acre is not fully supported by this analysis.

8. Availability of farm family worker is a factor which influences the extent of self-employment in a farm. It is noticed that in all the districts number of farm workers per farm steadily increases with the increase in farm size. But, the increase is not proportionate to the

increase in farm size. Labour input in terms of days of work per farm worker gives an idea of the extent to which the farm workers employ themselves in the farm. Size groupwise analysis shows that in most of the districts number of labour days per farm worker neither regularly increases nor decreases with the increase in farm size. In some cases, in fact, the labour input per farm worker is less on bigger farms as compared to that on smaller farms. However, on the basis of the variation in labour input per farm worker, howsoever small or large it is, the districts under study are classified into two groups. The districts falling in the first group are West Godavari, Akola-Amravati, Salem-Coimbatore and Rohtak-Karnal-Sangrur, where bigger farms by and large show smaller labour input per worker. This indicates, therefore, that in these regions farm workers on bigger farms do not put in as much of labour as put in by those in the smaller farms. In other words, the extent of self-employment is less on the bigger farms in these regions. The other group comprising the districts of Ahmednagar-Nasik, Amritsar-Ferozepur, Meerut-Muzaffarnagar, Hooghly-24 Parganas and Sambalpur, shows greater variation in labour days put in by a farm worker over size-groups, indicating progressively larger number of labour days per farm worker on bigger farms. This indicates that in these regions the farmers on the bigger holdings engage themselves intensively in the active physical work of crop production.

9. An analysis of monthly utilization of farm labour input shows that the variation in the farm labour input used is maximum in Sambalpur and minimum in Ahmednagar-Nasik. The other regions show moderate variation in the employment of farm labour from month to month. There is, thus, seasonal unemployment in different regions and it varies from one region to another depending upon the cropping pattern. There are some regions where it appears to be very prominent while there are some other regions where the employment is fairly uniformly distributed throughout the year making the extent of seasonal unemployment less. A measure of seasonal unemployment shows that it is quite high in Sambalpur, Hooghly-24 Parganas and West Godavari, and very low in Ahmednagar-Nasik. The cropping pattern in these regions shows that paddy is the major crop grown in all those regions depicting high seasonal surplus labour. In other regions the cropping pattern is such that it keeps the labour busy fairly evenly throughout the year over months. The seasonal surplus is, therefore, comparatively less.

10. An analysis of the other aspects of unemployment that is disguised unemployment or under-employment, which states that, although all the workers appear to be engaged fully in agricultural operations during the normal busy season, some or all of them may be partially employed, follows next in the discussion. It is examined, if the

per acre labour input with respect to output is more on the smaller farms as compared to the bigger ones. The finding indicates that the labour input per acre does not decrease with the increase in farm size in all the regions under study. In other words, in some regions, smaller farms use as much labour input per acre as the bigger farms, with output per acre remaining more or less the same. The regions or the districts are West Godavari, Sambalpur, Amritsar-Ferozepur and Akola-Amravati; in these regions, therefore, data on labour input do not throw any light on the question of under-employment. There are, however, some regions, namely, Salem-Coimbatore, Hooghly-24 Parganas, Nasik-Ahmednagar and Rohtak-Karnal-Sangrur, where the labour input per acre decreases, while output per acre remains more or less constant. It can be said that to produce the same amount of output per unit of land the smaller farmer in these regions require more labour input than that required by the bigger farms. On smaller farms, therefore, the employment of farm family labour is believed to be pushed to such a point where their application does not result into an increased output. There is, therefore, evidence of disguised unemployment or under-employment among family farm workers engaged in crop production on smaller holdings in these regions.

Return per labour day of farm workers points out



that a farm worker in smaller farms earns less for his labour per day in crop production than that earned by a farm worker in a bigger farm. This can also be taken as evidence of under-employment in small farms, in the sense that high labour input used on small farms does not lead to significant increase in production on those farms.

11. Labour input in agriculture and its nature and extent gives an idea of the employment provided by the agriculture to the population engaged in it. Conditions in this respect are found to vary from region to region. There are some regions where although the density of agricultural worker per cropped area is very low, the proportion of agricultural labour is very high. This is possibly because of the land being concentrated to few big owners.

Proportion of hired labour use in crop production is found to vary widely from region to region. This happens largely because of the type of crops grown and the availability of farm family workers. In quite a few regions the farm workers in bigger farms are found to put in considerably less number of labour days in crop production. The extent of self-employment is thus less in these regions. This is probably because the farm workers on bigger farms mostly do supervisory work and do not lend themselves to the actual physical work in crop production.

Self-employment is believed to be the predominant feature of Indian agriculture, but, it is seen that even the smallest farm uses hired labour to a certain extent. Nature of crops grown, the simultaneous arrival of some operations in crops and the urgency of completing it, compel even a small farmer to hire in some labour. Proportion of hired labour use, however, is higher on bigger holdings partly because the number of farm worker per acre of cultivated area is less in these farms.

It is believed that the agricultural sector of our country suffers from large scale disguised unemployment and that a part of the labour force can be removed from this sector, without adversely affecting the output. Farmers, engaged in cultivation of small pieces of land are supposed to be the worst sufferer of this problem of under-employment. It is said that on some farms the employment of family labour is pushed to such a point where their application does not result into increased output. Our analysis of the data on labour input per acre, however, does not lend support to this general belief fully. There is evidence of under-employment on some farms but it is neither acute nor widespread. In many of the regions, either the small farms use as much labour as the big farms, for a given output, or the higher labour input in small farms is associated with higher output in them. In fact,

unemployment due to seasonality appears to be more. During the peak season, the workload is so much that even the smallest farm has to employ some hired labour. Therefore, under-employment in terms of surplus labour available for transfer from one sector of the economy to the other, appears difficult to be visualized.

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