

Research Paper

Labour Utilization Structure and Pattern in Crop Activities in Sub Humid and Humid Southern Plain Region of Rajasthan

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Received: 21-04-2022

Revised: 24-07-2022

Accepted: 29-08-2022

ABSTRACT

The present investigation was undertaken with a view to estimate the structure and pattern of labour utilization in different crop activities in sub-humid and humid southern plain region of Rajasthan. The study was conducted based on primary as well as secondary data. The primary data were collected from 200 households of 10 villages during 2018-2019 and secondary data was used from census 2011. To study the labour absorption in different crop activities in principal crops the model suggested by Singh, 1996 was used. In sub-humid and humid southern plain region (Region-IV), the results showed that the share of total family labour was found maximum on marginal farms i.e. 95.56 per cent and minimum was found on large farms i.e. 59.69 per cent while the share of total hired labour was found maximum on large farms i.e. 40.31 per cent and minimum was on marginal farms i.e. 4.44 per cent in all crops and crop activities. In gender wise structure, the share of total male and female labour (both family and hired) absorption was 43.46 per cent and 56.54 per cent, 38.76 per cent and 61.24 per cent, 39.22 per cent and 60.78 per cent, 29.82 per cent and 70.18 per cent, 24.12 per cent and 75.88 per cent on marginal, small, semi-medium, medium and large farms, respectively in all crop activities. In this region, the participation of female labour was found more than the male labour on all farm size.

HIGHLIGHTS

- In gender wise structure, share of total male and female labour (both family and hired) absorption was more for female labour in all farm size.

Keywords: Labour absorption, agro-climatic regions, labour structure, pattern, crop activities

The term labour absorption means the total labour that is utilized or used in the production process. Labour plays important economic and social roles in any economy. It is one of the key factors of production as well as a source of livelihood to billions of people worldwide (Schneider, 2005). In India, as per the census, 2011, out of 481.7 million total workers, 118.7 million were cultivators and another 144.3 million were agricultural labourers. The utilization of human labour was seen in different crop activities as well as livestock activities. The Labour use varies extensively from crop to crop and region to region. The main reasons are the individual characteristics of each crop, inter-regions differences in farming

systems and the levels of development. Labour use in agriculture is contingent upon modernization of agriculture, labour promoting and displacing technologies, natural endowments, wage rates and the locally prevalent farming systems. Labour use depends upon both level of technologies and market characteristics. Labour absorption per hectare in terms of total, family and hired, gender and size groups varies prominently across crops and regions. Agriculture provides employment not only to the

How to cite this article: Rajput, A.S., Sharma, V., Yadav, A. and Sharma, L. (2022). Labour Utilization Structure and Pattern in Crop Activities in Sub Humid and Humid Southern Plain Region of Rajasthan. *Econ. Aff.*, 67(04): 479-489.

Source of Support: None; **Conflict of Interest:** None



adult males of a households but also to women. Women work extensively in production of major grains and millets, land preparation, seed selection and seedling production, sowing, applying manure, weeding, transplanting, threshing, winnowing and harvesting. Agriculture plays a significant role in overall socio-economic development. Therefore, fostering rapid, sustained and broad-based growth in agriculture remains key priority for the country. With the decreasing labour force in agriculture, increasing yield or productivity is the key to growth, which has to be accelerated. Shortage of labour and finding solutions thereof should become a major focus. Improved seed varieties, widespread extension services and farm mechanization remain three critical areas of intervention and focus. However, the issues related to agricultural labour differ across regions and across production activities or crops. In this context, this paper dissects the structure and pattern of labour use across major crops and in different crop activities in sub-humid and humid southern plain region of Rajasthan.

MATERIALS AND METHODS

The sub-humid and humid southern plain region of Rajasthan comprises six districts namely Bhilwara, Rajsamand, Udaipur, Chittorgarh, Banswara and Dungarpur. Out of these, two districts *viz.*, Bhilwara and Udaipur were selected randomly on the basis of gross cropped area for the present study. Further, two tehsils shahpura and vallabh nagar were selected from Bhilwara and Udaipur district, respectively. One village from each selected tehsil was selected randomly namely Dhikola and Badgaon, respectively. Twenty farmers were selected randomly according to five standard size classes i.e. marginal (<1 ha), small (1-2 ha), semi-medium (2-4 ha), medium (4-6 ha) and large (>6 ha) from each village from the total sample size of 200 farmers. The study was based on both primary and secondary data for the analysis. Primary data were collected from the farm households by personal interview based on specially designed comprehensive schedule for the year 2018-19. Secondary data were collected from the various administrative reports, government publications, surveys, records, articles, and official documents.

Labour absorption in crop production for principal crops

For estimation of labour absorption in crop production, the model suggested by Singh, 1996 was used. The labour absorption in crop production was analysed for principal crops according to marginal, small, semi-medium, medium, and large farm size groups of the sub-humid and humid southern plain region in Rajasthan state. The principal crops i.e. maize, soybean, sorghum and black gram of kharif season and wheat, rapeseed & mustard and chickpea of rabi season were selected that covered more than 75 per cent gross cropped area in this region.

Farm size group wise labour absorption estimates for selected crops was estimated on per hectare gross cropped area. For the purpose of crop operation wise labour absorption estimates, all crop operations were grouped under various heads such as ploughing, sowing/transplanting, intercultural operation, fertilizer application and manuring, plant protection measures, irrigation, harvesting, threshing, marketing operations and other miscellaneous work like purchase of inputs etc. Therefore, estimation of labour requirement for these activities were made on the basis of information from sample household for sub-humid and humid southern plain region. Per hectare labour absorption for selected principal crops which were grown on the sample farms, for irrigated and unirrigated conditions were used for total labour absorption. For arrive at region level labour absorption, firstly summed over all crops in the given district to arrive to zonal estimates and summed over all zones to arrive at the region level estimates and after that over all summed of all crops give the state level estimates of total labour time actually utilized in the crop production. The weighted average technique was used for aggregation at each level of district, zone and region (Gupta and Kapoor, 1970).

Precisely, estimation procedure of labour time requirement in crop production in r^{th} region can be expressed as follows;

Per hectare labour use in the district /region/state was calculated as-

$$L_R = \sum_{i=1}^n W_i L_i$$

Where,

L_R = Per hectare labour absorption in the district/
region/state

W_i = Proportion of cultivated area in i^{th} district/
region/state to the total cultivated area in the district

L_i = Per hectare labour use in the district

n = Number of districts/zones/regions

Structure and pattern of labour utilization in agriculture

The present study commences with an examination of the pattern and structure of labour absorption in different crop activities, gender wise, composition and farm size groups in sub-humid and humid southern plain region of the Rajasthan. The labour absorption in all crops were classified into different crop activities viz., preparatory tillage, sowing, inter-culture, fertilizer/manuring application, plant protection measures, irrigation, harvesting/picking, threshing, marketing and miscellaneous (includes guarding & supervision and other activity such as fencing, purchase of inputs, collection of stubbles of previous crops etc.).

The composition of labour use was examined with respect to family labour and hired labour and these were further classified into male and female labour. The different kinds (adult male, female; family labour and hired labour) of labour use hours for different crop operations over all the crops grown on the farm were aggregated for the farm as a whole and were measured in terms of standard labour days (1 labour day = 8 hours of work). The present study assumed equal work efficiency of male and female labour efforts and hence, there was no need to normalise male and female labour days as there is now growing perception that in the context of rural based occupation systems, specific types of labour were used in specific agricultural operations. For instance, female labour is generally used in agricultural operations like inter-culture, irrigation, harvesting/picking and threshing etc. as these activities demand certain types of operative skill and not just muscular strength (Parthasarthy, 1990). However, child labour efforts either not reported or converted into adult family labour.

Per hectare labour use of different types of labour on different farm size groups in each region of the

state was worked out from the sample data in the following manner.

$$L_{tsr} = \frac{\text{Total labour use of } t^{\text{th}} \text{ type in all crops on all farms in a given size group in a region}}{\text{Total area under all crops on all farms in the size group in the region}}$$

L_{tsr} = Average labour use of t^{th} type on s^{th} farm size group in i^{th} region per hectare of gross cropped area

RESULTS AND DISCUSSION

Structure of Human Labour Utilization in Different Crop Activities in Sub Humid and Humid Southern Plain

The structure of total human labour was divided into gender wise according to different crop operations.

Structure of Human Labour Utilization on Marginal Farms

The structure of human labour utilization in different crop activities on marginal farms of sub humid and humid southern plain region are presented in Table 1. In this region the selected principal crops on marginal farms were maize, soybean and sorghum in kharif season and wheat in rabi season. The utilization of total family labour and total hired labour was 66.22 man-days per hectare (95.56 per cent) and 3.05 man-days per hectare (4.44 per cent), respectively in all crop aggregate and in all crop activities on marginal farms. There were some probable reasons for less absorption of hired labour than family labour on marginal farms. The first reason may be small size of land holding, due to which available family labour was fully utilized or over utilized on their marginal farms and therefore, no requirement of hired labour was observed. The second reason was short duration employment opportunity on marginal farms. Among all crop operations, the maximum share of family labour absorption was 30.41 man-days per hectare in harvesting/picking activity followed by 19.55 man-days per hectare in inter-culture and minimum share 0.05 man-days per hectare was found in other activity from total family labour utilization on marginal farms. The harvesting/picking operation was the most important operation among the all operations. This

Table 1: Structure of Labour Utilization in Crop Activities on Marginal Farms in Sub Humid and Humid Southern Plain of Rajasthan State for the year 2018-19

Sl. No.	Particulars	Crop Activities (Man-days/ha)										Miscellaneous		Total
		Ploughing	Sowing	Inter-culture	Fertilizer/Manuring	PPM	Irrigation	Harvesting	Threshing	Marketing operation	A. Guarding	B. Other		
A	1	Family Labour	0.92 (100.00)	0.62 (100.00)	19.55 (95.38)	0.79 (100.00)	0.12 (100.00)	5.89 (100.00)	30.41 (93.60)	1.96 (98.84)	0.67 (100.00)	5.24 (100.00)	0.05 (100.00)	66.22 (95.56)
	2	Hired Labour	0.00	0.00	0.95 (4.62)	0.00	0.00	0.00	2.08 (6.40)	0.02 (1.16)	0.00	0.00	0.00	3.05 (4.44)
	3	Total labour	0.92 (100.00)	0.62 (100.00)	20.49 (100.00)	0.79 (100.00)	0.12 (100.00)	5.89 (100.00)	32.49 (100.00)	1.99 (100.00)	0.67 (100.00)	5.24 (100.00)	0.05 (100.00)	69.27 (100.00)
B	(I)	Male labour	0.92 (100.00)	0.55 (88.89)	5.64 (27.51)	0.69 (88.24)	0.05 (40.00)	4.16 (70.59)	12.48 (38.41)	1.09 (54.65)	0.51 (75.86)	3.97 (75.77)	0.05 (100.00)	30.11 (43.46)
	(II)	Female labour	0.00	0.07 (11.11)	14.86 (72.49)	0.09 (11.76)	0.07 (60.00)	1.73 (29.41)	20.01 (61.59)	0.9 (45.35)	0.16 (24.14)	1.27 (24.23)	0.00	39.16 (56.54)
	(III)	Total labour	0.92 (100.00)	0.62 (100.00)	20.49 (100.00)	0.79 (100.00)	0.12 (100.00)	5.89 (100.00)	32.49 (100.00)	1.99 (100.00)	0.67 (100.00)	5.24 (100.00)	0.05 (100.00)	69.27 (100.00)

Figures in parentheses denote percentage of total labour absorption.

operation should be done in certain time. If it is not completed within the required time, there may be some losses. Hence, maximum labour was used in this operation than the other operations. In this region, it was observed that around 75 per cent labour was utilized only in two operations i.e. harvesting/picking operation and inter-culture on marginal farms. It was due to tiny land holding in the study area by which they spend their most of time on their field.

The maximum share of hired labour was 68.20 per cent in harvesting/picking activity (2.08 man-days/ha) from total hired labour (3.05 man-days/ha). In this region, on marginal farms hired labour was not used. The per hectare utilization of hired female labour was 3.05 man-days in all crop activities. The utilization of hired female on marginal farms was clustered in only three operations viz., inter-culture, harvesting/picking and threshing.

The absorption of female labour was more than the male labour on marginal farms. Among all crop operations, maximum man-days per hectare was occupied by harvesting/picking activities i.e. 32.49. In harvesting/picking activity, share of female labour (61.59 per cent) was more than the male labour (38.41 per cent).

Thus, it can be concluded that the gender wise family and hired labour was maximum utilized in harvesting/picking activity on marginal farms. These findings are more or less similar with Thresia (2004), Prashant *et al.* (2018) and Neha (2018). In this region the utilization of hired male was not seen. While utilization of female labour was found only in inter-culture, harvesting/picking and threshing operations. The per cent share of female labour (56.54 per cent) was found more than the male labour (43.46 per cent). The similar results were reported by Rai (2015) and Subramanian *et al.* (2015).

Structure of Human Labour Utilization on Small Farms

Table 2 shows the structure of human labour utilization in different crop activities on small farms of sub humid and humid southern plain region. In this region the selected principal crops on small farms were maize, soybean, sorghum and black gram in *kharif* season and wheat and rapeseed &

mustard in *rabi* season. The per hectare utilization of total family labour and total hired labour was 59.76 man-days (88.21 per cent) and 7.99 man-days (11.79 per cent), respectively in all crops and crop activities. On small farm, family labour was the main source of labour in crop cultivation as the holdings were small. Due to which family labour was fully utilized on their farms itself and less requirement of hired labour. Among all crop operations, the maximum share of family labour absorption was 29.03 man-days per hectare in harvesting/picking activity and minimum share 0.04 man-days per hectare was found in others activity from total family labour utilization on small farms. There was the same result for maximum utilization of family labour in harvesting/picking operation then the other operations which was found also in marginal farms. In general the ploughing operation was done through tractor so there was no requirement of labour still some family labour work on field and manage all situations during ploughing operation.

The maximum share of hired labour was 64.14 per cent in harvesting/picking activity (5.12 man-days/ha) and minimum was 0.19 per cent in miscellaneous operation (0.01 man-days/ha) from total hired labour (7.99 man-days/ha). The reason for less utilization of hired labour on small farm was tiny land holding. The participation of female labour was more than male labour, due to good working efficiency, specialization in crop operations like inter-culture and harvesting/picking and social factors.

From the total labour absorption, the share of female labour (61.24 per cent) was found more than the male labour (38.76 per cent) in overall crop activities on marginal farms. Among all crop activities, harvesting/picking activity required maximum labour i.e. 34.15 man-days per hectare.

There was no use of hired male and female labour in ploughing, sowing, fertilizer/manuring, PPM, irrigation and guarding & supervision. In this region, share of female labour (61.24 per cent) was more than the male labour (38.76 per cent) on small farms. The similar results were reported by Venkatnarayana (2011), Rai (2015) and Subramanian *et al.* (2015).

Table 2: Structure of Labour Utilization in Crop Activities on Small Farms in Sub Humid and Humid Southern Plain of Rajasthan State for the year 2018-19

Sl. No.	Particulars	Crop Activities (Man-days/ha)										Miscellaneous		Total
		Ploughing	Sowing	Inter-culture	Fertilizer/Manuring	PPM	Irrigation	Harvesting	Threshing	Marketing operation	A. Guarding	B. Other		
A	1	Family Labour	1.43 (100.00)	1.43 (100.00)	14.05 (83.74)	1.07 (100.00)	0.72 (100.00)	6.38 (100.00)	29.03 (84.99)	1.79 (94.03)	0.43 (96.61)	3.41 (100.00)	0.04 (83.33)	59.76 (88.21)
	2	Hired Labour	0.00	0.00	2.73 (16.26)	0.00	0.00	0.00	5.12 (15.01)	0.11 (5.97)	0.02 (3.39)	0.00	0.01 (16.67)	7.99 (11.79)
	3	Total labour	1.43 (100.00)	1.43 (100.00)	16.78 (100.00)	1.07 (100.00)	0.72 (100.00)	6.38 (100.00)	34.15 (100.00)	1.9 (100.00)	0.45 (100.00)	3.41 (100.00)	0.05 (100.00)	67.75 (100.00)
B	(I)	Male labour	1.42 (99.47)	1.01 (70.77)	5.52 (32.88)	0.74 (69.50)	0.41 (56.84)	2.92 (45.78)	10.73 (31.41)	1.03 (53.84)	0.3 (66.10)	2.15 (63.11)	0.05 (100.00)	26.26 (38.76)
	(II)	Female labour	0.01 (0.53)	0.42 (29.23)	11.26 (67.12)	0.33 (30.50)	0.31 (43.16)	3.46 (54.22)	23.42 (68.59)	0.88 (46.16)	0.15 (33.90)	1.26 (36.89)	0 (0.00)	41.49 (61.24)
	(III)	Total labour	1.43 (100.00)	1.43 (100.00)	16.78 (100.00)	1.07 (100.00)	0.72 (100.00)	6.38 (100.00)	34.15 (100.00)	1.9 (100.00)	0.45 (100.00)	3.41 (100.00)	0.05 (100.00)	67.75 (100.00)

Figures in parentheses denote percentage total labour absorption.

Structure of Human Labour Utilization on Semi-Medium Farms

The structure of human labour utilization in different crop activities on semi-medium farms of sub humid and humid southern plain region are presented in Table 3. In this region the selected principal crops on semi-medium farms were maize, soybean, sorghum and black gram of kharif season and wheat and rapeseed & mustard in rabi season. The per hectare utilization of total family labour and total hired labour was 51.91 man-days (78.29 per cent) and 14.38 man-days (21.71 per cent), respectively in all crops and crop operations on semi-medium farms. There was the same reason for higher utilization of family labour than hired labour that was found on marginal and small farms. The utilization of total family labour in different crop operations was vary from 0.09 man-days per hectare to 20.95 man-days per hectare on semi-medium farms. Among all crop operations, the maximum share of family labour absorption 40.37 per cent was found in harvesting/picking (20.95 man-days/ha) activity followed by 25.46 per cent in inter-culture (13.22 man-days/ha) and 12.14 per cent in irrigation (6.30 man-days/ha) and minimum share 0.16 per cent was found in other activity (0.09 man-days/ha) from total family labour utilization (51.91 man-days/ha) on semi-medium farms. The same type of result was also found on marginal and small farms. In case of hired labour, the maximum share was found 9.66 man-days per hectare in harvesting/picking activity followed by 3.74 man-days per hectare in inter-culture activity from total hired labour (14.38 man-days/ha) and minimum share was found 0.01 man-days per hectare in marketing operation. In this region, it was observed that the maximum hours of hired labour was used only in some operations like inter-culture and harvesting/picking on semi-medium farms.

In this region, it was noticed that the more than 60 per cent human labour was contributed by female labour from total human labour on semi-medium farms. The participation of male and female labour was 60.78 per cent and 39.22 per cent, respectively in all crop activities. It was observed that there was a marked gender biasness in crop operation wise labour absorption in the crop production. Female labour absorption was found mainly clustered in operations like harvesting/picking, inter-culture,

irrigation and threshing on semi-medium farms. These operations require certain operative skill and not muscle power.

There was no use of hired male and female labour in ploughing, sowing, fertilizer/manuring, PPM and miscellaneous activities as was similar to marginal and small farms. The per cent share of contribution of female labour was more than the male labour on semi-medium farms. The similar results were reported by Rai (2015), Subramanian *et al.* (2015), Prashant *et al.* (2018) and Neha (2018)

Structure of Human Labour Utilization on Medium Farms

The structure of human labour utilization in different crop activities on medium farms of sub humid and humid southern plain region are depicted in Table 4. In this region the selected principal crops on medium farms were maize, soybean, sorghum and black gram of kharif season and wheat, rapeseed & mustard and chickpea in rabi season. The per hectare utilization of total family labour and total hired labour was 40.95 man-days (72.16 per cent) and 15.80 man-days (27.84 per cent), respectively in all selected crops and in all crop operations on medium farms. Among all crop operations, the highest share of family labour absorption was 43.09 per cent in harvesting/picking activity (17.65 man-days/ha) followed by 18.61 per cent in inter-culture (7.62 man-days/ha) and 16.38 per cent in irrigation (6.71 man-days/ha) and minimum share 0.36 per cent was found in other activity (0.15 man-days/ha) from total family labour utilization (40.95 man-days/ha) on medium farms. The same type of result was also found on marginal, small and semi-medium farms.

The absorption of hired labour was maximum in harvesting/picking activity i.e. 77.51 per cent (12.25 man-days/ha) and minimum share was found 0.05 per cent (0.01 man-days/ha) in other activity.

In this region, it was observed that the more than 70 per cent human labour was contributed by female labour from total human labour on semi-medium farms. The participation of male and female labour was 70.18 per cent and 29.82 per cent, respectively in all crop activities.

The utilization of hired male labour on medium farms was negligible. The participation of female

Table 3: Structure of Labour Utilization in Crop Activities on Semi-Medium Farms in Sub Humid and Humid Southern Plain of Rajasthan State for the year 2018-19

Sl. No.	Particulars	Crop Activities (Man-days/ha)										Total	
		Ploughing	Sowing	Inter-culture	Fertilizer/Manuring	PPM	Irrigation	Harvesting	Threshing	Marketing operation	Miscellaneous A. Guarding		Miscellaneous B. Other
A	1	0.94	0.65	13.22	1.09	0.37	6.3	20.95	1.56	0.67	6.06	0.09	51.91
	Structure of human labour	(100.00)	(100.00)	(77.95)	(100.00)	(100.00)	(92.19)	(68.45)	(77.72)	(98.44)	(100.00)	(100.00)	(78.29)
	Hired Labour	0.00	0.00	3.74	0.00	0.00	0.53	9.66	0.45	0.01	0.00	0.00	14.38
B	2	0.94	0.65	16.95	1.09	0.37	6.83	30.61	2.01	0.68	6.06	0.09	66.29
	Structure of human labour	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)
	Total labour	0.81	0.48	5.74	0.77	0.21	2.82	10.96	0.83	0.38	2.94	0.05	26.00
Gender wise structure	(I)	(86.36)	(73.77)	(33.86)	(70.59)	(57.14)	(41.33)	(35.81)	(41.11)	(56.25)	(48.46)	(62.50)	(39.22)
	(II)	0.13	0.17	11.21	0.32	0.16	4.01	19.65	1.19	0.3	3.12	0.03	40.29
	(III)	(13.64)	(26.23)	(66.14)	(29.41)	(42.86)	(58.67)	(64.19)	(58.89)	(43.75)	(51.54)	(37.50)	(60.78)
Total labour	0.94	0.65	16.95	1.09	0.37	6.83	30.61	2.01	0.68	6.06	0.09	66.29	
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)
	0.81	0.48	5.74	0.77	0.21	2.82	10.96	0.83	0.38	2.94	0.05	26.00	

Figures in parentheses denote percentage total labour absorption.

Table 4: Structure of Labour Utilization in Crop Activities on Medium Farms in Sub Humid and Humid Southern Plain of Rajasthan State for the year 2018-19

Sl. No.	Particulars	Crop Activities (Man-days/ha)										Total	
		Ploughing	Sowing	Inter-culture	Fertilizer/Manuring	PPM	Irrigation	Harvesting	Threshing	Marketing operation	Miscellaneous A. Guarding		Miscellaneous B. Other
A	1	0.82	0.85	7.62	0.82	0.25	6.71	17.65	1.48	0.57	4.04	0.15	40.95
	Structure of human labour	(100.00)	(100.00)	(71.76)	(100.00)	(91.43)	(100.00)	(59.03)	(78.17)	(84.09)	(100.00)	(95.00)	(72.16)
	Hired Labour	0.00	0.00	3.00	0.00	0.02	0.00	12.25	0.41	0.11	0.00	0.01	15.80
B	2	0.82	0.85	10.62	0.82	0.27	6.71	29.89	1.9	0.68	4.04	0.15	56.75
	Structure of human labour	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)
	Total labour	0.82	0.66	1.53	0.77	0.17	2.93	6.69	0.72	0.32	2.19	0.12	16.92
Gender wise structure	(I)	(100.00)	(77.48)	(14.41)	(93.46)	(62.86)	(43.69)	(22.39)	(38.07)	(47.73)	(54.29)	(75.00)	(29.82)
	(II)	0.00	0.19	9.09	0.05	0.1	3.78	23.2	1.18	0.35	1.85	0.04	39.83
	(III)	(82)	(22.52)	(85.59)	(6.54)	(37.14)	(56.31)	(77.61)	(61.93)	(52.27)	(45.71)	(25.00)	(70.18)
Total labour	0.82	0.85	10.62	0.82	0.27	6.71	29.89	1.9	0.68	4.04	0.15	56.75	
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)
	0.82	0.66	1.53	0.77	0.17	2.93	6.69	0.72	0.32	2.19	0.12	16.92	

Figures in parentheses denote percentage total labour absorption.

Table 5: Structure of Labour Utilization in Crop Activities on Large Farms in Sub Humid and Humid Southern Plain of Rajasthan State for the year 2018-19

Sl. No.	Particulars	Crop Activities (Man-days/ha)										Miscellaneous		Total
		Ploughing	Sowing	Inter-culture	Fertilizer/Manuring	PPM	Irrigation	Harvesting	Threshing	Marketing operation	A. Guarding	B. Other		
A	1	Family Labour	0.87	0.39	6.08	1.1	0.05	5.35	11.63	1.26	0.55	3.64	0.10	31.01
			(100.00)	(100.00)	(48.48)	(100.00)	(52.38)	(81.46)	(48.03)	(68.53)	(90.91)	(100.00)	(91.30)	(59.69)
		Hired Labour	0.00	0.00	6.46	0.00	0.05	1.22	12.58	0.58	0.06	0.00	0.01	20.95
				(51.52)		(47.62)	(18.54)	(51.97)	(31.47)	(9.09)		(8.70)	(40.31)	
	2	Total labour	0.87	0.39	12.53	1.1	0.1	6.57	24.2	1.85	0.61	3.64	0.11	51.96
			(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)
B	(I)	Male labour	0.84	0.36	1.48	0.88	0.06	2.48	3.62	0.65	0.21	1.89	0.06	12.53
			(96.30)	(92.94)	(11.78)	(79.92)	(61.90)	(37.79)	(14.97)	(35.14)	(34.85)	(52.09)	(52.17)	(24.12)
		Female labour	0.03	0.03	11.06	0.22	0.04	4.09	20.58	1.2	0.4	1.74	0.05	39.43
			(3.70)	(7.06)	(88.22)	(20.08)	(38.10)	(62.21)	(85.03)	(64.86)	(65.15)	(47.91)	(47.83)	(75.88)
	(III)	Total labour	0.87	0.39	12.53	1.1	0.1	6.57	24.2	1.85	0.61	3.64	0.11	51.96
			(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)

Figures in parentheses denote percentage total labour absorption.

labour was more than the male labour in overall crop activities on medium farms. The similar results were reported by Prashant *et al.* (2018) and Neha (2018).

Structure of Human Labour Utilization on Large Farms

Table 5 revealed the structure of human labour utilization in different crop activities on large farms of sub humid and humid southern plain region. In this region the selected principal crops on large farms were maize, soybean, sorghum and black gram of *kharif* season and wheat, rapeseed & mustard and chickpea in *rabi* season. The absorption of total family and hired labour was 31.01 man-days (59.69 per cent) and 20.95 man-days, respectively in all crop activities on large farms. Among the all crop operations, harvesting/picking was share maximum proportion i.e. 37.48 per cent (11.63 man-days/ha) followed by 19.59 per cent (6.08 man-days/ha) in inter-culture and 17.26 per cent (5.35 man-days/ha) in irrigation and minimum share 0.16 per cent (0.05 man-days/ha) was found in PPM from total family labour utilization (31.01 man-days/ha) on large farms. It was examined that as the land holding increased the utilization of family labour in harvesting/picking operation was decreased. The most probable reason for that was due to mechanization in the study area.

The maximum share of hired labour was found in harvesting/picking activity i.e. 60.05 per cent (12.58 man-days/ha) followed by 30.83 per cent (6.46 man-days/ha) in inter-culture and minimum was found 0.01 per cent (0.01 man-days/ha) in other activity. It was noticed that the per cent share contribution of labour was more of female labour (75.88 per cent) than the male labour (24.12 per cent) on large farms. Among the all crop activities, harvesting/picking activity required maximum labour in crop cultivation.

The per hectare absorption of family labour (31.01 man-days) was more than hired labour (20.95 man-days). The utilization of hired labour on large farms was negligible. The per cent share of female labour absorption in overall crop activities was found more than the male labour on large farms. The similar results were reported by Venkatnarayana (2011), Rai (2015), Subramanian *et al.* (2015), Prashant *et al.* (2018) and Neha (2018).

CONCLUSION

Labour use varies extensively from crop to crop and region to region. The main reasons are the individual characteristics of each crop, inter-regions differences in farming systems and the levels of development. Female labour utilization was observed to be mainly clustered in few specific crop operations like inter-culture, harvesting and threshing-winnowing, which require certain operative skills and consistent working efficiency. In humid southern eastern plain region (Region-V), the results showed that the utilization of total family labour and total hired labour was 95.56 per cent and 4.44 per cent, 88.21 per cent and 11.79 per cent, 78.29 per cent and 21.71 per cent, 72.16 per cent and 27.84 per cent, 59.69 per cent and 40.31 per cent on marginal, small, semi-medium, medium and large farms, respectively in all crops and crop activities. In gender wise structure, the share of total male and female labour (both family and hired) absorption was 43.46 per cent and 56.54 per cent, 38.76 per cent and 61.24 per cent, 39.22 per cent and 60.78 per cent, 29.82 per cent and 70.18 per cent, 24.12 per cent and 75.88 per cent on marginal, small, semi-medium, medium and large farms, respectively in all crop activities.

ACKNOWLEDGMENTS

This research paper is part of my Ph.D. research work at MPUAT, Udaipur so I thankful to Rajasthan college of agriculture, Udaipur, Department of Agricultural Economics and Management, My Major Advisor Dr. (Mrs.) Latika Sharma and my advisor committee who help and support me for my research work.

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