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Research Journal of Agricultural Sciences  
An International Journal

P- ISSN: 0976-1675

E- ISSN: 2249-4538

Volume: 13

Issue: 06

*Res. Jr. of Agril. Sci.* (2022) 13: 1674–1679



# An Empirical Study of Female Participation in Agricultural Activities in Reference to Western Uttar Pradesh

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Received: 08 Jun 2022 | Revised accepted: 10 Oct 2022 | Published online: 05 Nov 2022

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## ABSTRACT

Agriculture sector has developed with the influence of science and technology but it is not yet accepted by women as the main labour. According to the Census of India, a worker is defined as a person whose main activity is participation in any economically productive activity of a physical or mental nature. The work involved is not only the actual work, but also the effective supervision and direction of the work. It also includes unpaid work on the farm or in the family enterprise. It is very important to understand the nature of rural landscape changes during the urbanization process to prepare rural management plans for sustainable development. Although there is not much information available about how rural landscapes change and there is limited evidence of how they can be improved. With the change of time the landscape of agriculture has also changed completely but one thing which has not changed over the centuries is the concept of women as the dominant force in the field. Agriculture in developing countries like India absorbs and employs two-thirds of the female work force but fails to recognize them as employed labour. Female labour force in developing countries still faces oppressive conditions. Women are the modern builders of the destiny of any nation. Women are considered to be the backbone of the Indian rural landscape. Women are more active in rural India than in urban India. Most of the women do various types of work to fulfil their livelihood and agriculture is considered to be the largest unorganized sector in which a large number of rural women actively contribute. Rural women constitute the most important productive work force in the Indian economy. Almost all rural women in India can be considered farmers as most of them are directly and indirectly engaged in agriculture and allied activities. In spite of their above participation in any work in India and work on such a large scale, women are not yet actively involved in the mainstream of development and there is hardly any appreciation and recognition for their massive contribution. Most of the studies related to female labour in India were done in the early decades of Green Revolution, although there are some recent studies related to the participation of women in agricultural work in India. The present study relates to western Uttar Pradesh, the most agriculturally developed region of India's most populous state Uttar Pradesh producing labour intensive crops such as sugarcane, wheat and paddy. The study is based on an in-depth field survey and primary data of 160 agricultural households belonging to western UP, which throws fair light on the contribution of women in agriculture in the study area.

**Key words:** Female work participation rate, Agricultural labour, Unpaid labour, Farm activities, Household activities

Women constitute about half of the labour force in any economy, but the transformation of this labour force into the workforce depends on many factors. Sometimes women's work is either as household workers or hidden in domestic duties. If this category of employment is done then the wages are very less or there is no wages [1]. According to Dr. MS Swaminathan, women were the first to domesticate crop plants and thus the art and science of farming began. When men went

hunting in search of food, women started collecting seeds of indigenous plants and people interested in food fodder fibre started farming [2-3]. Agriculture is the first culture that man learned to practice as a means of his livelihood, it is the primary sector of any economy, whether it is developed or developing. Agriculture is considered the backbone of the rural economy especially in India and is a family enterprise responsible for rural development and significant reduction in poverty [4].

Women in India are the pillars of rural society and are known to be important resources in agriculture and rural economy [5]. They make much needed contribution in any development and relations and other domestic activities. The role of women in agriculture cannot be ignored. They contribute in every operation of agricultural activities and play an important active role in allied sectors like animal management, bee keeping, goat rearing, mushroom production, vegetable production and poultry farming etc. In India and other

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developing countries, man researchers have been done regarding the important roles of women in agriculture [6]. Women make up about 45% of the agricultural labour force in developing countries and average range from about 20% in Latin America to East and South East Asia and the Sub covers about 50% of Sahara Africa. Agricultural researchers have also noted a trend of more feminization of any labour in countries in recent years, with the migration of male rural workers in search of better opportunities, with women bearing more responsibility for agricultural work [7]. Commercialization of agriculture and promotion of exportable agricultural crops also gives new opportunities for women to engage in agriculture related activities [8]. The growing role played by women in agriculture, however, is not reflected in official estimates of women workers. The main reason for the recognition of the high participation played by women in various agricultural activities is the bias found in the middle-class group [9]. It is because of the bias found above that all agricultural contributors are basically seen as domestic women [10]. In this investigation, the role of women has been studied in various activities related to crop production in western Uttar Pradesh. An attempt has also been made in this study to find out what is the comparative contribution of men and women in different types of crop production activities. This contribution has been constituted in terms of physical quantities as well as monetary contribution.

## MATERIALS AND METHODS

The present study belongs to Western Uttar Pradesh for which data for the year 2018-19 was collected from selected farmers. Primary data related to physical input output of sugarcane, wheat, paddy, oilseed crops and other major crops and their prices for agriculture year 2018-19. To achieve this objective, the primary data was collected by personally interviewing the farmers with the help of specially designed set of schedules. For this investigation, data related to the participation of men and women in crop production in the agricultural year and other activities related to agriculture were also collected through the schedules prescribed for this investigation. For various activities of crop production in the study area, men and women working days (Labour Days) were calculated by dividing the agricultural year 2018-19 into different months. Four stage sampling technique has been used for selection of sample agricultural farms. Ghaziabad and Bulandshahr districts from western Uttar Pradesh were selected, from above two districts, four tehsils were selected on the basis of highest operational holdings. Twenty (20) villages from above selected four tehsils (five from each) and 8 farmers from each village were randomly selected, out of total 160

selected farmers interviewed with 32 farmers each according to the status of irrigation system. The agricultural farms irrigated by different means of irrigation in the study area were divided in the following order:

- Canal irrigated farms
- Electric tubewell irrigated farms
- Diesel tubewell irrigated farms
- Canal + Electric tubewell irrigated farms
- Canal + Diesel tubewell irrigated farms

In addition to the above, the farms were also classified into different categories i.e., small, medium and large sized farms according to their operational holdings in the study area. The farmers were selected in random order within each category. The number of farmers selected from different categories was also in the form of 20 small farmers, 7 medium and 5 large farmers.

The data related to the participation of men and women in the production of major crops and other related activities in different areas under different irrigation systems were subjected to tabular analysis. Male and female participation in the production of various major crops in the study area was also assessed. Various cost and concepts were also employed to check the cost and revenue on the agriculture farm, the cost of production and returns were calculated on per hectare basis for major crops in each category to meet the objective of the study. The average gross returns of major crops in the study area were also calculated, and also the returns of male and female participation were also estimated.

## RESULTS AND DISCUSSION

The demand for labour for agricultural operations depends on the nature of agricultural operations and the type of crops grown in that particular area. The study area for the present investigation is the major crops grown in two major districts of western Uttar Pradesh, Bulandshahr and Ghaziabad, mainly wheat, paddy and sugarcane. In all the above three crops of the study area, there is a demand for excessive labour in the work like sowing, weeding, harvesting, threshing, planting and threshing of paddy etc. In the above types of agricultural work, there is a high demand for male agricultural labourers as well as female labourers because women labourers become available at lower wage rates than men. Most of the agricultural labourers are employed as seasonal labourers [11]. Female agricultural labourers receive their wages both in cash and kind. Keeping in view the above conditions, the present investigation clarifies the participation of women in whatever agricultural activities are done in the production of various crops in the study area.

Table 1 Month wise per hectare human labour utilization on canal irrigated farms (Labour days)

Months	Owned labour		Hired labour		Total labour	
	Male	Female	Male	Female	Male	Female
July + August	4	2	7	8	11	10
September + October	5	3	6	4	11	7
November + December	8	5	11	6	19	11
January + February	4	3	8	5	12	8
March + April	5	3	12	6	17	9
May + June	9	5	13	10	22	15
Total	35	21	57	39	92	60

### Month wise per hectare human labour utilization

In the present study, the labour employment per hectare for different crop productions on the farms irrigated by different means of irrigation under the study area is displayed by table number one to five. The existing month wise human labour

employment per hectare on different irrigation systems depicting the participation of both male and female workers has been shown in the summarised tables. The table presented clearly shows that canal irrigated farms, electric tubewell irrigated farms, diesel tubewell irrigated farms canal plus

electric tube well irrigated farms and canal plus diesel tubewell irrigated farms the per hectare human labour utilization was traced out to be 152, 179, 177, 182, and 194 labour days in sequence. The presented table of human labour utilization per month makes it clear that the highest human labour employment per hectare was received in May plus June month while the

lowest was received in September plus October. The share of women in the total labour employment was also being received in the above order. The reason for more labour employment in the month of May and June was due to sowing of most of the Kharif crops, harvesting and threshing of wheat and inter-culture of sugarcane crop during these months [12-14].

Table 2 Month wise per hectare human labour utilization on electric tubewell irrigated farms (Labour days)

Months	Owned labour		Hired labour		Total labour	
	Male	Female	Male	Female	Male	Female
July + August	5	2	9	9	14	11
September + October	6	3	7	4	13	7
November + December	10	5	13	6	23	11
January + February	6	3	9	5	15	8
March + April	6	4	15	7	21	11
May + June	12	6	15	12	27	18
Total	45	23	68	43	113	66

Table 3 Diesel tubewell irrigated farms (Labour days)

Months	Owned labour		Hired labour		Total labour	
	Male	Female	Male	Female	Male	Female
July + August	4	2	10	9	14	11
September + October	5	2	8	4	13	6
November + December	9	4	14	6	23	10
January + February	6	3	9	6	15	9
March + April	5	3	16	7	21	10
May + June	10	5	17	13	27	18
Total	39	19	74	45	113	64

Table 4 Canal + Electric tubewell irrigated farms (Labour days)

Months	Owned labour		Hired labour		Total labour	
	Male	Female	Male	Female	Male	Female
July + August	4	2	8	9	12	11
September + October	4	2	10	5	14	7
November + December	10	3	13	8	23	11
January + February	6	2	10	8	16	10
March + April	6	2	17	8	23	10
May + June	11	4	18	13	29	17
Total	41	15	76	51	117	65

Table 5 Canal + Diesel tubewell irrigated farms (Labour days)

Months	Owned labour		Hired labour		Total labour	
	Male	Female	Male	Female	Male	Female
July + August	5	1	11	10	16	11
September + October	5	2	9	5	14	7
November + December	10	2	16	8	26	10
January + February	6	2	9	8	15	10
March + April	7	3	18	8	25	11
May + June	12	3	19	15	31	18
Total	45	13	82	54	127	67

Present tables also show that the percent share of women in total labour utilization was decreasing with increasing potential of irrigation, women's share was highest (39.4%) in canal irrigated farms while lowest (34.5%) on canal plus diesel tube well irrigated farms [15]. The above types of results in total human labour utilization were not obtained in respect of hired female labour. It is clear from the table that with the increase in the irrigation potential, there was an increase in the share of hired female utilization in the total labour utilization. This was achieved because the increase in irrigation potential was accompanied by an increase in the production of commercial crops leading to an increase in the gross income and net income. Due to the improvement in the economic condition and standard of living of the farmers, the share of domestic women in the total labour utilization decreased while the share of hired female

labour increased [16]. From the table presented of human labour utilization, it was also estimated that what was the share of hired female labour in the total female participation on different irrigated farms, this share was obtained 65%, 65%, 70.3%, 78.5% and 80.6% respectively on different farms.

#### *Female labour participation in major crops' cultivation*

The share of women in total labour and total labour utilization in the cultivation of major crops grown in the study area is displayed in (Table 6). It is clear from the table that wheat, paddy and sugarcane are the major crops of the study area, which accounts for about 72% of the gross crop area [17]. It is clear from the table that the share of women was higher in the production of paddy and other crops as compared to sugarcane and wheat, which were 40.2% and 41% respectively

[18-20]. Despite being the main crop of the study area, the share of women in sugarcane production was less as compared to other crops. The share of hired female labour in the production of paddy crop was higher as compared to other major crops. Female labour share was found more in vegetable cultivation

than in other crops [21]. The percentage participation of women in the production of sugarcane, the major crop and the most labour intensive crop of the study area, was relatively less because most of the work in sugarcane production is male-dominated.

Table 6 Total labour used in different crops per hectare (Labour days)

Months	Owned labour		Hired labour		Total labour	
	Male	Female	Male	Female	Male	Female
Wheat	15	9	29	18	44	27
Paddy	24	13	43	32	67	45
Sugarcane	33	17	78	32	111	49
Other crops	19	11	36	27	55	38
Total per hectare of NSA	45	19	77	46	187	

Table 7 Total labour use in different field activities per hectare (Labour days)

Months	Owned labour		Hired labour		Total labour	
	Male	Female	Male	Female	Male	Female
Field preparation	4	1	8	2	12	3
Sowing	4	2	8	8	12	10
Irrigation	4	1	8	0	12	1
Buying of inputs	2	1	0	0	2	1
Fertilizer and manures	4	1	8	3	12	4
Intercultural	5	5	9	12	14	17
Plant protection measures	3	0	8	3	11	3
Harvesting	5	3	11	7	16	10
Threshing	5	2	9	4	14	6
Bringing crop to home	3	1	3	1	6	2
Processing	3	2	2	6	5	8
Marketing	3	0	3	0	6	0
Total	45	19	77	46	122	65

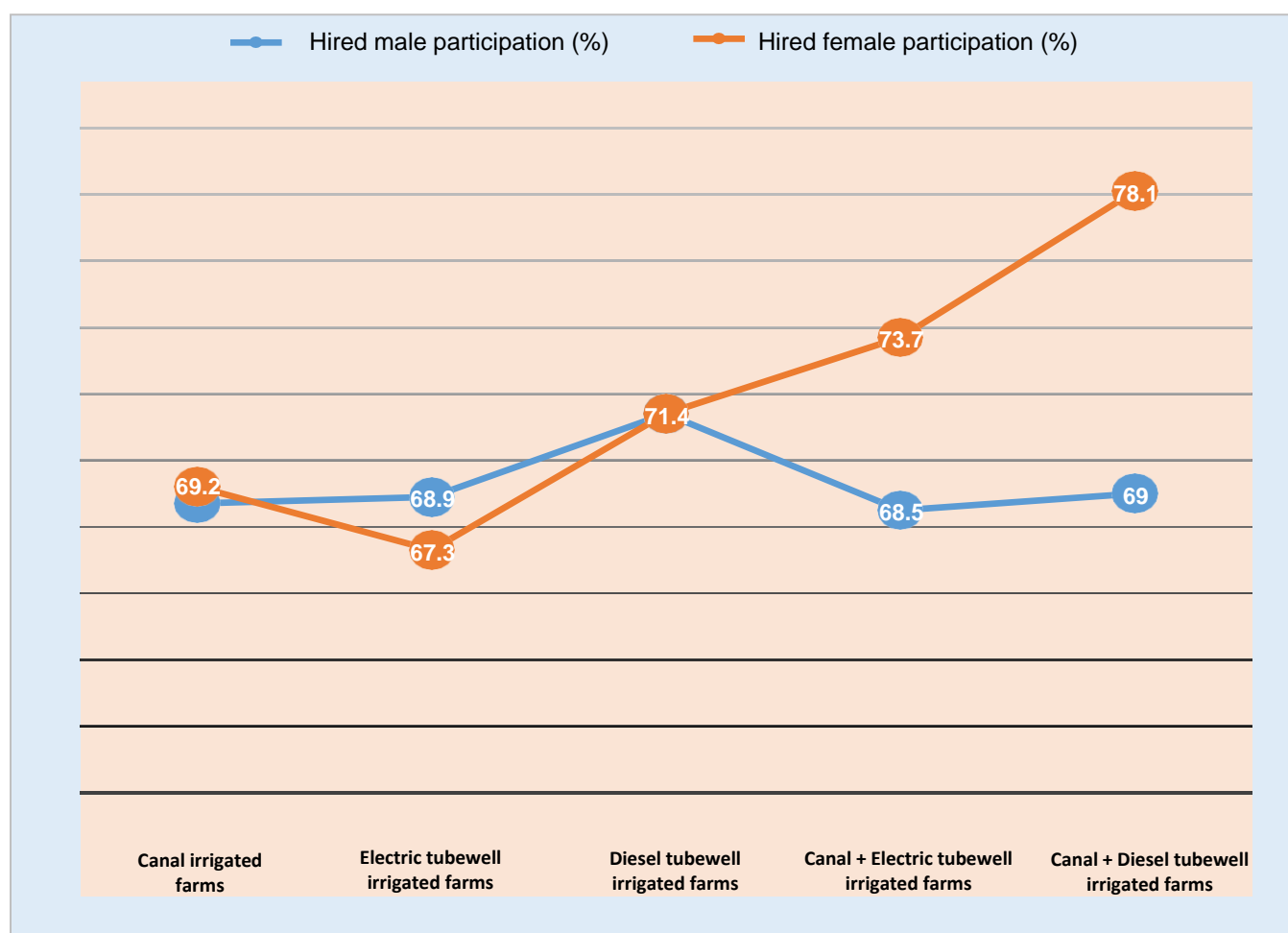


Fig 1 Percent participation of hired male and female labourers

Table 8 Participation of male and female labourers on different categories of farms in study area (Labour days)

Farm category	Owned labour		Hired labour		Total labour	
	Male	Female	Male	Female	Male	Female
Canal irrigated farms	30	66	16	36	46	102
Electric tubewell irrigated farms	33	73	17	35	50	108
Diesel tubewell irrigated farms	30	75	16	40	46	115
Canal + Electric tubewell irrigated farms	34	74	15	42	49	116
Canal + Diesel tubewell irrigated farms	36	80	14	50	50	130

#### Total labour used in different field activities

The total labour involved in various agricultural activities and female and male participation in the study area has been displayed in the (Table 7) on the sample farms. It is highlighted from the table presented that on the basis of per hectare net sown area, 187 man-days were spent on sample farms for various agricultural activities. In which the share of men was as 122 mandays and that of working women was as 65 mandays. It is also revealed from the table that the percentage share of hired female labour in various field activities was higher than that of male\hired labour in the study area. The presented table of different field activities also clearly shows that the role of women in economic decision-making activities was limited, which reveals the low relative status of women in spite of their equal participation in agriculture [22-24].

#### Participation of male and female labourers

The per hectare participation of male and female workers on sample farms of the study area is displayed in (Table 8). It is clear from the participation table of male and female workers that highest labour rates (180 labour days) were available on canal plus diesel tubewell farms while the lowest (148 labour days) were obtained on canal irrigated farms. It was also found from the presented table that the participation of female workers in labour days was about 35%, whereas if we look at the hired female labour, then this participation was about 36%. The main reason for higher participation of male and female labourers per hectare on Canal plus diesel tubewell farms was due to timely, adequate and assured water supply on these farms. As a result of which more and commercial crops were grown on this type of agricultural farm as well as vegetable crops were also being grown on some farms. This was the reason that hired female participation on canal plus diesel tubewell irrigated farms was around 39 percent [25].

## CONCLUSION

It can be concluded that the maximum human labour employment was received on the sample farms in the study area on the canal plus diesel well irrigated farm. The supply of irrigation water on these agricultural farms was timely, adequate and assured, as a result, more commercial crops and

vegetable crops were being produced on these farms. As a result of which more female participation on these farms was being received, especially the percentage participation of higher female labour was increasing with increasing irrigation potential. Proper participation of women workers was obtained in the production of major crops like wheat, paddy, sugarcane and other crops in the study area on sample farms. Women's participation in agriculture depends on the labour requirement for different crop production. Female participation is higher in paddy and wheat than in sugarcane. The participation of women in various activities of crop production on the agricultural farm was found to be quite extensive in the study area and women were involved in most of the agricultural activities except the ploughing work, but the participation of women in the tasks of economic decision making was negligible. The present investigation also concluded that both owned male and female labour use declined sharply with the increase in the size of agricultural holdings. On the other hand, with the increase in the size of agricultural holdings, the use of hired labour increases, especially in the participation of hired women workers. In various sample villages of the study area, there has been an increase in the demand for hired female workers in agricultural activities due to the hired male labourers' involvement in other work or migration to urban areas. The above analysis reveals that even though domestic women participate extensively in agricultural activities, they are still referred to as reserved workers. Whenever additional labour is required in agricultural work, they are called to work and assigned work that is considered less efficient and involves light manual labour. If the participation of domestic women in farms other than the production activities of various crops in other allied agricultural areas such as animal care, goat rearing, poultry, etc. is added, then their participation rate seems to be very high. Finally, as a suggestion, it can be said that women should also get information about new techniques and farming methods so that their load of work can be reduced. Equal wage rate should be fixed for women for various activities of agriculture and at the same time women should also be given land rights so that they can get credit and inputs for agriculture and be able to take economic decisions, as a result gender gap in agriculture can be bridged in underdeveloped countries like India.

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