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Extent of women's participation in agriculture and factors influencing it: Evidence from Haryana, India

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Abstract

The study examines the extent of women's participation in activities such as harvesting of wheat and mustard and examining the factors influencing their involvement. A total of 100 women farmers were surveyed from one village of Hisar district in Haryana to understand their demographic, educational, and economic profiles, as well as their engagement in key agricultural tasks such as harvesting mustard, wheat, and cutting fodder crops. The findings revealed that more than half (51%) of the respondents were aged between 35-45 years, with 39% being illiterate and only 13% having a graduate degree or diploma. A significant portion (65%) of women were farmers, while 35% were labourers. Nuclear family types predominated (58%), and most families (59%) were small, with 1-4 members. Marginal landholding (below 2.5 acres) was common, with 53% of respondents falling into this category. In terms of agricultural activity, 69% of women worked more than 5 hours per day, with 81% using the traditional *Aari drati* sickle. Harvesting mustard and wheat were the most time-intensive activities, with 57.4% of women spending over 5 hours daily harvesting mustard. The correlation analysis indicated a significant inverse relationship between education level and participation in agricultural activities (r = -0.209), suggesting that higher education levels led to reduced involvement in farming. Conversely, a positive correlation was found between time spent in agricultural activities and the harvesting of mustard and wheat, with r-values of 0.281 and 0.357, respectively. The results highlights the significant role of women in Haryana's agricultural sector and emphasize the need to improve the sickle design with appropriate measurements to enhance and optimize their participation in farming activities without experiencing much drudgery.

Keywords: Cutting fodder, harvesting of mustard and wheat, time intensive activities, sickle design, drudgery

Introduction

Women play a crucial role in Indian agriculture by performing 70% of essential farm tasks and representing 60% of the farming population (NSWF, 2014) [8]. Out of 30 million women in the workforce there are 20 million women residing in rural areas. According to the 2001 Census, women account for 22.56% of the total workforce, with 60.89% of them classified as marginal workers. Despite their significant contributions both at home and on farms activities women's efforts often go unrecognized. They are actively engaged in various farm activities starting from transplanting, weeding, harvesting, processing, and marketing produce, all of which are labour-intensive and lead to drudgery.

India's 2001 Census recorded 495 million women, making up 48.27% of the population. It is widely acknowledged that women work more than men, but much of their labour remains unaccounted for, worsening the issue. Despite their deep involvement in agriculture, women have not been fully integrated into the broader development efforts, and their contributions often go unappreciated. Agriculture is not merely an occupation but a way of life for farming communities (Oerke, 2006) [9]. Numerous studies highlight the significant role women play in farming, as they undertake most of the farm operations but often facing harsh working conditions that result in physical strain and drudgery.

There is substantial evidence showing that the proportion of women in field labour has increased over recent decades compared to men (Ghosh and Ghosh 2014; Guérin 2013; Chayal and Dhaka 2010; Garikipati 2008; Verma 1992) [5, 6, 2, 4, 15]. Pattnaik *et al*. (2017) [10] analyzed occupational data from four Indian Census periods (1981, 1991, 2001, and 2011) agricultural employment has declined by 15.8% over 40 years, with men leaving at a faster rate than women. By 2011, half of male workers were employed in agriculture, while around two-thirds of female workers remained in the sector. There are several reasons have been proposed to explain the predominance of women in agriculture. Research suggests that men, despite being affected by caste,

generally have more agency and mobility than women which enables them to take advantage of both economic opportunities and escape rural stagnation more effectively. This has led to higher male migration rates, both temporary and permanent, and a greater capacity to find non-agricultural employment (De Neve 2017; Saha *et al*. 2018) [3, 12].

According to the study of Mehta and Anusha (2021) [7] in Rajasthan, women demonstrated the highest level of traditional participation in agricultural activities, dedicating significant time to tasks like weeding, cob picking, and stalk harvesting during the maize crop. On average, women spent 94-161 hours per hectare on weeding, 214 hours on cob picking, and 99-118 hours on stalk harvesting. For wheat crop harvesting, women spent 110-138 hours per hectare. These tasks are considered the most labour-intensive in the Maize-Wheat cropping system. Furthermore, women continue to perform many of these tasks traditionally due to their limited knowledge and skills in applying modern science and technology, which leads to significant time and energy expenditure. This is a major source of dissatisfaction among women involved in agriculture. While some traditional tools pose low risk, they also result in low productivity. In contrast, modern agricultural tools and equipment significantly improve productivity. So, the continued use of traditional methods in agricultural tasks results in high labour intensity and low productivity for women which contributes to their dissatisfaction. Adopting modern tools and technologies can significantly enhance productivity and reduce the burden of these laborious activities.

Objectives of the research

1. To know the nature and extent of women participation in agricultural activities.
2. To know the factors influencing participation of women in agriculture.

Methodology

The study was conducted in Hisar district, Haryana, India, with one village randomly selected for research. Hisar was purposively chosen for accessibility during the COVID-19 pandemic. Further, 100 women farmers, engaged in agricultural activities for more than two years, and were surveyed. Data were collected using a pretested interview schedule, focusing on various demographic, social, and work-related variables. Data were coded, tabulated, and analyzed using methods like frequency, percentage, mean, standard deviation, and correlation analysis. Pearson's coefficient of correlation (r) was used to examine the relationships between independent variables like age and education and dependent variables such as participation in agricultural activities.

Results

Results revealed that more than fifty percent (51.00%) of the women were in the age category of 35-45years, followed by 35.00 percent in the 25-35years of age (35.00%) and 14.00 percent respondents were from age category of 45-55years. Regarding education, 39.00% of respondents were found illiterate, whereas 37.00% had completed elementary or middle school and 11.00% had completed education up to high school, and a meagre percent (13.00%) had earned a graduate degree or diploma. The whole sample of responders (100%) was married. It was found that more than sixty percent (65.00%) of the respondents were farmers, and 35.00 percent were labourers. Family education level was low among half of the respondents that is 52.00%, followed by medium in 31.00 percent and 17.00 percent had high education level. Nuclear family type was found among more than fifty percent (58.00%) followed by joint family type (42.00%). More than half of the respondents (59.00%) families were having small family with family members 1-4, followed by 33.00 percent had medium-sized family (4-8members) and a meagre percent (8.00%) were having large family (above 7 members). As per the results, more than fifty percent (53.00%) of respondents had marginal landholding (below 2.5 acres), followed by 27.00 percent had semi-medium (5.00-10.00 acres) and 20.00 percent had land size (2.5-5.00 acres). Majority of the respondents (71.00%) had a family income between Rs. 60,000 to Rs. 4,20,000, followed by 16.00% had an income between Rs. 4,20,000 to Rs. 7,80,000 and 10.00 percent had annual income between Rs. 7,80,000 to Rs. 11,40,000, and lowest percent (3.00%) of women farmers were having family income between Rs. 7,80,000 to Rs. 11,40,000. The findings revealed that most respondents (69%) worked an average of 5 to 8 hours daily in the agricultural fields, while 18% worked 3.5 to 5 hours, 6% worked 2 to 3.5 hours, and only 7% worked between 30 minutes to 2 hours per day. Similarly, Sarsana and Kumari (2022) [13] reported that most women working as agricultural laborers spent 8 or more hours per day in the fields. Budihal (2007) [1] also noted that female farmers spent an average of 517 minutes per day cutting stalks and 380 minutes nipping ear heads during the kharif season, which was longer than the time spent during the rabi season. Additionally, 81% of respondents used the Aari drati tool, while 19% used the Sidhi drati.

Table 1: General profile of the respondents (N=100)

Variables	F (%)
Age	
25-35 Years	35(35.00)
35-45 Years	51(51.00)
45-55 Years	14(14.00)
Education	
Illiterate	39(39.00)
Primary - middle	37(37.00)
High/ senior secondary	11(11.00)
Graduate / Diploma	13(13.00)
Marital status	
Married	100(100.00)

Family occupation	
Farmer	65(65.00)
Labourer	35(35.00)
Family Education status	
Low (1-4)	52(52.00)
Medium (4-8)	31(31.00)
High (above 8)	17(17.00)
Family type	
Nuclear	58(58.00)
Joint	42(42.00)
Family size	
Small (up to 4 members)	59(59.00)
Medium (4-7 members)	33(33.00)
Large (above 7 members)	08(8.00)
Land holding (acre)	
Marginal (below-2.5)	53(53.00)
Small (2.5-5.00)	20(20.00)
Semi-medium (5.00-10.00)	27(27.00)
Annual income (Rs)	
60,000-4,20,000	71(71.00)
4,20,000-7,80,000	16(16.00)
7,80,000-11,40,000	10(10.00)
11,40,000-15,00,000	3(3.00)
Time spend in agriculture activities	
30min-2hr	7(7.00)
2hr-3.5hr	6(6.00)
3.5-5hr	18(18.00)
Above 5hrs	69(69.00)
Types of sickle used	
Sickle 1(Aaridrati)	81(81.00)
Sickle 2 (Sidhidrati)	19(19.00)

Figure in parentheses indicate percentage

Table 2 illustrates the work patterns for specific agricultural tasks, including mustard harvesting, wheat harvesting, and fodder crop cutting, as reported by 100 women farmers. The data shows the frequency of work according to the season and the average time spent on each activity per day (in minutes). Over 67% of women participated in mustard harvesting during peak season, while 33% did so intermittently, with an average of 384±35.6 minutes per day spent on this task. For wheat harvesting, 65% of respondents worked on alternate days, spending 186±39.5 minutes per day. In fodder cutting, 32% of women worked alternately, 31% weekly, and 37% fortnightly, with an average of 152±26.5 minutes spent per day on this task.

Table 2: Work pattern of women farmers in agricultural activities (N=100)

Activities	Frequency of work according to season				Time spent in a day (min)
	5	4	3	2	Mean ± std. deviation
Harvesting (mustard)	67(67.0)	33(33.0)	-	-	384±35.6
Harvesting wheat	-	65(65.0)	53(53.0)	-	186±39.5
Cutting fodder crops	-	32(32.0)	31(31.0)	37(37.0)	152±26.5

5- Daily, 4- alternately, 3-weekly, 2- fortnightly and 1-occasionally

Results from Table 3 outlines the participation of women farmers in various agricultural tasks. The results show that 65% of women were involved in mustard harvesting, 23% in wheat harvesting and 31% in fodder cutting. The findings also revealed that the majority of women (65%) went to the fields between 9-10 am followed by 24% started at 8-9 am and 15% who were found working on the farm in the evening between 5-6 pm.

Table 3: Participation profile of women farmers during agriculture activities (N=100)

Activities	F (%)
Harvesting (Mustard)	65(65.00)
Harvesting (Wheat)	23(23.00)
Cutting fodder crops	31(31.00)
Time to go farm	
8am-9am(morning)	24(24.00)
9 am-10 am (morning)	61(61.00)
5 pm-6 pm (evening)	15(15.00)

Note: Multiple responses

Data from Table 4 presents the time spent by women farmers on selected agricultural tasks focusing on mustard harvesting, wheat harvesting, and fodder cutting. data details the time intervals for farm activities and the

percentage of women involved in each task during these periods. For mustard harvesting, 57.4% of women farmers spent more than 5 hours per day, 27.8% worked 3.5-5 hours and 14.8% spent 2-3.5 hours per day. For wheat harvesting, over 63% of women worked less than 2 hours per day, while 32.4% spent 2-3.5 hours in the field for this task. Shamna *et al*. (2018) [14] also stated that majority of women invest more time in mustard harvesting more than any other crops. Majority of the women (86.00%) were working for less than 2hrs per day for cutting fodder crops.

Table 4: Time spends in agricultural activity

Harvesting (mustard)	F (%)
2-3.5hrs./day	16(14.8)
3.5-5hrs./day	30(27.8)
>5hrs./day	62(57.4)
Harvesting (Wheat)	
Less than 2hrs./day	68(63.0)
2-3.5hrs./day	35(32.4)
Cutting fodder crops	
Less than 2hrs./day	86(86.0)

Table 5 shows the correlation coefficient (r-value) between women farmers' education levels and their participation in agricultural activities. The results indicate an inverse relationship (r = -0.209), meaning that as education levels increase, participation in agricultural tasks tends to decrease. Similarly, Rani (2021) [11] found that education significantly and negatively affects women's involvement in agriculture, based on a study of 250 women. Additionally, the r-values (0.281 and 0.357) highlight a significant positive correlation between the time spent on agricultural activities and the harvesting of mustard and wheat, suggesting that as women spent more time in agricultural work, they were more involved in harvesting these crops.

Table 5: Correlation between personal profile and Dependent variables (Participation in agriculture activities, Harvesting of mustard and wheat)

Variables	Dependent variables		
	(Participation in agriculture activities)	Harvesting (mustard)	Harvesting (wheat)
Independent variables	**r-value**	**r-value**	**r-value**
Age	-.019	-.041	.042
Education	-.209*	-.109	-.006
Family occupation	-.096	.058	.039
Family education status	.015	.077	-.063
Family type	-.005	-.026	.013
Family size	-.033	-.034	-.038
Time spend in agriculture activities	-.087	.281**	.357**

Conclusion

Study highlighted that a majority of the women farmers surveyed were between 35-45 years old, with a significant portion being illiterate. Most of the respondents belonged to nuclear families, were involved in farming activities, and held marginal landholdings. A large proportion worked more than 5 hours daily in agriculture, primarily using traditional tools like the Aari drati sickle. Mustard and wheat harvesting were the most time-intensive tasks, with most women spending more than 5 hours on mustard harvesting. An inverse correlation was observed between education levels and participation in agricultural activities, indicating that higher education reduced involvement in farming. Conversely, the time spent on agricultural activities positively correlated with mustard and wheat harvesting. These findings underscore the crucial role women play in agriculture and the need for tools that reduce drudgery in their work.

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