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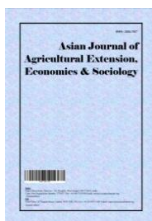
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Assessment of Participation of Women Farm Workers in Agricultural Activities in Maize-Wheat Cropping System of Udaipur District

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Women play a major and crucial role within the agricultural operations. Agriculture is the major occupation in our country and more than 70% of the population depends directly or indirectly on agriculture. In India, 82% of the farmers own marginal and small land less than 2 hectares (Food and agriculture organization). Most Percentages of the women hail from rural areas where the impact of science and technology on the standard of living is limited. This study was conducted to investigate the Percentage participation of women farm workers in agriculture activities in district Udaipur during 2019-20. Five villages of Vallabh Nagar and Gogunda block/Tehsil of the Udaipur district of Rajasthan state were selected randomly for this study, representing the maize-wheat cropping area of the zone. An interview schedule was used to collect data from a random sample from 500 farmers with farm units less than or equal to 2 hectares and follows maize-wheat cropping system. Women in the study area showed active participation in agricultural activities together and alone in Gogunda and Vallabh Nagar blocks. Women of study area also showed the highest traditional participation and spends much time in agriculture activities. The average time spent by

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women per hectare basis in weeding operations, cob picking, stalk harvesting during maize crop are 94-161, 214, 99-118 hours/hectare/woman respectively and 110 – 138 hours/hectare/woman during harvesting in wheat crop. These activities are considered the most drudgery prone activities in Maize-Wheat cropping system. Moreover, women perform some of these identified tasks traditionally due to limited knowledge and skill in applying science and technology to daily living, which consumes most of their time and energy. These were the major causes of discontentment among women involved in agricultural activities. There is no doubt that some of the traditional implement have low risk. Still, at the same time they also have a low level of productivity whereas, improved agricultural tools and implements provides high productivity.

Keywords: *Agricultural activities; women farm workers; survey; shelling; harvesting; maize; wheat.*

1. INTRODUCTION

According to the population census of India 2011, there are about 481.9 million total workers of which 118.8 million are cultivators and 144.3 million are agricultural labourers. In other words, total agricultural labourers constitute nearly 54.6% of the total workers, of which 41.5% are cultivators and 54.9% are mainly agricultural labourers [1].

In Sub-Saharan Africa, Asia, and the Caribbean, female participation in agriculture is largest, whereas in Latin America, it is lowest. 70% of women in third-world countries who live in rural areas work in agriculture. Brazil shows that the total number of men economically active in agriculture dropped between 1970 and 1980, but the number of women increased, and the female proportion raised from 9.6% to 12.7%. Similarly, between 1971 and 1981, the proportion of Peruvian women who were economically involved in rural areas increased from 14% to 21% [2].

E. Krishna [3] stated that in rural India, the Percentage of women who depend on agriculture for their livelihood is as high as 84%. Women make up about 33% of cultivators and about 47% percent of agricultural labours. This is often due to the activities performed by men are visible whereas those by women are invisible. Sociologically speaking the role of women within the cultural context of the country has invariably been misconceived. Constraints long-faced by the women in India are deeply rooted in cultural values, normative patterns, and customs without religious and ethical sanction. They are never recorded for their labour.

Women are currently 33 percent of cultivators and 47 percent of agricultural labourers in rural India, but their work remains invisible in family businesses. Some states have a higher

proportion of female agricultural labourers than others. Agriculture draws a higher proportion of women than men in most backward districts, while less prospective districts have less women than men [4]. Apart from farm work, rural women engaged in activities such as cleaning animal sheds, collecting farmyard manure, collecting fodder, watering, preparing dung cakes, milking, milk processing, and ghee preparation, among others. As a result, women accounted for almost all of the practises associated with livestock management [5]. Sharma, Dubey, and Sharma [6] confirmed that women engaged in agricultural activities for 5-7 hours a day, as opposed to various indoor chores for which they spent the least amount of time.

In another study, it was discovered that women dominated a number of farm activities like cleaning the field, growing nursery seedlings (chilli, tomato, pea), sowing, transplanting, manure application, weeding, thinning, gap filling, harvesting crop and grass cutting, picking, winnowing, drying crops, storage, grading, and so on) [7].

A similar study of "Female Agricultural Labourers" was conducted in the villages of Punjab state's Ludhiana District, Moga District, and Roopnagar District to determine the uncompromising agricultural activities, such as transplanting, weeding, thinning, manual harvesting, picking vegetables, drying and cleaning grains, grading, storage, animal dung collection and disposal, and so on [8].

Women represents almost half of the men force engaged in agriculture. The rural women participate in an exceedingly broad range of agricultural activities such as weeding, harvesting, threshing, shelling etc. They play a prominent role within the entire food system, beginning from selecting seeds, sowing, manuring, drying, stacking, storing and feeding

the family from the harvested produce. Further, they play a significant role in the decision-making process at the household level. It is imperative to know that they seem to influence the choices concerning the selection of farm enterprise and the acquirable production features of a particular crop. Women work longer and more durable than men although they are paid less. They additionally work on a lot of tasks than men. Despite of their huge contributions to farming, the women have mostly remained invisible as active farmers. Most people did not acknowledge the work that the women's involvement in agriculture is gigantic.

1.1 Justification of the Research Study

Research studies work on women's role noticeably concerning rural women in various agriculture activities are scarce. In terms of research, very few studies pertaining to women participation in agriculture activities have been carried out in India, in particularly Udaipur district. Keeping in view the dearth of data regarding women participation in agriculture activities, the study in hand is initiated to fill these gaps.

The study would modify the policy makers to prepare plans, which might address women's issues and develop projects/schemes wherever the hidden potential may well be utilized totally to develop the economy. As for the choice of the rural areas of agricultural areas of Udaipur for this study is concerned, women do participate in agriculture activities here and it is easily accessible for the researcher.

The objectives of the study were:

- i. To identify the type of source and contribution of labor (male & female) in farm units for doing agricultural activities.
- ii. To identify the major women dominated agriculture activities in the study area.
- iii. To identify the time spent by the women for doing various women dominated agricultural activities.
- iv. To identify various problems faced by women in performing women dominated agriculture activities.

This study highlights the role of the invisible working hands of women in agriculture, who are working side by side with the male workers and contributing a lot towards agricultural development. Additionally, to acknowledge the maximum participation of rural women in

agriculture activities, the study conjointly brings the hidden abilities of rural women to the limelight. It signifies the potentials of rural women for correct harnessing and the resultant improvement in farm financial gain and productivity. The study will be of great use to the policymakers in formulating future policies for rural development and the agricultural sector.

2. MATERIALS AND METHODS

2.1 Selection of the Villages for the Study

Five villages namely Siyakheri, Nawaniya Wela, Nawania, Tarawat, Udakhera in Vallabh Nagar block and Chhali Umariya, Nalkhawas, Chhali, Bharwara, Malariya Khurd in Gogunda block/Tehsil of Udaipur district of Rajasthan state were selected randomly for this study, which represents the maize-wheat cropping area of the zone.

2.2 Sampling Procedure

After selecting villages, a fixed sample size of fifty farm units for each village of Vallabh Nagar and Gogunda block has farm unit size less than or equal to two hectares, besides adopting only maize-wheat cropping system was selected. The total number of farm units in Vallabh Nagar and Gogunda blocks was five hundred farm units.

2.3 General Information and Data Collection

Interview schedule (questionnaire) was used as a research instrument to elicit information on women participation in agriculture activities. A well-structured questionnaire was prepared for the collection of data. Efforts were made to keep it simple and understandable so as to capture all the necessary information.

The general information such as Name of the farmer, Number of agricultural workers in the family, major crops grown, soil type, Landholding pattern, tenure status of the farm units and list of problems associated with tools for female workers were taken from the selected villages of Vallabh Nagar and Gogunda tahsil of Udaipur district of Rajasthan state. Agriculture is the main occupation in these villages while adopting mostly maize-wheat cropping system.

2.4 Identification of the Type of Source and Number of Labor (Male & Female) Participating for Doing Agricultural Activities

To identify the actual age of the participation of male and female farmworkers for each operation in maize-wheat cropping system, the name of the tool/ implement being used along with the type of power source (Animal power, Human power, Tractor power, Electric power, Engine power) and the number of labour's (Male & Female) participating for doing each operation was surveyed from fifty farms of each village. Accordingly, the number of labour's (male & female) working for each operation was studied. Based on this information, the female-dominated farm activities for both maize and wheat crops were identified.

2.5 Identification of Time Spent by the Female Farm Workers in Female-dominated Farm Activities on per Hectare Basis

Based on the information related to female-dominated farm activities, data analysis (descriptive) was conducted to determine the time spent by the female farmworkers in the female- dominated farm. Women participation in agriculture activities was measured in person-hours/hectare and one day consists of 8 hours.

3. RESULTS AND DISCUSSION

This section deals with the discussion and interpretation of the data collected and also highlights the main findings relating to the objectives set forth for this study. Efforts were made to emphasize those findings, which were significant and prominent.

3.1 General Information

Major crops: The major crops grown in Gogunda tehsil is maize, wheat, barley, jowar, and the major crops grown in Vallabh Nagar

block are maize, wheat, groundnut, rapeseed mustard, gram etc.

Soil type: Most of the area is covered with Canal irrigated Clay Loamy Medium to Deep Soils for maize-wheat cropping system in Vallabh Nagar block and Heavy clay soils in Gogunda block.

Irrigation practices: The principal means of irrigation practices in the wheat crop in the Udaipur district are wells/tube wells, though canals, tanks, wells etc., irrigate some areas. Canal irrigation, well irrigation and flood irrigation are most practicable in Gogunda and Vallabh Nagar blocks because of smaller areas.

Size of Land holding and cropping pattern: It is an important factor influencing almost all agriculture activities including the participation of women. Hence a fixed sample size of fifty farm units for each village of Vallabh Nagar and Gogunda block, having farm unit size less than or equal to two hectares, besides adopting only maize-wheat cropping system was selected.

Table 1 indicates the Size of land holding in the Gogunda block. The total area under farm size is more in Chhali village, 37.13 ha and the total area under farm size is less in Bharwara village, 23 ha.

Table 2 indicates the Size of land holding in the Vallabh Nagar block. The total area under farm size is more in Nawaniya village, 57.61 ha and the total area under farm size is less in Tarawat village, 17 ha.

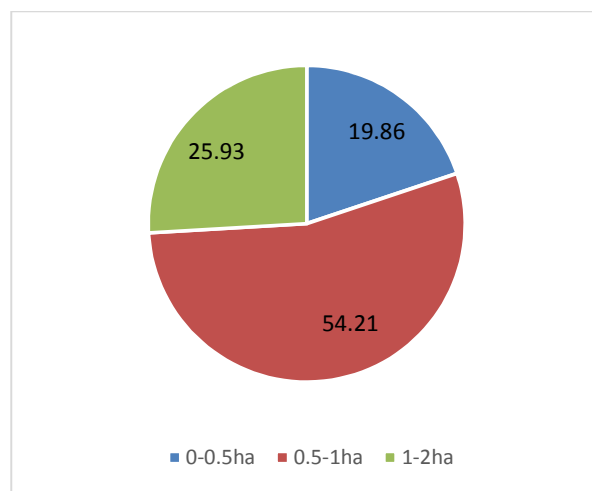
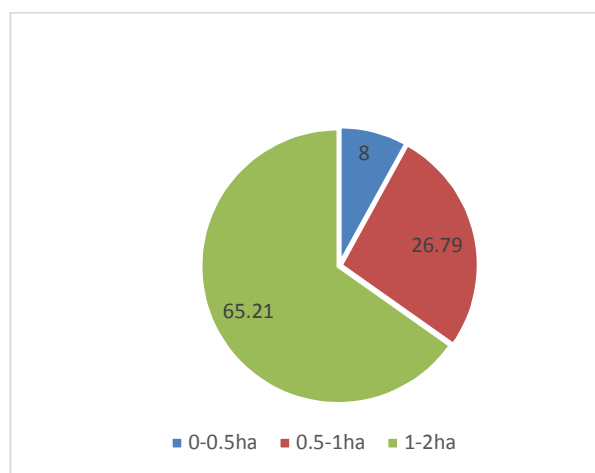
Fig. 1 represents the pictorial Percentage distribution of area in Gogunda block. It can be seen in Fig. 1, that the percentage of area is more in case of 0.5-1 ha category and the percentage of area is less in case of 0-0.5 ha category. Fig. 2 represents the pictorial Percentage distribution of area in Vallabh Nagar block. It can be seen in Fig. 2, that the percentage of area is more in case of 1-2 ha category and the percentage of area is less in case of 0-0.5 ha category.

Table 1. Size of land holding in Gogunda block

S. No.	Name of the village	Total area under farm size(ha)	Percentage of area (%)		
			0-0.5 ha(%)	0.5-1ha(%)	1-2 ha (%)
1.	Malariya khurd	24.4	47.21	46.64	6.15
2.	Chhali Umariya	26.69	38.18	41.21	20.61
3.	Nalkhawas	27.60	26.20	62.93	10.87
4.	Bharwara	23	39.13	56.52	4.35
5.	Chhali	37.13	5.72	60.60	33.68
Total		138.82	19.86	54.21	25.93

Table 2. Size of land holding in Vallabh Nagar block

S. No.	Name of the village	Total area under farm size(ha)	Percentage of area		
			0-0.5 ha(%)	0.5-1ha(%)	1-2 ha (%)
1.	Siyakheri	17.52	-	4.81	95.19
2.	Nawaniya Wela	28.25	9.73	13.27	23
3.	Nawaniya	57.61	-	42.53	57.47
4.	Tarawat	17	47.06	52.94	-
5.	Udakhera	54.5	0.92	13.76	85.32
Total		174.87	8	26.79	65.21

**Fig. 1. Percentage distribution of area in Gogunda block****Fig. 2. Percentage distribution of area in vallabhnagar block****Number of agriculture workers in a family:**

Family size reflects an important relationship between women participation and agriculture activities. The total number of agricultural workers (including male and female) of farm units less than 2 hectares in Gogunda blocks is 600

respectively. Nearly 50% male agricultural workers and 50% female agricultural workers. The maximum family size was 6 and the minimum family size was 2. The average family size was 4. Table 3, represents the number of agricultural workers in a family in Gogunda block.

Table 3. Number of agricultural workers in a family in Gogunda block

S. No	Name of the village	No. of agricultural workers in a family		Total no. of agricultural workers in a family (Male + Female)
		Male	Female	
1.	Malariya khurd	58	64	122
2.	Chhali Umariya	62	57	119
3.	Nalkhawas	57	58	115
4.	Bharwara	60	61	121
5.	Chhali	63	60	123
Total		300	300	600

The total number of agricultural workers in a family (including male and female) of farm unit less than or equal to 2 hectares in Vallabh Nagar block is 754 respectively. Nearly 51.72% male agricultural workers and 48.28% female agricultural workers. The maximum family size was 8 and minimum family size was 2. The average family size was 5. Table 4, represents the number of agricultural workers in a family in Vallabh Nagar block.

3.2 Tenurial Status of Farm Units

The tenurial status of farm units is very important in this procedure. The sampled respondents were categorized in two different Tenure statuses: owned and leased/rent. It was noted that around 76.31% of farm units surveyed cultivate their land they owned, while farm units represent that group that cultivated the land

rented by someone else on a share or rent/ lease basis as shown in Table 5. This group was 23.69% of the total farm area in Gogunda block.

It was noted that around 64.63% of farm units surveyed cultivate their land they owned. At the same time, farm units represent that group that cultivated the land rented by someone else on a share or rent/ lease basis as shown in Table 6. This group was 35.47% of the total farm area in Vallabh Nagar block.

Fig. 3 indicates the pictorial representation of tenurial status of farm units in Gogunda block. In Gogunda block, the owned land category is more (76.31%). Fig. 4 indicates the pictorial representation of tenurial status of farm units in Vallabh Nagar block. In Vallabh Nagar block, owned land category is more (76.31%).

Table 4. Number of agricultural workers in a family in Vallabh Nagar block

S. No	Name of the village	No. of agricultural workers in a family		Total no. of agricultural workers in a family (Male + Female)
		Male	Female	
1.	Siyakheri	75	72	147
2.	Nawaniya Wela	58	55	113
3.	Nawaniya	99	94	193
4.	Tarawat	86	78	164
5.	Udakhera	72	65	137
Total		390	364	754

Table 5. Actual area under farm size in Gogunda block

S. No.	Name of the village	Total area (owned+leased)	Actual area under farm size (%)	
			Owned	Lease/Rent
1.	Malariya khurd	24.4	73.36	26.64
2.	Chhali Umariya	26.69	71.41	28.59
3.	Nalkhawas	27.60	74.64	25.36
4.	Bharwara	23	76.08	23.92
5.	Chhali	37.13	83.17	16.83
Total		138.82	76.31	23.69

Table 6. Actual area under farm size in Vallabh Nagar block

S. No.	Name of the village	Total area (owned+leased)	Actual area under farm size (%)	
			Owned	Lease/Rent
1.	Siyakheri	17.52	61.36	38.64
2.	Nawaniya Wela	28.25	49.09	50.91
3.	Nawaniya	57.6	73.09	26.91
4.	Tarawat	17	57.35	42.65
5.	Udakhera	54.5	66.75	33.25
Total		174.87	64.63	35.47

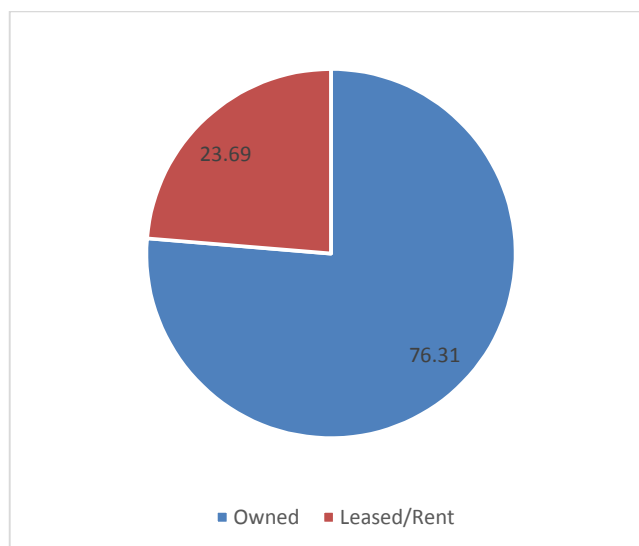


Fig. 3. Tenurial status of farm units in Gogunda block

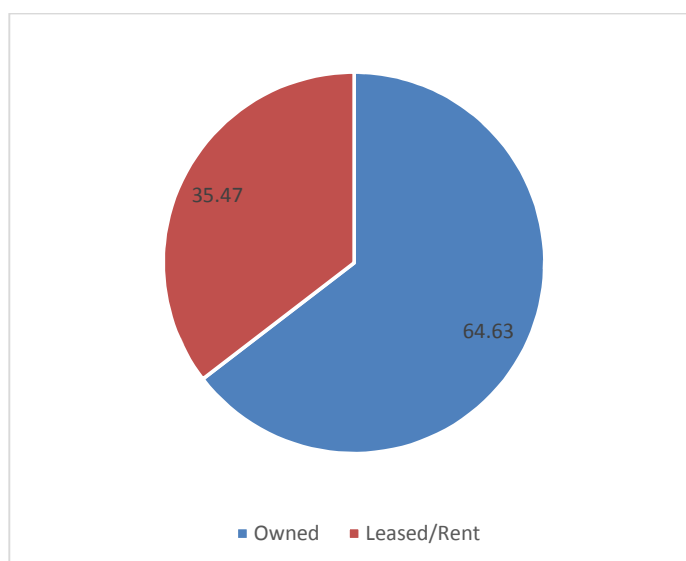


Fig. 4. Tenurial status of farm units in Vallabh Nagar block

3.3 Identification of the Type of Source and Number of Labour (Male & Female) being Used by Farmers for doing Different Agricultural Activities in Maize-wheat Cropping System

(a) Description of activities related to cultivation practised in study area

This section outlines detailed information about type of operation, the name of the tool/ implement, type of source and the number of labour (male & female) required on the farm for agricultural activities in maize-wheat cropping system.

The nature of activities related to maize-wheat cropping system is seasonal and performed stage wise. In the first stage, land preparing activities include cleaning farm fields, ploughing, harrowing, boundary making, manuring the field and sowing seeds. These activities are known as preparatory activities for crop cultivation. For maize and wheat such activities start from the first part of July and for wheat, from the mid part of November in the study area in Vallabh Nagar and Gogunda blocks.

(b) Farm activities related to maize crop in Vallabh Nagar and Gogunda block

For tillage operations, in maize crop, ploughing was the basic method, which was opted by farmers having farm units less than or equal to 2 hectares in both Vallabh Nagar and Gogunda blocks. About 52.4% of farm units, opted Tractor drawn cultivator and the rest of 47.6% farm units opted animal-drawn cultivator for tillage operations in the Gogunda block. About 45% of farm units, opted Tractor drawn cultivator, 18% of farm units opted Tractor drawn mould board plough and rest 37% of farm units opted animal-drawn cultivator for doing tillage operations in Vallabh Nagar block. For using animal power and tractor power, human power is required for operation. The entire operation is handled by male-only in both blocks. For tractor-drawn cultivator and tractor-drawn mould board plough nearly 35-42 hp range tractor was being used in both blocks.

For sowing operations, in maize crop, seed drill was being used for sowing seeds. About 12.2% of farm units, opted Tractor drawn seed drill, 42.6% of farm units opted animal-drawn seed drill and about 45.2% of farm units opted in-line sowing to do sowing operations in the Gogunda

block. About 25.9% of farm units, opted Tractor drawn seed drill, 48.6% of farm units opted animal-drawn seed drill and 25.2% opted of in-line sowing for doing sowing operations in Vallabh Nagar block. Human power is required for using animal power and tractor power. Around 52.8% of operation is handled by both male and female jointly, and 47.2% male workers alone operate sowing operation in Gogunda block and 48.2% of operation is handled by both male and female jointly and 51.8% of male workers operate sowing operation alone. For tractor-drawn seed drill nearly 35-42 hp range tractor were being used in both blocks.

Weeding operations were primarily employed in maize crop. Farmers employ manual labouring for this operation, where female workers were most dominant. Nearly 83.26% female workers and the rest 16.74% were male and female workers jointly in the Gogunda block and 89.72% female workers and the rest 10.28% were male and female workers jointly in Vallabh Nagar block. The contribution of female workers was more in the case of weeding operations in both blocks. Most female farm workers use khudali and khurpi for doing intercultural operations.

Fertilizer application in maize is a very important factor. Besides, using of chemical fertilizers like urea, usage of cow dung for manuring the field is also a common practice in both Gogunda and Vallabh Nagar blocks. They use fertilizers twice in this process. This process is usually done manually in both the blocks in maize crop. Around 52.32% of operation is handled by both male and female farmworkers jointly, 39% by females alone and 8.68% male alone in the Gogunda block. About 68% of operation is handled by male and female farm workers jointly, 25% by female alone and 7% male alone in Vallabh Nagar block.

Plant protection was employed mainly in maize crop. Around 26% of farm units use knapsack sprayer and 74% of farm units do not use any sprayers for plant protection in Vallabh Nagar block and only 8% spraying in Gogunda block. Mostly spraying operation was done by the male workers only. Male workers were most dominant for this operation in both the blocks.

Cob picking in maize crop was dominant by female farm workers. Nearly 89.13% of female workers and the rest 10.87% were male and female workers jointly in Gogunda block and

91.26% female workers and rest 8.74% were male and female workers jointly in Vallabh Nagar block. Besides, the contribution of female workers was more in the case of cob picking in both blocks. Mostly female farm workers use their hands for picking the cobs.

The female farmworkers mostly dominant in doing stalk harvesting operation in maize crop. Nearly 74.11% were female workers and the rest 25.88% were male and female workers jointly in the Gogunda block and 76.62% female workers and the rest 23.38% were male and female workers jointly in Vallabh Nagar block. The contribution of female workers was more in the case of stalk harvesting in both the blocks. Mostly female farm workers use traditional sickle for stalk harvesting of maize crops.

Shelling in maize crop was dominated mainly by the female farm workers. Shelling was usually done by using maize sheller. Some female farm workers usually follow the easiest traditional system for shelling maize to press the thumbs on the grains to detach them from the ears. Nearly 56.43% use maize shellers and the rest 43.57% follows the traditional way in the Gogunda block and 64.53% use maize shellers and the rest 25.47% follows the traditional method in Vallabh Nagar block. Nearly 66.44% were female workers and the rest 33.56% were male and female workers jointly in Gogunda block and 70.43% female workers and the rest 29.57% were male and female workers jointly in Vallabh Nagar block.

(c) Farm activities related to wheat crop in Vallabh Nagar and Gogunda block

For tillage and sowing operations, the procedure is the same as followed in maize crop in wheat crop. For Nutrient management in wheat crop, DAP is most commonly used and in some villages combination of both DAP and urea was being used in both Gogunda and Vallabh Nagar blocks. This is also done manually. Weeding is not a common practice in both Gogunda and Vallabh Nagar blocks.

Plant protection was employed mainly in wheat crop. Around 26% of farm units use knapsack sprayer and 74% of farm units do not use any sprayers for plant protection in Vallabh Nagar block and only 0% spraying in Gogunda block. Mostly spraying operation was done by the male workers only. Male workers were most dominant for this operation in both the blocks.

Female farmworkers mostly dominated harvesting in the wheat crop. Nearly 92.16% were female workers and the rest 7.84% were male and female workers jointly in the Gogunda block and 96.23% female workers and the rest 3.77% were male and female workers jointly in Vallabh Nagar block. The contribution of female workers was more in the case of wheat harvesting in both the blocks. Mostly female farm workers use traditional sickle for harvesting of wheat crops.

Threshing in the wheat crop was done mainly using a thresher. Farm units less than or equal to 2 hectares mainly rent threshers for doing threshing operation in both the blocks. The operation is joint, where male and female farmworkers work together in Gogunda and Vallabh Nagar blocks.

(d) Participation of Women Workers in maize and wheat Cultivation

Activity wise participation of women labour in crop cultivation reveals their level of labour utilization which varies among the different cultivation activities. In the case of the cultivation of maize, eight areas of activities have been taken and in wheat crops, seven areas of activities have been taken to analyse the extent of participation of women in different activities and to assess their overall participation in its production process.

Almost all the women workers of farm families have participated alone as well as jointly in activities like sowing, nutrient management, weeding, cob picking, stalk harvesting and shelling operations of maize crop cultivation and sowing, nutrient management, harvesting and threshing operations of wheat crop. But some of them have not been involved in certain activities related to cultivation. Table 7 shows the percentage of women involved in different activities jointly with male workers and also alone in both maize crop cultivation. The Table 7, indicates that the women farm workers participate alone actively in the operations like fertilizer application, weeding, cob picking, stalk harvesting and shelling operations of maize crop cultivation. Hence the operations in which women farm workers work alone can be considered as the women-dominated operations in maize cultivation.

Table 8 show the percentage of women involved in different activities jointly with male workers and

also alone in wheat crop cultivation. Table 8, indicates that the women farm workers participate alone actively in the operations like nutrient management and harvesting operations of wheat crop cultivation. Hence the operations in which women farm workers work alone can be considered as the women-dominated operations in wheat cultivation.

(e) Identification of time spent by the female farm workers in female dominated farm activities on per acre basis

From the above Table 9 and Table 10, it is clear that the maximum Percentage participation by

the women farm workers in the operations like shelling, stalk harvesting, cob picking and weeding operations in case of maize crop and harvesting operation in wheat crop. These operations can be considered as the female dominated operations in maize-wheat cropping system. The total time spent by the women farmworkers in the activities mentioned above in maize crop, which were calculated through field experimentations is 194 – 493 hours/hectare/ woman as shown in Table 9. Munir et al. [9] also stated that the women farm workers spends much time during their harvesting operation in wheat crop.

Table 7. Percentage of women involved in maize cultivation

S. No	List of activities in maize crop	Percentage of women participation jointly (M+F) (%)		Percentage of women participation alone (%)	
		Gogunda	Vallabh Nagar	Gogunda	Vallabh Nagar
1.	Land preparation	0	0	0	0
2.	Sowing	52.8	48.2	0	0
3.	Fertilizer application	52.32	68	39	25
4.	Weeding	16.74	10.28	83.26	89.72
5.	Plant protection	0	0	0	0
6.	Cob picking	10.87	8.74	89.13	91.26
7.	Stalk harvesting	25.88	23.38	74.11	76.62
8.	Shelling	33.56	29.57	66.44	70.43

Table 8. Percentage of women involved in wheat cultivation alone

S. No	List of activities in wheat crop	Percentage of women participation jointly (M+F) (%)		Percentage of women participation alone (%)	
		Gogunda	Vallabh Nagar	Gogunda	Vallabh Nagar
1.	Land preparation	0	0	0	0
2.	Sowing	52.8	48.2	0	0
3.	Nutrient management	52.32	68	39	25
4.	Weeding	0	0	0	0
5.	Plant protection	0	0	0	0
6.	Harvesting	7.84	3.77	92.16	96.23
7.	Threshing	100	100	0	0

Table 9. Time in hours spent by one woman per hectare in women-dominated operations involved in maize cultivation

S. No	List of activities in maize crop	Tools/implements	Time required per woman per hectare in hours
1.	Intercultural operations	Khudali	160.15
		Wheel hand hoe	94.63
		Pratap wheel hand hoe	94.41
2.	Cob picking	Manual	213.99
3.	Stalk harvesting	Sickle	117.98
		Serrated sickle	98.64
Total time spent			194 - 493 hours/hectare/woman

Source: Field experiments

Table 10. Time in hours spent by one women per hectare in women-dominated operations involved in wheat cultivation

S. No	List of activities in maize crop	Tools/implements	Max time required per woman per hectare in hours
1.	Harvesting	Sickle	137.58
		Serrated sickle	110.89
Total time spent			110 – 138 hours/hectare/woman

Source: Field experiments

The total time spent by the women farmworkers in the activities mentioned above in wheat crop, which were calculated through field experimentations is 110 – 138 hours/hectare/woman as shown in Table 10. Munir et al. [9] also stated that the women farm workers spends much time during their shelling operation in maize crop.

3.4 Problems Faced by the Women Farm Workers

Analysis of the report showed that female farm workers participate in the operation which involves more drudgery. Many of the women's operations were ordos, back-breaking and required bending and crouching postures for longer hours of time. After becoming concerned about the work load on the women respondents in the sampled area, it becomes mandatory to know about the health standard and ill effects of work on female respondents. There are many infirmities associated with work, particularly women who have been seen complaining about the work load that has deteriorated their health standards as they are being considered weak. They do not get time for proper maintenance of their health. From the above study, it can be marked that agricultural work needs sufficient time, particularly for women farmworkers in doing work for whole day long and their health gets affected because of over workload and extreme climatic conditions desolations of workers.

4. CONCLUSIONS

Women farmworkers of Gogunda and Vallabh Nagar blocks of Udaipur districts actively participate in the agricultural activities. Almost all the women workers of farm families have participated alone and jointly in activities like sowing, nutrient management, inter-culture, cob picking, stalk harvesting and shelling operations of maize crop cultivation and sowing, nutrient management, harvesting and threshing operations of wheat crop. But the women farm workers participated alone in the operations like

nutrient management, inter-culture, cob picking, stalk harvesting and shelling operations of maize crop cultivation and nutrient management, harvesting operations in wheat crop. After the field survey in both the blocks, the maximum time spent by the women farm workers was in the operations including weeding, cob picking, stalk harvesting and shelling operations in case of maize crop and harvesting in wheat crop. The maximum time spent by the women farmworkers in the farm can be considered as the most women-dominant farm activities in maize-wheat cropping system. More determination struggles are needed to encourage women, raise women's awareness and understanding of efficient management practices and enact of drudgery-reducing tools/ implements for small and marginal land farm units in agriculture activities.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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