



Research Article

AN EXPLORATORY STUDY ON WOMEN'S PARTICIPATION IN MAIZE PRODUCTION SYSTEM IN TELANGANA STATE

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Abstract: The present study was conducted in Maheswaram mandal of Ranga Reddy district, Telangana. One hundred farm women engaged in Maize production system were selected through purposive random sampling technique. Nearly 67 percent of the farm women surveyed were above 35 years old and had more than 15 years of farming experience (50%). Most of the female workers were involved in agricultural activities like sowing, weeding, fertilizer application and harvesting of maize. Though they had their own land, many of them were working as labourers in others' field. Technologies used in farmers field was Tractor, Gampa (basket), Kalvara, Kodavali. Postures adopted while performing different agricultural activities were *i.e.*, Sitting, Squatting, Kneeling, Standing and bending. Discomfort experienced in various body parts while working were Shoulder, Upper arm, Lower arm, Waist, Lower back and Knee. Work demand was there in manually performing agricultural activities. Feeling of exhaustion was experienced. Posture assumed in work was very difficult. Workers perceived the manual loads operation as heavy load and it was very painful.

Keywords: Maize production system, Drudgery, Body discomfort and postures

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Introduction

The third most important cereal crop after rice and wheat is Maize (*Zea mays* L.). Maize is grown in warm weather conditions. Yield will be high when temperature is more than 32°C. First soil tillage is done to improve the germination and root growth and to optimize the infiltration and evaporation. Ploughs are used for soil tillage. Planting should be such that the most heat and water sensitive growth stage of maize (*i.e.*, scheduled. the flowering stage) does not coincide with midsummer droughts. The depth of maize planting depends on soil type and planting date because deeper the planting of seed, higher the yield as it can maintain seed to soil contact better and adequate moisture content. Usually 1.5 to 2 inches is recommended. A study conducted by Renuka *et al.* (2016) on characterization of drudgery of women labourers in maize production system in Dharwad revealed that about 40 percent of households had more than 10-20 years of farming experience and more than 50 percent of women indulge in dibbling, top dressing and weeding activities [1]. While doing these activities pain was experienced in lower back, upper arm, shoulder, upper leg, lower arm and lower leg. The main postures used in all activities were standing and bending, while squatting and bending were observed in weeding activity. Another study on empirical analysis of women participation in farm activities in rural Kashmir revealed that 90 percent of women involved in harvesting followed by 80 percent in threshing and 32 percent of women in sowing of seeds, storing of grains was done by 56 percent of women [2].

Methodology

Descriptive research design was adopted for the present study. One hundred female farmers engaged in Maize production system were selected randomly from Maheswaram mandal of Rangareddy district (which has low maize productivity *i.e.*, <2 tons/ha.), Telangana. Personal interview method was followed for collecting data by using pre coded questionnaire. Respondent was female farmer answered for the household details especially for men's participation in the

agricultural activities of maize production system.

Results and Discussion

Results of the present study were presented below

Table-1 Distribution of sample collected from operational villages, (N=100)

SN	Name of the village	Frequency	Percentages (%)
1.	Kalwakole	42	42
2.	Pendyal	27	27
3.	Ramchandraguda	14	14
4.	Dabliguda	13	13
5.	Dubbacherla	4	4
	Total	100	100

Majority of the farmers were selected randomly from Kalwakole and more or less an equal percentage of the sample was drawn from Ramchandraguda and Dabliguda. PRA technique was used to build rapport with the villagers prior to data collection.

Table-2 Crop calendar and Diversification, (N=100)

S N	Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	Maize	-	-	-	-	Land Preparation and sowing		Weeding and fertilizer application		Fertilizer spraying		Harvesting	

Usually maize cultivation in kharif season starts in the month of May-June with land preparation and sowing followed by weeding and fertilizer application during the months of July-august. Harvesting is completed by December.

Table-3 General information of the households, (N=100)

Socio economic parameters		Number	Percentage
Age (years)			
a.	18-25	7	7.0
b.	25-30	17	17.0
c.	30-35	9	9.0
d.	Above 35	67	67.0
Mean \pm S.D		39.59 \pm 10.5	
Sex			
a.	Male	-	-
b.	Female	100	100
Caste			
a.	SC	20	20.0
b.	ST	14	14.0
c.	OBC	60	60.0
d.	General	6	6.0
Marital status			
a.	Married	89	89.0
b.	Married but separated/ divorced/widow	11	11.0
Family type			
a.	Nuclear	51	51.0
b.	Joint	47	47.0
c.	Extended	2	2.0

Nearly 67 percent of the farm women surveyed were above 35 years old. Only 24 percent belonged to the age group of 18-35. Majority (89%) of the farm women were married and only 11 percent were married but separated or divorced or widows. Nuclear families (51%) and joint families (47%) seemed to be prevalent in the selected villages. Majority of the respondents belonged to OBC (60%) followed by SC (20%).

Table-4 Socio-economic parameters of the households, (N=100)

Socio economic parameters	Frequency	Percentage
Family size		
a) Small (up to 4 members)	49	49
b) Medium (5 to 8 members)	41	41
c) Large (Above 8 members)	10	10
Educational status		
a) Functionally literate	20	20
b) Primary	11	11
c) Middle	5	5
d) High school	11	11
e) Graduate	4	4
f) Illiterate	49	49
No. of years of experience working in agricultural activities		
No. of years of experience	Frequency	Percentage
a) Up to 3	5	5
b) 3-6	9	9
c) 6-9	14	14
d) 9-12	9	9
e) 12-15	13	13
f) Above 15	50	50
Mean \pm S.D	4.66 \pm 1.6	

Regarding, family size 49 percent belonged to the small family *i.e.*, up to 4 members; and 41 percent belonged to the medium size family *i.e.*, 5-8 members. Fifty percent of the respondents were educated/ functionally literate and nearly 50 percent were illiterates. With regard to number of years of farming experience, maximum percentage (50%) of households had more than 15 years of farming experience followed by equal percent (24%) each had 6-9 years and 12-15 years of farming experience.

Table-5 Gender participation, technology used, sourcing and satisfaction in production system activities, (N=100)

Farm activities	Gender participation (%)			Technology used F (%)		Satisfied	Not satisfied
	M	F	B	Conventional	Improved		
Land Preparation							
Ploughing	100%				Tractor		
Manure application		100%		Basket		59%	41%
Forming ridges and furrows	50%	50%	100%				
Planting/sowing							
Planting/sowing		100%		Basket		71%	29%
Weed Management							
Spraying Weedicide	100%			Pesticide Sprayer			
Hand weeding		100%		Manual Sickle		62%	38%
Fertilizer application							
Fertilizer application		100%		Basket		56%	44%
Irrigation							
Irrigation				Canal irrigation			
Weeding (row to row)							
Weeding		100%		Manual Sickle		48%	52%
Harvesting							
Cutting/Plucking		100%		Manual Sickle		46%	54%
Cleaning	50%	50%	100%	Hand Hoe & Rake			
Transporting							
Carrying		100%		GunnyBags/basket		47%	53%
Loading	100%			Trolleys/ Lorry			

Table-6 Discomfort caused in body parts while working in the production system activities, N(100)

Farm activities	Body part involved									
	Neck	Shoulder	U Arm	L Arm	Waist	Hips	Abdomen	L Back	U Back	Knee
Manure application		15 (3); 85 (4)	15(3); 81(4); 4(5)	100(3)	4(4)	-	-	4(3)	4(4)	4(1); 12(3);84(4)
Planting/sowing	8(3); 92(4)	100(4)	100(4)	100(4)	92(4)	8(3)	-	2(2); 2(3); 92(4)	100(4)	8(3); 92(4)
Spraying Weedicide		100(4)	100(4)	100(4)	100(3)	-	-	100(3)	100(3)	
Hand weeding	96(3); 1(5)	36(3); 32(4); 32(4)	4(3); 96(4)	4(3); 96(4)	100(3)	-	-	4(3); 96(4)	4(3); 96(4)	1(3); 96(4)
Fertilizer Application		39(3); 15(4); 10(5)	100(4)	100(4)	100(3)	-	-	100(4)	100(3)	100(3)
Weeding (Row –Row)	100(3)	100(3)	100(3)	100(3)	100(3)	-	-	100(3)	100(3)	100(4)
Cutting	96(4)	100(4)	100(4)	100(4)	31(3);69(4)	-	96(4)	100(4)	100(4)	100(4)
Carrying	100(4)	100(3)	100(3)	100(4)	100(3)	-	100(3)	100(4)	100(4)	100(4)
Loading	100(3)	100(3)	100(3)	100(3)	100(3)	-		100(3)	100(3)	100(3)

Table-7 Average time spent by farm women in production system, (N=100)

Farm activities	Hours/day	Number of days	Number of labour employed	*Number of man days/season	**Workload as per time
Planting/sowing	8	2	4	8	3
Hand weeding	6	12	4	36	3
Harvesting – Cutting	6	20	4	60	3

No. of man days: 8 hour =1 man day, **work load as per time: very high duration-5, high duration-4, moderate duration-3, less duration-2, very less duration-1

Table-8 Activity analysis by posture in production system activities, (N=100)

Farm activities	Nature of Posture					
	Standing	Twisted	Sitting	Squatting	Kneeling	Bending
Land preparation						
Ploughing	30	-	-	-	-	-
Manure application	30	-	-	-	-	30
Forming ridges and furrows	-	-	-	-	-	30
Planting/sowing	30	-	-	-	-	30
Weed management						
Spraying weedicide	30	-	-	-	-	-
Hand weeding			30	30		30
Fertilizer application	30					
Irrigation						30
Harvesting						
Cutting	30					
Sorting				30	30	
Cleaning	30		30			
Transporting						
Carrying	30					
Loading	30					30

Table-9 Activity analysis of duration/time in production system, (N=100)

Farm activities	Hours/day	Number of days	Number of labour employed	*Number of man days/season	**Workload as per time	Time load factor	Time load
1. Manure application	7	3	4	9	4	4	16
2. Planting/sowing	6	2	3	4	3	4	14
3. Hand weeding	8	2	3	7	4	4	15
4. Fertilizer application	6	2	3	4	4	4	15
5. Weeding (row to row)	8	2	4	8	4	4	16
6. Cutting	8	7	3	22	4	4	17
7. Carrying	5	1	2	2	3	4	14

Table-10 Activity analysis by posture in maize production system activities, (N=100)

Farm Activity	Sum of Discomfort Rating	Average Discomfort Rating	Posture Load Factor	Posture Load
1. Manure application	15	2	5	11
2. Planting/sowing	32	4	5	20
3. Hand weeding	33	4	5	20
4. Fertilizer application	21	4	5	21
5. Weeding (row to row)	25	4	5	18
6. Cutting	35	4	5	22
7. Carrying	35	4	5	19
8. Loading	24	3	5	17

There was a clear gender variation in the activities carried out. Cent percent male participation was there in ploughing, spraying weedicide and loading the produce. While cent percent women participation was there in manure application, sowing, weeding, cutting and carrying the corn cobs from field to the main road or some times to home. However, equal participation was there in forming the ridges and furrows and cleaning the produce. Basket was used for manure application, pesticide sprayer for the prevention of weeds, manual sickle for removing the weeds, hand hoe and hand rake for cleaning purpose, gunny bags or basket for collecting the produce, trolleys or lorry for lifting the produce from field to the market. However, majority of the respondents were dissatisfied with the technologies used for weeding, harvesting and carrying the crop from farm to the home as these activities required more time and man power. Height (cm) and weight (kg) of the sample was measured by using anthropometric rod and weighing machine. Body mass index was calculated by multiplying height with weight. It was found that majority of the sample (57%) were having normal weight, while 17 percent were having underweight and only negligible percentage belonged to morbid obesity category. Respondents expressed that more pain was felt in lower arm while applying manure, shoulder, upper arm and back in doing planting/sowing; shoulder, arms and back were painful in applying weedicide; pain

was felt in waist by cent percent in doing weeding activity; arms, back, waist and knee pained during fertilizer application, cutting, carrying and loading activities. Only while cutting and carrying, women expressed moderate to severe pain in the abdomen. More man power was required for harvesting followed by weeding activities as more labour was required for more number of days to complete the task. Respondents expressed that moderate duration was needed to complete the work load as per time for planting, weeding and harvesting activities. Postures adopted while performing different agricultural activities were mostly bending and standing followed by sitting and squatting. Manure application, sowing and loading activities required the workers to alternate their posture between standing and bending. Only sorting of cobs required kneeling posture. From the above [Table-7], Time spent by farm women while cutting the cobs and weeding was high i.e., 8 hrs/day followed by fertilizer application and sowing for 6hrs/day. Number of man days required for harvesting i.e. plucking the cobs was highest (22 days). Sowing the corn kernels and carrying the cobs from the field to storage place required less time and less labourers. Majority of the activities such as sowing, weeding, applying fertilizer, maize cutting, carrying the produce from home in maize production system were performed by alternating standing, squatting and bending postures [Table-8].

Total discomfort ratings indicated that majority of the farm women were suffering severe discomfort while performing activities in maize production system such as cutting maize cobs from the plants, carrying them home from farm, followed by weeding and sowing.

Conclusion

It can be concluded from the above study that, more women's participation was there in those activities which require more time and attention. Cent percent male participation was there only in ploughing as it is done by tractor, spraying for which pesticide sprayer is used and loading onto trucks or trolleys. Since farm women are involved in repetitive, monotonous and long duration tasks with wrong postures, majority of them had experienced moderate to high discomfort in various body parts. Most of the men based activities are mechanized, but women based activities are mostly manually operated ones. Thus it is recommended to introduce a package of improved tools/implements for sowing, weeding and harvesting operations so that it would reduce the drudgery of women.

Application of research: Policy making

Research Category: Rural development, Energy conservation

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