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Research Article

Technological needs perceived by farm women in sorghum production

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SUMMARY : Farm women in our country have limited access to technological advice, as extension programmes tend often to transfer agricultural technical information to men and focus on home technology for women. In the process only male farmers are linked to the agricultural scientists ignoring the importance for the need for knowledge and experience of women in technology design, development and evaluation. The present study, therefore, envisaged to identify the technological needs of farm women in sorghum production to develop need based technologies. The study was conducted in semi-arid region of Andhra Pradesh. Data were collected from 256 farm women from 8 villages. Technological needs were defined as technologies which the farm women require to carry out the various farming activities in the most efficient manner without any strain on their part**.** Technological needs were identified using the rank based quotient (RBQ) method. The farm women perceived the following technological needs for sorghum production activities. A simple device to sow seeds, as sowing is a skillful and tiring activity, low cost easily operable winnowers that reduce physical fatigue, possibility of altering the harvesting time as it is very sunny and high stalks of sorghum cause suffocation, mechanism that protects from dust during winnowing as it causes soreness in the mouth, modify/redesign sickles to prevent minor injuries, improvising the (''*gorru*'') seed drill as hands were hurt while pouring the seeds and mechanical weeders that reduce physical fatigue.

KEY WORDS :
Farm women,
Technological needs,
Need based technology

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BACKGROUND AND OBJECTIVES

Women are the primary cultivators and work longer than men in fields besides their involvement in domestic activities (Jain, 1996 and Kantor, 2008). Many of the activities farm women undertake require considerable skills and application of technology. Moreover, the activities they are engaged in are repetitive, monotonous and drudgery prone (Kanwar, 2003). Therefore, the objective of the present study was to identify the technological needs of farm women based on the problems associated with major activities performed by them so that appropriate technologies which alleviate drudgery and increase their work efficiency may be evolved.

RESOURCES AND METHODS

The present study was conducted in Mahboobnagar district of Andhra Pradesh, India. A representative sample of 32 farm women from each village and thus, the total sample size was 256 farm women from 8 villages. Technological needs of farm women were identified by using the rank based quotient (RBQ) method. Technological needs were defined as those technologies which the farm women require to carry out the various activities in sorghum production in the most efficient manner without any strain on their part. Technological needs were ranked using the participatory rural appraisal (PRA) method.

The farm women were asked to place the maximum number/ heap(tamarind seeds/paddy

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grain) against the technological needs for sorghum production activities which they considered the most important, followed by the next most important and so on. The biggest heap of seeds/grain was considered as the rank I, the next big as II, the next as III and so on.

Technological needs of farm women were quantified for the purpose of analysis based on ranks attributed to the different technological needs and the number of farm women who assigned the particular rank for the technological need .

The formula for calculation of R.B.Q was as follows:

$$R.B.Q = \frac{\sum_{i=1}^{n} E(Fi)}{Nn} \times 100$$

where,

Fi = frequency of farm women for the i-th rank of the technological need

N = number of farm women

n = number of ranks

E (Fi) 9n+1-I) = $F_1 x\, n = F_2 x\, n-1 + F_3 x\, n-2 \ldots\ldots\ldots Fn x\, 1$

Based on the R.B.Q vale, the technological needs were ranked as I, II, III, IV and arranged in descending order. R.B.Q was calculated based on the methodology developed by Sabarathnam and Venilla (1996).

OBSERVATIONS AND ANALYSIS

Farm women perceived two needs under extension needs and eleven under research technological needs (Table 1 and 2) knowledge about varieties that are drought tolerant yield more straw and are good to taste were assigned the highest RBQ value. The probable reason being sorghum is primarily grown for household consumption and as fodder for animals.

Table 1 : Technological need perceived by farm women for sorghum cultivation

Technological need	R.B.Q	Rank
Extension need		
Knowledge of drought tolerant varieties	29.53	I
Knowledge and skill of seed treatment	26.41	II
Research needs		
Sowing device	29.17	I
Mechanical harvesters	29.14	II
Low cost and easily operable winnowers	25.78	III
Altering/delaying harvesting time	25.55	IV
Mechanism to protect from dust	20.63	V
Low cost threshers that reduce labor requirements	16.40	VI
Modify/redesign sickles to prevent injuries	15.39	VII
Low cost thresher that are easily operable	12.11	
Improvising the ''gorru''	10.23	IX
Insect free sorghum storage technique	9.53	X
Weeders that reduce physical fatigue	9.22	XI

In the case of research technological needs, a simple sowing device was assigned the highest RBQ value. Farm women reported that sowing was a skilful activity and they had to continuously monitor whether the seeds had fallen or not and move continuously behind the plough. Both the hands were also engaged in pouring the seed in the gorru and thus,

Table 2 : R.B.Q value of the different technological needs for sorghum

Technological need	Ranks			
	I	II	III	IV
	F_1xn	F_2 xn-1	F_3xn-2	F_4 xn-3
Extension need				
Knowledge of drought tolerant varieties	23x5=115	1x4=4	1x3=3	-
Knowledge and skill of seed treatment	3x5=15	9x4=36	2x3=6	8x2=16
Research needs				
Sowing device	1x5=5	25x4=100	73x3=219	28x2=56
Mechanical harvesters	70x5=350	5x4=20	1x3=3	-
Low cost and easily operable winnowers	12x5=60	47x4-188	19x3=57	8x2=16
Altering/delaying harvesting time	63x5=315	3x4=12	-	-
Mechanism to protect from dust	3x5=15	38x4=152	28x3=84	4x2=8
Low cost threshers that reduce labor requirements	1x5=5	21x4=84	18x3=54	25x2=50
Modify/redesign sickles to prevent injuries	37x5=185	3x4=12	-	-
Low cost thresher that are easily operable	-	20x4=80	21x3=63	6x2=12
Improvising the ''gorru''	-	15x4=60	17x3=51	10x2=20
Insect free sorghum storage technique	23x5=115	1x4=4	1x3=3	-
Weeders that reduce physical fatigue	-	14x4=56	14x3=42	10x2=20

sowing was perceived as a physically tiring activity. Singh *et al*. (2003) reported that farm women perceived the following health hazards associated with sowing as fatigue, backache, roughness and pain in limbs.

Farm women reported that harvesting of sorghum was perceived as the least preferred activity as it was drudgerous to hold the heavy stalks with one hand and cutting with the other hand. Therefore, they perceived the need for mechanical harvesters. Winnowing of grains was difficult at times when the wind speed was low and women had to hold the hand held winnowers high for a longer time resulting in immense pain in shoulder and hands. This may be the probable reason farm women expressed the need for low cost mechanical winnowers. It was reported by farm women that sorghum stalks are very high and harvesting the stalks in the hot sun was very suffocating. Therefore, they expressed the need for varieties whose harvesting time could be delayed/altered.

Farm women reported that after harvesting and winnowing sorghum, they imperatively fell sick. The grain dust caused soreness of mouth and they could not take up any other field activity after harvesting sorghum crop as they felt feverish and sick. Therefore, they felt the need for protection from grain dust.

Threshing is an activity which needs to be carried out simultaneously in all the farmer's fields and there was acute problem of labour shortage. This might be the reason that prompted the farm women to feel the need for low cost threshers. Since the sorghum stalks are high and harder in an effort to cut the stalks with their entire strength farm women often received minor injuries due to slipping of the sickles, therefore, they expressed the need for redesigning sickles to prevent injuries.

In the study area, "gorru" bullock drawn sowing implement was being used by some of the farm families and farm women reported that they had to continuously take seeds with one hand and pour in the ''gorru'' with the other hand. Gorru is a wooden implement and constantly touching the "gorru'' hurt their hands, therefore, they desired that it may be redesigned.

Farm women reported that sorghum grain on storage turned powdery due to insect infestation and they had to frequently clean, dry, winnow and replace in the storage bags. Therefore, they perceived the need for insect-free storage technique. They also expressed the need for weeders that reduce physical fatigue. Similar findings of physical fatigue faced during weeding in the form of backache, pain in limbs and finger tips has been reported by Singh *et al.* (2003). Similar work on the related topic was also done by Kapadia, 1993, 1995; Mehra and Rojas, 2008; Sharma *et al*., 2007; Singh, 2003; Singh and Sengupta, 2009.

Conclusion :

The extension needs as perceived by farm women of the study area necessitate the need for training programmes to impart both knowledge and skills to farm women. The researcher's may develop/modify technology based on the technological needs expressed by the farm women so as to reduce their drudgery and improve the work efficiency.

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