

Effectiveness of Training on Tubular Maize Sheller for Reducing the Drudgery of Farmwomen

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ABSTRACT

The study was planned to reduce the drudgery of farmwomen by introducing tubular maize Sheller for maize shelling and was conducted in three villages of Jhansi district of Bundelkhand on 30 farm women, 10 from each village. The results indicated that maize sheller was found much better than their local practices in shelling efficiency (98% vs 91%), labour requirement (4 vs 6 man h /q), field capacity (25 vs 16.67 kg/ h) and damage/ broken grains (1% vs 20%). It has also reduced the health hazards like hand pain, shoulder pain, backache and waist pain in majority of the respondents. Majority of the farmwomen (66.67%) perceived the tubular maize sheller as 'most feasible' technology'. Training on use of tubular maize sheller has resulted in significant gain in knowledge and skills of farmwomen.

Key words: Drudgery; Farmwomen; Feasibility; Health Hazards; Tubular maize sheller;

Most of the works performed by farmwomen are tedious as well as time consuming. As most of these operations like weeding, harvesting, digging, seed separation from pods, winnowing, threshing, seed shelling, cleaning and preparation etc. are done manually or by traditional tools, which are slow and cause considerable fatigue and drudgery. Many of these operations are traditionally done in varying body postures, some of which if done for long duration are not only inconvenient but also cause serious health hazards.

All these factors result in drudgery by causing physical and mental fatigue, monetary hardships, exploitation, pain, economic stress etc. Majority of the respondents perceived farm activities as either moderately difficult or difficult (Singh *et. al.* 2010). The farmwomen are employed in the operations which are either not mechanized or least mechanized and involve a lot of drudgery (Singh *et. al.* 2010).

The importance of maize or corn lies in its wide variety of applications besides serving as human food and animal feed. It is a source for a large number of industrial products - maize corn, corn starch, corn oil, baby corn, popcorn, dairy feed, poultry feed, piggery, agro-industries, and so on. The huge potential for exports

has added to the demand for maize all over the world. In Bundelkhand region maize is the major crop of *Kharif* season. Farmwomen contribute more than 60% in maize production. Maize shelling is one of the tedious operations which are mainly performed by women farmers. To separate its seeds from the cobs, they have to hit the heap of cobs with the stick in bending posture for many hours. This causes various health hazards especially hand pain, shoulder pain, waist pain, backache and injuries etc. Also due to vigorous hitting seeds get damaged which affects the seed quality and productivity. Hence, study was conducted to reduce drudgery of farmwomen by introducing tubular maize sheller and training was organized on it.

METHODOLOGY

The study was conducted in Niwari block of Tikamgarh district in MP part of Bundelkhand during 2010-2011. Three villages namely Bagan, Maharajpura and Radhapur from Baragaon block were selected purposively. A group of 10 farmwomen from each village totaling 30 farmwomen who were actively involved in maize shelling were selected for the training purpose. All the selected farmwomen were given

training to reduce their drudgery, increase the feasibility of tubular maize sheller and enhance their knowledge and skills. The farm women used the maize sheller for 15 days. Data was collected in two phase i.e. pre training and post 15 days after training to assess the effectiveness of Tubular maize sheller in reducing their drudgery and accordingly the analysis were done. The significance of difference in terms of their performance, knowledge and skills in pre training and post training phase were compared by using paired 't' test. Chi square test was used for comparing the occurrence of various health hazards in respondents during pre and post training periods. Perceived feasibility of tubular maize sheller was also was measured through five attributes viz., simplicity- complexity, profitability, physical and cultural compatibility, observability and triability and compared with the help of 'chi square' test. In order to find out the overall feasibility, a feasibility index of each respondent was calculated as under:

$$PFI = \frac{E(SC + P + PCC + O + T)}{P(SC + P + PCC + O + T)} \times 100$$

PFI = Perceived feasibility index (for the innovation)

E = Extent to which innovation was rated feasible by the respondents regarding simplicity, complexity, profitability, physical and cultural compatibility, observability and triability

P = Maximum limit to which innovation was rated, feasible as regard to simplicity- complexity, profitability, physical and cultural compatibility, observability and triability.

RESULTS AND DISCUSSION

Performance of tubular maize sheller: After organizing a training programme data was collected to compare the performance of tubular maize sheller and their traditional practices. The shelling efficiency of tubular maize sheller was 98% with only 1% seed breakage as compared to their local practice of stick beating with shelling efficiency 90% and seed breakage 20% (Table 1), which causes significant losses to the farmers. Sheller has also saved the 2 man-hour per q as compared to traditional practices. The field capacity of sheller was found 25 kg / hr while the field capacity of maize shelling by stick beating was only 16.67 kg / hr. Similarly, Singh et. al. (2010) also compared the field capacity of tubular maize with the local practice

of hand shelling and found that field capacity of sheller was 26 kg/hr as compared to hand shelling by which farmwomen could shell 13 kg/hr. Hence, that sheller was found more effective in saving time with better shelling efficiency and good quality grain compared to their traditional practices.

Table 1. Comparative analysis of tubular maize sheller with the existing practices (On average basis (N=30))

Particulars	TM	HC	't' value
Shelling efficiency (%)	98	90	23.36**
Labor requirement (Man-hour/q)	04	06	29.50**
Field Capacity (Kg/hour)	25.44	16.83	18.10**
Damage/Broken grains (%)	01	20	66.98**

**Significant at 1per cent level of probability

TM = Tubular maize sheller

HC = Hitting cobs with stick

Health hazards reduced by using tubular maize sheller: Occurrence of health hazards in any practice affects the working efficiency and productivity of the performer. For reducing the drudgery by tubular maize sheller the percentage of farmwomen having these health hazards in both of the practices (ie. Traditional by hitting cobs with stick and tubular maize sheller) were compared. Table 2 reveals that in traditional practices the percentage of respondents reported the occurrence of hand pain (90%), shoulder pain (76.66%), backache (80%) and waist pain (73.33%) while by using tubular maize sheller very few of them have reported these health hazards like hand pain (10%), shoulder pain (6.66%), backache (6.66%) and waist pain (10%).

Perceived feasibility of Tubular maize sheller: A technology having high feasibility index can be easily adopted by the respondents. Hence, perceived feasibility of tubular maize sheller was measured through five attributes viz., simplicity- complexity, profitability, physical and cultural compatibility, observability and triability. The data in Table 3 reveal that tubular maize sheller was perceived by most of the respondents as very easy to understand and use (66.33%), most profitable (60%) physically and culturally most compatible, most observable (60%) and most triable (73.33%) technology.

Overall feasibility of Tubular maize sheller: Majority of the farmwomen (66.67%) perceived the tubular maize sheller as 'most feasible' technology followed by 20 per cent of them who perceived it as 'feasible'. Only

Table 2. Health hazards reduced by using tubular maize sheller

Health hazards	% of respondents having health hazards					
	Hitting cobs with stick			Tubular maize sheller		
	Yes	No	χ^2	Yes	No	χ^2
Hand pain	80	20	10.8**	10	90	19.2**
Shoulder pain	70	30	4.8*	6.6	93.3	22.53**
Backache	73.3	26.6	3.33	6.6	93.3	22.53**
Waist pain	73.3	26.6	3.33	10	90	19.2**
In beating process	60	40	1.2	00	100	00

**Significant at 1per cent and

*significant at 5 per cent level of probability

Table 3. Feasibility of tubular maize sheller as perceived by the respondents

Variables	No.	%	χ^2
<i>Simplicity/Complexity</i>			
Very easy to understand and use	19	63.33	25.20**
Easy to understand and use	6	20	
Niether easy nor difficult to understand and use	4	13.33	
Difficult to understand and use	1	3.33	
Very difficult to understand and use	0	0	
<i>Profitability</i>			
Most profitable	18	60	21.47**
Profitable	7	23.33	
Somewhat profitable	3	10	
Least profitable	2	6.66	
Not at all profitable	0	0	
<i>Physical/ cultural compatibility</i>			
Most compatible	22	73.33	21.80**
Compatible	3	10	
Somewhat compatible	5	16.66	
Least compatible	0	0	
Not at all compatible	0	0	
<i>Observability</i>			
Most observable	21	70	33.20**
Observable	4	13.33	
Somewhat observable	4	13.33	
Least observable	1	3.33	
Not at all observable	0	0	
<i>Triability</i>			
Most triable	22	73.33	38.99**
Triable	4	13.33	
Somewhat triable	3	10	
Least triable	1	3.33	
Not at all triable	0	0	

**Significant at 1per cent level of probability

13.33 per cent of respondents found it as ‘somewhat feasible’ and none of them considered it as ‘least feasible’ and ‘not at all feasible’ technology. Hence with high feasibility index it may be predicted that tubular maize sheller can easily be adopted by the respondents (Table 4).

Table 4. Overall feasibility of tubular maize sheller

Category (Scores)	No.	%
Most feasible (85-100)	20	66.67
Feasible (69-84)	06	20.00
Somewhat feasible (53-68)	04	13.33
Least feasible (37-52)	00	0.0
Not at all feasible(20-36)	00	0

Figures in parenthesis indicate percentages.

Gain in knowledge and skills of farmwomen regarding Tubular maize sheller: Training was given to the farmwomen to improve their knowledge and skills about the tubular maize sheller.. But after training they got the significant gain.

Table 5. Gain in knowledge of farmwomen regarding Tubular maize sheller

Aspects	Average score Knowledge			‘t’ value
	Pre-training knowledge	Post-training knowledge	gain (%)	
Name	0.47	1.70	41	6.71**
Purpose	0.83	2.70	62.33	10.14**
Procedure	0.90	2.37	49	8.25**
Care & maintenance	1	2.43	47.67	5.06**

**Significant at 1per cent level of probability

Knowledge level of farmwomen regarding Tubular maize sheller (%): Knowledge level of farmwomen was assessed in terms of the name, purpose, procedure and care/ maintenance of tubular maize sheller. Data presented in Table 4 indicates that Women farmers had very less knowledge about all the aspects of tubular maize sheller but after training there was a very significant gain. As it was a new tool for them so their knowledge level regarding all the aspects of tubular maize sheller was almost negligible before training. But due to simplicity, usefulness, better efficiency and cost effectiveness of this tool, respondents learned a lot (indicated in ‘t’ value of knowledge gain. Their knowledge gain was observed minimum in knowing name of this tool (41%) and maximum in knowing

purpose of this tool (62.33%). The results are consistent with findings of *Sharma and Batra (2003)*, who found that action programme on drudgery reducing farm implements for farmwomen has achieved a desired change in their knowledge gain.

Table 6. Gain in Skills of farmwomen regarding Tubular maize sheller (%)

Aspects	Average score		skill gain (%)	't' value
	Pre-training skill	Post-training skill		
Handling	0.77	2.37	53.33	9.40**
Setting tool	0.77	2.36	53	8.83**
Doing operation	0.67	2.4	57.67	10.47**
Repair problems	0.83	2	39	6.48**
Giving good produce	0.67	2.37	56.67	9.78**

**Significant at 1per cent level of probability

Gain in skills of farmwomen regarding Tubular maize sheller (%) : Skill gain gives practical working knowledge to the persons for operating this tool. As sheller is very simple to operate and try so, after training respondents got sufficient skills to operate it perfectly. Here also due to newness of the tool their skills pertaining to this tool were very low in pre training phase

but after training there was significant gain in their skills as indicated in the calculated t value of skill gain. Table 6 indicates that minimum gain was observed in repairing problems (39%) and maximum in doing operation (57.67%).

CONCLUSION

Hence, it can be concluded that tubular maize sheller was found effective in reducing the drudgery of farmwomen. It was better in shelling efficiency, labour requirement, field capacity and damage/ broken grains than their local practices. It has also reduced the health hazards like hand pain, shoulder pain, backache and waist pain in majority of the respondents. Majority of the farmwomen perceived the tubular maize sheller as 'most feasible' technology. Training has resulted in significant gain in knowledge and skills of farmwomen regarding this technology. It is suggested here that other hand tools and farm implements should also be tested for reducing the drudgery of farmwomen and effective tools and implements should be made easily accessible for them.

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