Use of Improved Sickle for Drudgery Reduction in Farmwomen of Gir-Somnath District of Gujarat

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ABSTRACT
Most of the works performed by farmwomen are tedious as well as time consuming. Also many of these operations are traditionally done in varying body posture. The present study was carried out with the objectives to evaluate the performance of improved sickle for reducing the drudgery level and harvesting efficiency by farmwomen using newly introduced and traditional tools. It was noticed that improved sickle resulted in higher harvesting efficiency than the ordinary sickle. The rate of perceived opinion for improved sickle fall in the category of highly acceptable tool as compared to simple sickle. The results of the study showed that improved sickle was helpful in reducing the drudgery level in which physical tiredness was medium to low, time saving was 12 to 20 per cent and cost saving 10 to 14 per cent compared to ordinary sickle.

Key Words: Harvesting, Improved sickle, Farm women, Drudgery reduction.

INTRODUCTION
Agriculture is an important unorganized sector where majority of the women labour force is engaged either in their own field or in the fields of other farmers. The various agricultural farm operations like weeding, cutting, uprooting, picking, transplanting, removal of stalks and stubbles and threshing performed by farm women result in maximum drudgery. Harvesting is perceived as the drudgery prone task in agriculture domain. It accumulates load of work on farmwomen during peak seasonal period. The related work, nature and tools used by farmwomen in agriculture are also some of the important reasons to lower down the productivity and increase in health hazards.

Most of the works performed by farmwoman are tedious as well as time consuming. Also many of these operations are traditionally done in varying body postures, which if done for long duration causes inconvenience and body pain. The harvesting of cereal crops in India is mostly done manually by sickles. There is large variation in the types of sickles being used in different parts of the country. Mostly, the sickles are made by village artisans with wide variation in shapes and sizes. The serrated sickle introduced by Central Institute of Agricultural Engineering (CIAE), Bhopal consists of a steel blade with special serration and a special handle that makes operation of the sickle easy and comfortable compared to the traditional sickle. The good quality steel used and the special serration gives better cutting in both dry and green crops. The special shape of the handle gives protection of fingers from getting rubbed to the soil or stubbles. The sickles have been found very useful for harvesting wheat, rice, fodder and other crops that do not have woody stem.

The ordinary sickle being used for harvesting the fodder grasses is very simple and the design has not been changed for years. As a result, these sickles are very rough to handle and gives poor working efficiency. Therefore, a need was felt to study the strength, weakness, opportunity and threat (SWOT) analysis of improved sickle and their impact on farm women health. Hence, the...
present study was undertaken with the objective to evaluate the harvesting efficiency of improved sickle and performance evaluation of harvesting activity performed by farmwomen using newly introduced and traditional tools.

MATERIALS AND METHODS

The Front line demonstrations were conducted in six villages of 4 talukas during last five years (2010-11 to 2014-15). The Una, Talala and Sutrapda talukas are far away from the Junagadh Agricultural University, Junagadh. Therefore, it is most ignored area and till now no work has been done for transfer of technology to farmwomen community by any extension agency. The participants from these villages were selected on the basis of land holding in to landless, small and marginal farm women.

The study was conducted in the villages namely Navagam Vadi Vistar (Kodinar Taluka), Kanakiya and Kaneri (Una Taluka), Pikhor (Talala Taluka) and Ganetha and Rangpur (Sutrapada Taluka). A total of 100 farm women, 50 under demonstration and 50 as local check were taken for this study. In the demonstration group, serrated sickles developed by CIAE, Bhopal were provided whereas traditional sickles were used in local check group. The various parameters recorded were time taken for harvesting per hectare of area under different crops, cost of operations and level of drudgery.

The trainings were organized to farmwomen’s group/beneficiaries with the objectives of imparting knowledge and skill of improved farm tools along with gaining confidence towards their participation in sustainable development of other aspects also. After completion of the proper training, the participants were fully motivated for use of improved sickle but being extremely poor and having no outside support especially in the case of landless labourers, they showed inability to purchase it and thus needed financial support. Then to encourage and disseminate the technology of using improved farm tools, Krishi Vigyan Kendra-Junagadh arranged improved sickles for harvesting of fodder as well as other crops under demonstrations.

RESULTS AND DISCUSSION

Potential of improved sickle for fodder harvesting

SWOT (strengths, weaknesses, opportunities and threats) analysis for use of improved sickle in fodder harvesting by farmwomen in Junagadh district is presented in Table 1. It indicates that use of serrated sickle by farmwomen for harvesting of fodder crop could be a useful implement and found reduction in drudgery of farmwomen with increased output including other advantages like; harvesting of other various crops, time saving, more income per unit of time and not require the sharpening of cutting edge frequently. This indicates better possibilities of adoption of the same as drudgery reduction tool for farmwomen empowerment.

Table 1. SWOT analysis for harvesting of crop by using of improved/serrated sickle.

Strengths
- Ferrule and wooden handle
- Less weight
- Less fatigue on wrist
- Serrated blade

Weaknesses
- Pressure as on specific time
- Unawareness and unavailability of improved implements for harvesting

Opportunities
- A good tool for farmwomen empowerment
- Useful in harvesting of various crops
- Time saving more income per unit time
- Does not require the sharpening of cutting edge frequently
- Require to develop at local manufacturers

Threats
- Exploitation of farmwomen by middle men during purchasing of improved tools
- Very high rates
- Poor care & management by farmwomen lead to reduce efficiency by serrated blade

Creating awareness and developing desire

Farmers/farmwomen are not always aware of the improvements they could make by using scientific and technological knowledge. Thus, the attention of farmwomen was directed towards the
women friendly improved farm tools especially of improved sickle by conducting informal meetings and discussion with them. Their interest was stimulated by explaining them how it could contribute towards their drudgery reduction. This interest was later transferred into desire by continuous persuasions and motivation for use of the same.

**Drudgery Reduction**

It was observed that during the fodder cutting, all farmwomen were bending in position and none was squatting. However, the bend position during longer periods of work might lead to tensing of certain muscles and thus resulted in quicker as tiredness and soreness (Pheasant, 1991). To reduce these feelings, farmers/farmwomen occasionally stand upright or sharpen their sickles which result in wastage of time.

The data in Table 2 showed per cent saving of time in harvesting with the use of serrated sickle over the traditional sickle. Similarly, economical benefit was also observed due to the reason that ordinary sickle requires more grinding/sharpening frequency compared to serrated sickle. These findings were in agreement with those reported by Patel et al (2013). In addition to this, traditional sickle is not comfortable for the users as sometimes the fingers as well as lower portion of the hand get rubbed with the soil and pain occurs. On the other hand, the design of serrated sickle is much farmer friendly and does not result in any damage to the worker. Hence, it reduces the drudgery amongst the farmwomen while working in the fields. According to Kulkarni and Sirohi (1985), the sharpened part of sickle is the most important factor affecting the working capacity of farmers and the handle determining the convenience in using this tool may also have an indirect effect on working capacity. Likewise, Sen and Chakrabarti (1989) stated that the use of serrated sickles may improve working efficiency. The present findings were, thus, in agreement with these workers.

In the year 2010-11, front line demonstrations were laid out in Kaneri village of Una Taluka for 10 farmwomen. They were selected randomly for the inputs to them for harvesting purpose. The serrated sickle cost was Rs. 60/- per piece and no need of serration up to 2 years purchased from CIAE, Bhopal. While, simple/deshi sickle was available at local market at a cost of Rs. 55-65/-, but Deshi sickle requires 3-4 times sharpening. The results showed that improved sickle resulted in higher field capacity compared to traditional sickle. The average time consumption with deshi sickle was recorded as 25.6 hr/ha while in improved sickle it was 20.6 hr/ha. So, finally time saving was found as 19.5 per cent. In the deshi sickles, during harvesting three to four time sharpening is necessary but in improved sickle up to two years no need of serration is required.

In the year 2011-12, 10 per cent saving in the cost and 23.9 per cent in time was recorded with serrated sickle over the traditional sickle whereas during the year 2012-13, 2013-14 and 2014-15, the results indicated as cost saving of 10.0, 9.1 and 14.3 per cent and time saving in harvesting to the extent of 16.1, 12.5 and 20.6 per cent, respectively. It was also observed during the course of investigation that respondents were using traditional sickle while harvesting the crops and due to its more weight, it reduced the efficiency of the operator as well as caused cuts on fingers and pain in the wrist as well as hands whereas, in the case of serrated sickle/improved sickle becomes relevant for more efficient and time saving over traditional.

<table>
<thead>
<tr>
<th>Year</th>
<th>Cost of operation (Rs)</th>
<th>Local Sickle</th>
<th>Improved Sickle</th>
<th>Cost Saving (%)</th>
<th>Local Sickle</th>
<th>Improved Sickle</th>
<th>Time consumed (hr/ha)</th>
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CONCLUSION

It can be concluded that serrated sickle was found effective in reducing the drudgery to the farm women. It has also reduced the health hazards along with saving in their time and energy of majority of respondents. Most of the farm women perceived these implements as most feasible technology. It was suggested that other hand tools and implements should also be made easily accessible for them.

REFERENCES


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