

Improved farm tools for women worker to increase productivity and reduce drudgery- An assessment

■ B. SHARMA, M. GOGOI, A.M. BEGAM, R. BHATTACHARJEE, B. DEKA AND U. GOSWAMI

Received: 04.12.2014; Revised: 09.04.2015; Accepted: 24.04.2015

■ **ABSTRACT :** Agriculture is an important sector where majority of women labour force is engaged and because of using age old tools and implements most of their tasks are tedious monotonous and drudgery prone. Researchers of ICAR institutes effort in introducing various time and energy saving tools to relieve their drudgery in agricultural work has been proven effective in many times. Present study in OFT form is an effort to assess the impact of improved garden tools *i.e.* Garden rack, Circular blade weeder and hand fork on economic viability and physiological workload of women in comparison with traditional age old tools *Khurpi* and Hoe conducted in 5 districts of Assam comprising 40 beneficiaries and 40 non-beneficiaries. Result revealed that less time required in all selected activities by using improved garden tools resulted less labour cost than simple Hoe and *Khurpi*. Moreover, differences of energy expenditure (both by using improved garden tools and traditional *Khurpi* and Hoe) in same activities indicates it helps in reducing physiological fatigue. Opinion perceived by farm women of using such tools is highly acceptable than Hoe and *Khurpi*.

See end of the paper for authors' affiliations

B. DEKA

Krishi Vigyan Kendra (A.A.U.)
JORHAT (ASSAM) INDIA
Email : babita_s06@yahoo.co.in

■ **KEY WORDS:** Farm tools, Women worker, Productivity, Drudgery

■ **HOW TO CITE THIS PAPER :** Sharma, B., Gogoi, M., Begum, A.M., Bhattacharjee, R., Deka, B. and Goswami, U. (2015). Improved farm tools for women worker to increase productivity and reduce drudgery- An assessment. *Asian J. Home Sci.*, 10 (1) : 144-148.

In India people are mostly depended on agriculture and women in rural areas play a vital role both in management of domestic as well as farm related work (Astrand and Rodahl, 1986). They work for almost 14 to 16 hours a day in trying to balance competitive demands in agricultural production, household activities and income generation. Literature revealed that agriculture is an important unorganised sector where majority of the women labour force is engaged. (Nag (1983); Nag *et al.* (1981) and Sudharani and Raju (1991) in a study stated that women as agriculture labourers, participate in several

activities such as seeding, transplanting, weeding, fertilizer application, plant protection, thinning, harvesting, processing, selling, winnowing, storing, looking after animals, kitchen gardening etc. It is also obvious that most of the task are tedious and back-breaking and are found to have profound health risk of women. In such condition where participation of women in agriculture is so high, women need to have the precised agricultural tools and implements. But despite their pivotal role in agriculture most of women use age old tools and implements for such activities which is monotonous and

drudgery prone. Bimala *et al.* (2001); Gite and Singh (1997); Mohanty *et al.* (2008) and Verma and Sinha (1991) experienced in a study that many believe that women's involvement in agricultural tasks and large is a source of heavy burden of drudgery on them. Keeping women's involvement in mind researchers of ICAR institutes have tried to relieve their drudgery in agricultural work by providing time and energy saving tools since long (Nag, 1981 and Nag and Dutta, 1980). Introduction of such tools and implements are designed mainly in the context of reducing both physiological and psychological drudgery, increase in labour productivity and to decrease in cost of production.

Among various agricultural activities it is generally felt that weeding is the activity invariably performed by women in almost all crops and harvesting of *Rabi* vegetables Goel and Swain (2000); Nag *et al.* (1988) and Singh *et al.* (2007). Drudgery which is generally conceived as physical and mental strain, agony, monotony and hardship experienced by the human being, is alarming more such activity because of using old tools and implements specially *Khurpi* and Hoe (Pradhan *et al.*, 1980; Singh *et al.*, 2001 and Varghese *et al.*, 1994). Though improved tools/ technology have been developed, most of them have not reached to the farm women. Hence, the present assessment was carried out in five district of Assam with an objective of assessing the impact of improved garden tools *i.e.* Garden rack, Circular blade weeder and hand fork on economic viability and physiological workload of women in comparison with traditional old tools *Kuhrpi* and Hoe and promotion of such tools as tested technologies for drudgery reduction based on opinion of farm women and SWOT analysis.

■ RESEARCH METHODS

On Farm Trial (OFT) on Improved garden tools *i.e.* Garden rake, circular bleed weder and hand fork for productivity, comfort ability and as drudgery reducing tools of farm women were conducted by five numbers of KVK in five districts of Assam namely- Dibrugarh, Sonitpur, Jorhat, Tinsukia and Darrang. For the purpose of the trial 6 beneficiaries from Siringhola no.1, Siring hola no. 2, Romai and Melangial village of Dibrugarh, 9 beneficiaries from Moholipara, Lathapara and Bharuwadol of Darrang, 9 from Hatisaal and Kartik Sapori of Jorhat, 10 from kakopathar of Tinsukia and 6.

From Punioni, Napum chapori and Napam of Sonitpur district were selected. Total 40 nos. of farm women as beneficiary of using improved tools were selected. Another same numbers of farm women (*i.e.* 40 nos.) from same villages of five districts were taken as non-beneficiary for comparing the assessment. Care has been taken to select the farm women who were healthy, non-pregnant, non-lactating and free from any serious health hazards. Thus, total sample size of the study was 80 numbers comprising 40 beneficiaries and 40 non-beneficiaries.

Data were collected through observation, personal interview and during field practices of the implements. Collected data were processed, tabulated, classified and analysed in terms of mean, per cent score and ranks. The trial was envisaged with one fundamental assumption out of four as suggested by Pillai (2003) *viz.*, When the technology is not acceptable for the farmers in the recommended form, need minor modification, refinement or change. A Likert scale was adopted to assess the opinion of beneficiaries in adoption of improved tools. Acceptability of improved tools were judge based on mean value in comparison of traditional practices.

■ RESEARCH FINDINGS AND DISCUSSION

Performance of improved garden tools in terms of productivity, drudgery reduction and cost benefits were analysed in comparison with farmers traditional practices and presented in tabular form. Result of comparative analysis is presented in Table 1.

Table 1 revealed that less time required in all selected activities by using improved garden tools resulted less labour cost than simple Hoe and *Khurpi*. Outcome of the OFT clearly brings out that the use of such improved garden tools is economically viable. Differences in time consumption on selected activities of time for pulling out weed in 1 bigha potato plot after harvesting, weeding time in 1 bigha lemon plot after one month of plantation, harvesting time of 1 bigha land of potato and time requirement in final bed preparation of 1 bigha for carrot cultivation are 16, 16, 10 and 11 hour, respectively. Which influence labour cost of cultivation. Moreover, differences of energy expenditure indicates it helps in reducing physiological fatigue. Therefore, these tools can be considered as drudgery reducing tools (differences of total energy expenditure in same activities are shown in Fig. 1).

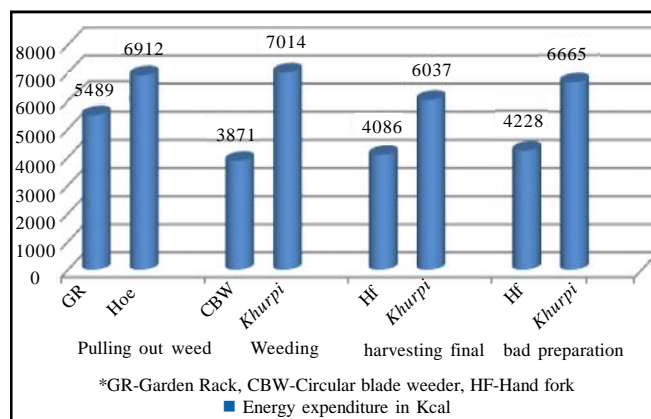


Fig. 1 : Differences of total energy expenditure in same activities

Less energy consumption with improved tools in same activities may be because of comfortable handle length, easy to use and sharpness of blade etc. less time and energy expenditure influence productivity of

worker and ultimately farm production.

Farm women’s opinion :

Opinion of farm women on use of improved garden tools is presented in Table 2. Opinion were measured in Likert scale with 5 = strongly agree and 1 = strongly disagree was used. Those who strongly agree on the point are awarded with point five and reducing by one point to the subsequent lower grade opinion. Beneficiaries were asked to accept or reject in varying degree of various statements in Likert scale and ranked their responses accordingly based on mean value. Responses were set in the category physiological stress, psychological stress, cost benefit of using such tools, comfort ability in using the tools, field acceptability. In the category of physiological stress, back pain, wrist pain and tiredness were included. Opinion on psychological stress was perceived in terms of Boredom because of more time consumption. Opinion of farm women on use of improved

Table 1 : Output of respondents performing activities by employing improved and traditional tools

Parameters	Improved tools		Traditional practices	
	Garden rake	Energy expenditure (Kj/min)	Hoe/ Khurpi	Energy expenditure (kj/min)
Time for pulling out weed in 1 bigha potato plot after harvesting	48 hour	7.975	64 hour	10.042
Heart beat of farm women /min	105		118	
Labour cost (Rs.)	1200/-		1600/-	
Circular blade weeder				
Weeding time in 1 bigha lemon plot after one month of plantation	36 hour	7.498	52 hour	9.406
Heart beat of farm women /min	102		114	
Labour cost (Rs.)	900/-		1300/-	
Hand fork				
Harvesting time of 1 bigha land of potato	38 hour	7.498	48 hour	8.77
Heart beat of farm women /min	102		110	
Labour cost	Rs. 950/-		1200/-	
time requirement in final bed preparation of 1 bigha for carrot cultivation	42 hour	7.021	53 hour	8.77
Heart beat of farm women /min	99		110	
Labour cost	Rs. 1050/-		Rs. 1325/-	

*labour cost calculated average Rs. 200/day/labour (8 hr. In a day); * Energy Expenditure= (heartbeat/minx0.159)-8.72

Table 2 : Farm women opinion in the use of improved garden tools and traditional Khurpi and Hoe in agriculture activities (n=40)

Factor assessed	Total score in likart scale		Mean value		remarks
	Improved tools	Traditional practice	Improved tools	Traditional practice	
Less physiological stress	156	75	3.9	1.87	
Less psychological stress	151	88	3.77	2.20	
Quantitative cost benefit	179	72	4.47	1.80	Highly acceptable
Very comfort ability of use	177	68	4.42	1.70	
Acceptable in terms of cost of tools	157	153	3.92	3.82	
Over all opinion about tools	280	122	5.66	3.03	

Table 3 : SWOT analysis of improved garden tools

Strengths	Postural stress and severity of pain in various parts of body reduces by adopting the tools Convenient to use Less time required in fields operation compared to traditional practice Positive influence in cost of production because of time and labour saving Less fatigue in wrist and back
Weakness	Lack of awareness and unavailability of improved tools Input free attitude of farm women
Opportunities	Good drudgery reducing tools for farm women Less costly Time and energy saving Don't require specific training for operation Useful in various crops and field operation Easy to handle
Threats	Inappropriate handle length may lead to stress and pain in various body parts Poor care and management of tools by farm women may lead to reduce efficiency specially circular blade weeder

Source: Field survey 2012-13

garden tools and traditional *Khurpi* and Hoe in agriculture activities improved garden tools is presented in Table 2. Table 2 depicts that mean value in all the categories of response is high in case of using improved garden tools than traditional *Khurpi* and Hoe. Comparing mean score of both improved garden tools and traditional practices it is perceived that use of such tools is highly acceptable than Hoe and *Khurpi*.

SWOT :

Need to study the SWOT analysis of improved tools keeping in mind of disseminated approach and their impact on farm women. SWOT analysis in above stated five districts of improved tools for field activities of farm women were analysed and documented in Table 3.

Table 3 indicates that use of improved tools by farm women in various activities like digging, weeding, arthening, harvesting etc. are useful implements for reducing the drudgery of farm women with increased output. Moreover, there are certain other advantages, which ensure the possibilities of adoption of such tools. During SWOT it was analysed that farm women are not aware about such improved tools and most of the farmers have attitude of getting things freely. This is partially supported by Reddy (1993) that farmers are not always aware of the improvement they could make by using scientific and technological knowledge. KVKs effort in terms of awareness programme, method demonstration by explaining how it could contribute towards drudgery reduction, increased output with profitability will help to stimulate farm women interest towards adoption of such tools in large scale. Another important concern of these tools are in case of inappropriate handle length of these tools may lead to stress and pain in various body parts. Therefore, popularisation these tools with dissemination of proper technology is important.

Conclusion :

It is found obvious from the findings that use of selected improved tools was found economically viable and superior in terms of reducing drudgery. In order to overcome drudgery both physiological and psychological using these tools are better option for farm women in agriculture field. This trial could convenience most of other farm women to use such tool in account of obvious advantage.

Authors' affiliations:

B. SHARMA, M. GOGOI, A.M. BEGAM AND R. BHATTACHARJEE, Krishi Vigyan Kendra, Assam Agricultural University, JORHAT (ASSAM) INDIA

U. GOSWAMI, Directorate of Extension Education, Assam Agricultural University, JORHAT (ASSAM) INDIA

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