

Need To Design Agriculture Sickle for Women Farmers

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Promilakrishna Chahal

Assistant Scientist,
FRM, COHS,
CCSHAU, Hisar,
Haryana, India

Abstract

Women in rural India play a major role in shaping the economy of the country. In Haryana, women are engaged in various agricultural activities like; sowing, transplanting, weeding, harvesting, threshing, grain cleaning, etc, which includes awkward postures like bending and squatting. The women engaged in agricultural works often face serious injuries at their work, like cuts on the limbs, scraping off of the skin, blisters on the skin, superficial vein and deep vein cuts, cuts on toes or fingers, permanent loss of any body part, and also different musculoskeletal disorders for repetitive-type works. Because the tools/equipments available for agricultural operations are primarily developed for male workers taking their anthropometric body dimensions and strength parameters, which is on the higher side than that of body dimensions of women workers. For injury prevention, proper hand tool designs need to be recommended with ergonomic evaluations. Women-friendly hand tools/equipments can enhance the socio-economic development of farm women in Indian Agriculture.

Keywords: Agriculture sickle, women farmers, anthropometry and musculoskeletal disorders

Introduction

In most developing countries due to rural-urban migration and other reasons, agriculture is depleted of the needed workforce. In essence, the result is that many smallholder farmers have more women and girls remaining on the farms providing the bulk of the labor force. Women playing an important role in Indian Agriculture by doing 70% of major farm work and constitute 60% of the farming population (NSWF, 2014). As per Census 2011, out of total female main workers, 55 percent were agricultural laborers and 24 percent were cultivators. In India, out of 30 million women in the workforce, 20 million live in rural areas and agriculture is not just only a profession, but it is a way of life for the farming community (Oerke, 2006).

Objective of the Study

“To awaken the people, it is the women who have to be awakened. When she is on move, the family moves, the village moves, the nation moves” –

These words of Pandit Jawaharlal Nehru are the central theme in the socio-economic paradigm of the country as it is an accepted fact that when women are in the mainstream of progress, any economic and social development can be meaningful.

In India, Most of the farming operations are being done by small farmers with women contributing up to 60 percent of the labor. The tools used are meant for male workers are very heavy for women resulting in a higher workload and increased discomfort to them. Higher energy demand and increased drudgery created by the tools develop stresses, which affect the safety and health of the women. The designing tool as per women's perspectives would greatly help the researchers to appropriately design simple and labor-effective tools/equipments considering ergonomic requirements. Such designs of tools would not only minimize the drudgery of the women but also increase productivity.

Occupational Problems Faced By Women Farmers Due To Inappropriate Design of Sickle

Women are involved in various responsibilities to perform a wide spectrum of work in the home as well as on-farm, but their role is normally

considered by society. All these activities not only required considerable time and energy but also the main factor of drudgery in women. Drudgery generally pertains to physical and mental strain, agony, monotony, and hardship faced by women farmers while doing farm operations. These drudgery-prone activities leads to various health-related problems which cause physical exhaustion fatigue and low productivity at the workplace. There are various tools and techniques available for different agricultural activities but the maximum of these are designed only for men.

A sickle is a curved, hand-held agricultural tool that is commonly used to harvest cereal crops or cut grass for hay. It is one of the oldest hand tools used in agriculture. Still widely used, it hasn't changed in design very much since times (Singh *et al.*, 2006). Working in a bending position for long periods, as well as using a small and traditional sickle, results in severe pain in the shoulder, upper back, lower back, thigh, upper arm, lower arm, and palm. Harvesting became a very strenuous and energy-intensive activity for farm women as a result. During these activities, the risk of developing musculoskeletal problems is mainly due to the improper design of the sickle (Chauhan and Saha, 1999). Observing these difficulties led to the development of a farm women-friendly sickle to reduce drudgery and energy expenditure in harvesting operations.

Effect of properly designed sickle/improved sickle

A comparative study was done among Local, Vaibhav, and Naveen sickle. Bokaro refined sickle was designed and developed based on findings and feedback given by farm women. The sickle to reduce drudgery, pain, and energy expenditure as per feedback of farm women of different districts of Jharkhand state. Bokaro refined sickle was found to be comfortable, cost-effective, and best suited for harvesting purposes (Kumar and Kumari, 2019). Improved sickle resulted in higher field capacity than a simple sickle. The rate of perceived opinion for improved sickle falls in the category of the highly acceptable tool as compared to simple sickle. The improved sickle has increased gross return for farm women from Rs 112.50 to Rs. 150.00. Results of the study showed that improved sickle was found to be more suitable for harvesting purposes compared to traditional sickle (Mishra *et al.*, 2013). The result of the study unveiled that improved sickle increases the work efficiency by 19.5percent on average, as woman farmers harvested 50 bundles of wheat by using improved serrated sickle while only 39 bundles of wheat harvested through local serrated sickle within a fixed period. The improved sickle was found to be saving the energy expenditure (about to 12kJ/s) of farm women (Singh, *et al.*, 2014).

Dilbaghi, *et al.*, (2008) evaluated the performance of improved sickle over conventional sickle in terms of output and reduced drudgery. The experiment was conducted on 20 rural women aging 25–45 years of age with four sickles comprising one conventional sickle (S0) and three improved sickles

viz., S1, S2, and S3. S0 sickle was the heaviest measuring 234 g followed by S2 (217 g) and S3 (198 g). S1 sickle was the lightest in weight (186 g). In terms of physical fitness index, two-fifth of the respondents had a high average PFI whereas 40% had good PFI. Output was found maximum for S2 sickle (64.9 kg). S2 sickle resulted in 4.8% more output over conventional sickle resulting 16.4% increase in area covered. The present demand for improved sickle in India is more than 2.27 million (Singh, 2012).

Need to Incorporate Women's Perspectives In Sickle Design

Economic survey 2017-18 says that with growing rural to urban migration by men, there is 'feminization' of the agriculture sector, with an increasing number of women in multiple roles as cultivators, entrepreneurs, and laborers. Globally, there is empirical evidence that women have a decisive role in ensuring food security and preserving local agro-biodiversity. Rural women are responsible for the integrated management and use of diverse natural resources to meet the daily household needs. For this women farmers should have enhances their livelihood status by accessing resources like land, water, energy, electricity, technologies, and training which make them self-sufficient and critical investigators in the context of farming and agriculture. With this, increasing the involvement of women in agriculture is a key to improve agriculture productivity. With women predominant at all levels-production, pre-harvest, post-harvest processing, packaging, marketing – of the agricultural value chain, to increase productivity in agriculture, it is imperative to adopt gender-specific interventions. An 'inclusive transformative agricultural policy' should aim at gender-specific intervention to raise the productivity of small farm holdings, integrate women as active agents in rural transformation, and engage men and women in extension services with gender expertise. In India, regarding agriculture hand tools, there is no special design that has been developed for farm women who are doing a tremendous job in agriculture. Women are found to be engaged in agriculture farm activities with traditional old tools like a sickle (Karunanithi and Tajuddin, 2003). Less work is being reported on sickle design for especially farm women and its effect on women working conditions. There is a need to evaluate sickles and design them accordingly to users (farmers).

Conclusion

At present very few studies are available on the collection of anthropometrical data on women and their application in agricultural hand tools design in the country. Studies have been reported for the collection of anthropometric data on Indian agricultural workers most of them are confined to male agricultural workers (Premkumari, *et al.*, 2016). Till now no effort has been made to collect anthropometric data and strength parameters of female agricultural workers in hand tools designing for agriculture. The study points to the need for evolving

farm equipment specific to women's level of energy and body dimensions, as is in the case of bicycles where we have a specific shape and size for women as distinct from the bicycles meant for men (Sam, 2004). Efforts are underway to apply similar concepts in developing and justifying distinctly different tools for women farmworkers. A greater global interaction on this aspect will indeed accelerate developments.

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