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Chapter 16
Characterization of Drudgery of Farm Women in the Soybean Production System

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Abstract A sample of 50 farm women involved in soybean production system was selected from five villages of Parbhani district. Pretested interview schedule was used to collect the data. The activities performed by the farm women in selected production system were listed out. Six variables were selected for characterizing drudgery of women in selected three production systems such as Physical load, Postural load, Repetitive strain load, Time load, Musculo skeletal Discomfort load, and Physiological load. Drudgery index was calculated based on total drudgery load. Drudgery index was identified as medium to high in case of soybean production system. Significant variation was observed due to factors contributing to drudgery of women labourer in soybean production system. The study revealed that drudgery of women labourers in Soybean cultivation is characterized by physiological, physical, and repetitive strain load experienced due to lack of protective aids and appropriate technologies. Result emphasized the need of designing cost-effective tools/implements, techniques based on ergonomic consideration.

Keywords Drudgery index · Load factors · MSD · Physiological load Postural load

1 Introduction

Agriculture is an important unorganized sector when majority of the women labour force is engaged. Farm women suffer from musculoskeletal problems that are caused by over use of muscles and significantly impair their activities of daily living [7]. Over the year's women cultivators are typically and wrongly characterized as economically inactive and women cultivators play only a supportive role in

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agriculture as farmers' wives [6]. Dash [2] stated that the Indian women, especially in the poverty group spend above 5 h per day more than the Indian man in work, including visible burden of family. As per the recent findings women in India are major producers of food in terms of value, volume, and number of hours worked. In the view of Chayal and Dhaka [1] the farm women's participation was maximum in cutting, picking, cleaning grains, drying of grains, storage, processing operations and major part of cleaning of field, raising nursery for seedlings, weeding, shifting production to threshing floor, winnowing and grading operations are also done by farm women. In case of leveling of field, fertilizer application they do least amount of work, where as there is no participation of farm women in ploughing of field, plant protection measures and marketing activities.

Marathwada region is the largest area under soybean cultivation. Most drudgery prone tasks are performed by women in soybean cultivation. Thus, present study was taken up with the objectives to assess drudgery in women-dominated activities.

2 Methodology

The present study was conducted in selected villages of Parbhani district. A total of 50 women farmers engaged in soybean production system from last 5 years were selected purposively. Interview schedule was used for collecting general background information and to elicit information on drudgery involved in women-dominated activities in soybean production system. Drudgery in soybean production system was calculated as per the six parameters, i.e. physical load, posture, repetitive strain, physiological load, musculoskeletal disorder, time load and load factor. Each factor was measured using quantitative and qualitative methods [3–5].

Drudgery load and drudgery index were calculated for each selected activity in selected crop system by using following formulae:

$$\text{Drudgery Load} = [dr(PL) + dr(P) + dr(RS) + dr(T) + dr(MSDs) + dr(PysL)]$$

$$\text{Drudgery Index } \% \ (DI) = [100 \times dr(total)]/150$$

where,
dr (total) = Total drudgery; PL—physical load (25 points); P—postural load (25 points); RS—repetitive strain load (25 points); T—time load (25 points); MSDs—musculoskeletal disorders (25 points); PhsL—physiological load (25 points) [3, 5].

Drudgery-Level Categorization
<15 = V. Low, 15–30 = Low, 30–45 = Moderate to Heavy, 45–60 = Heavy, 60–80 = V. Heavy and >80 = Unacceptable.

3 Result

Soybean production system was studied in Parbhani district and it was found that all soybean farms were rain fed. Total duration of soybean crop was 3 months. Intercultural operations and weeding were performed after 1 month of sowing, i.e., in the month of July and August. Activities exclusively performed by women were removing stalks, stubbles, weeding and transportation of manure. Equal participation of men and women was observed in activities such as spreading of manure, seed dropping, cutting, gathering and heaping. Traditional iron weeder (*Khurpi*) and sickle (*weela*) were used for weeding, harvesting, gathering and heaping by women. Physical load up to 25 kg was being lifted at 1.4 m height and handled for a distance of 2 km while gathering and heaping soybean harvest. Similarly, about 6 kg physical load was being handled by women while transporting and spreading of manure. Though more man hours were spent in weeding and harvesting, time load contributed to only 12–13% of variation in drudgery load. Repetitive strain loads were felt more in weeding, cutting, removing stalk and stubbles and gathering and heaping soybean harvest in the fields.

Activity of soybean cutting had high drudgery load, and it was followed by weeding plant to plant and gathering and heaping which were categorized as moderate to heavy tasks. Table 1 showed that physical load followed by repetitive strain load and physiological load contributed to drudgery of farm women in the order of priority. Repetitive strain load was higher in weeding, soybean cutting, gathering and heaping and removing stalks and stubbles. Drudgery due to physical load was more in transportation and spreading of manure and gathering and heaping. Drudgery due to physiological load was more in transportation and spreading of manure, weeding and soybean cutting. Significant variation in drudgery was found due to factors computed by ANNOVA (Figs. 1 and 2).

4 Conclusion

It can be concluded that among all the selected eight activities, cutting soybean plants was scored highest for its drudgery load and bagging soybean seeds at field was scored least. It can be said that as extent of participation of farm women was higher in performing cutting soybean plants, drudgery load was perceived higher. Whereas bagging at field was a male-dominating activity and role of women was only to assist them, hence, drudgery load was perceived less.

Table 1 Drudgery load of farm women in soybean production system

Farm activity	Physical load (25)	Posture load (25)	Repetitive strain load (25)	Physiological load (25)	Time load (25)	MSD load (25)	Total drudgery (150)	Drudgery index (%)	Level	'F' value
Removing stalks and stubbles	8.6	7.2	14.8	11.06	12.8	6.3	61	40.6	MH	33.97*
Transportation of manure	18.2	4.6	6.3	15.6	7.1	9.1	61	40.7	MH	81.28*
Application of manure	17.3	7.2	7.2	15.4	5.7	6.8	60	40	MH	63.61*
Seed dropping	10.8	4.4	9.9	11.2	7.3	9.4	53	35	MH	17.01*
Weeding	4.4	14.3	17.6	13.1	8.5	7.04	65	43	MH	76.81*
Soybean cutting	8.9	11.6	15.6	13.7	10.6	7.2	68	45	H	20.99*
Gathering and heaping	13.1	9.4	13.5	12.1	8.8	7.06	64	43	MH	15.09*
'F' value	60.98*	51.99*	50.52*	6.48*	15.79*	3.44*				

H Heavy; *MH* Moderate to heavy; *MSD* Musculoskeletal disorder
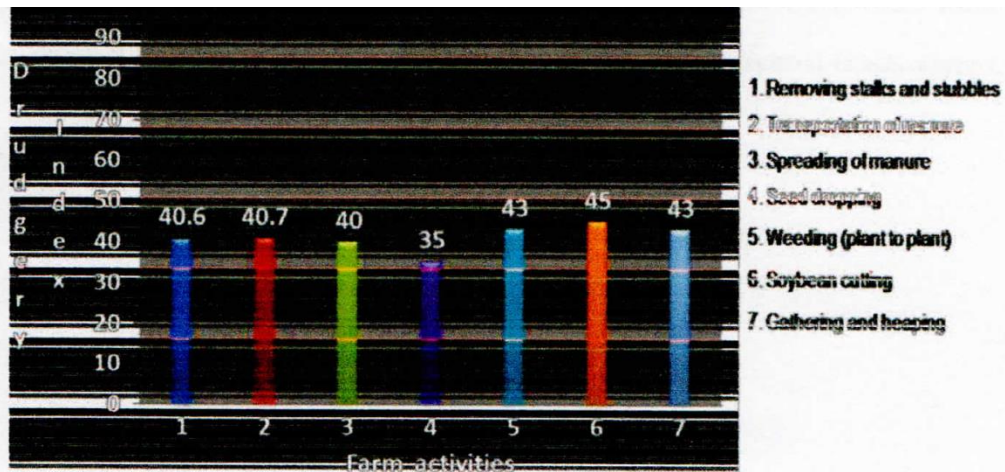*Significant at 5 % level

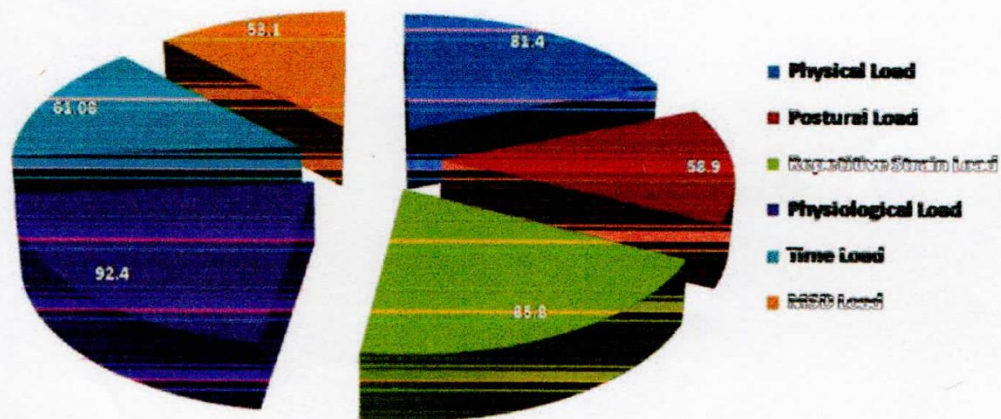**Fig. 1** Drudgery load of farm women in soybean production system

Fig. 2 Factors contributing to drudgery load of farm women in soybean production system

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