

Constraints Experienced by the Soybean Growers in Adoption of Soybean Production Technology in Maharashtra

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ABSTRACT

The study was conducted in ten selected villages of Washim District of Maharashtra to study the constraints experienced by soybean growers in adoption of improved soybean production technologies. A sample size comprised of 150 trainees and 150 non-trainees from the KVK operated villages. The results of the study revealed that the major situational and economic constraints experienced by both the trainee and non-trainee farmers were labour scarcity, high cost of inputs, non-availability of good quality seeds, failure of seasonal rainfall, severe pest and disease attack, inadequate credit facilities, high cost of labour, high cost of insecticide and higher rent for threshing machine. The technological constraints were faced by majority of the non-trainee farmers, whereas the same were faced by only a lesser proportion of the trainee farmers. As the trainees have undergone training on technological aspects on soybean production, they might have not experienced these constraints.

Key words: Constraints, Adoption, Technology, Soybean growers

Soybean (*Glycine max* L. Merrill) is the world's most important seed legume, which contributes to 25% of the global edible oil and about two-thirds of the world's protein concentrate for livestock feeding. Agricultural technologies have predominantly been implemented through improved varieties of traditional, familiar, staple crops; improvements inland, soil and water management practices; and input and fertilizer utilization and subsidy packages [1]. These types of agricultural technologies can be considered in the context of short-jump technologies as they require farmers to engage in incremental shifts in their existing agronomic practices and do not represent significant changes in their overall crop production portfolios [2]. Improved Agricultural technologies use the experience, knowledge and core competencies of farmers to improve agricultural productivity without requiring farmers to engage in more risky activities often associated with long-jump agricultural technologies [3]. Further, short-jump agricultural technologies have a high probability of adoption and success by smallholder farmers as they build upon the traditional practices and norms of farmers and typically require fewer new assets, have a lower risk premium and are less expensive than long-jump agricultural technologies [4].

In India, soybean is cultivated in an area of 11.00

million ha and the production of 9.30 million tonnes with a productivity of 8.65 q/ha under rainfed crop system in Madhya Pradesh, Rajasthan, Karnataka, Chhattisgarh and Telangana. There persists wide variation in the productivity ranging from 7.80 q/ha in Rajasthan to 11.25 q/ha in Maharashtra primarily due to farm level inefficiencies. In Maharashtra, soybean is cultivated in an area of 3.73 million ha with production of 3.94 million tonnes and productivity of 11.25 q/ha with second rank in India [5]. However, low productivity of the crop remains a major problem in soybean cultivation. This may be due to various technological, situational and economic constraints experienced by the soybean growers. Hence, the present study was attempted to study the constraints faced by the farmers in soybean cultivation.

MATERIALS AND METHODS

The study was conducted in Washim district of Maharashtra during 2018-19. A list of farmers attended training on improved soybean cultivation practices was obtained from KVK, Karda. Out of six taluks of Washim district, three taluks namely, Risod, Washim and Malegaon were selected as these taluks had highest number of trainees. Six villages from Risod, two villages from Washim and two villages from Malegaon were selected based on the availability of maximum number of trainees. The selected villages were Bhapur, Tandalwadi, Belkhed, Gobhani, Warud Tofa and Karda from Risod taluk, Shelgaon bagade and Tiwali from Malegaon taluk, Hiwara rohila and Sawargaon jire from Washim taluk. A sample size of 150 trainee farmers and 150 non-trainee farmers were selected from all these ten villages by following the proportionate random sampling technique. Thus, a total of 300 farmers were selected for the study. The trainee and non-trainee farmers were asked to reveal the

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various constraints faced by them in adoption of improved soybean production technology. The data were collected with the help of pre- tested and structured interview schedule by personal interview method. Percentage analysis was worked out to interpret the results.

RESULTS AND DISCUSSION

The results on constraints experienced by the farmers in adoption of recommended soybean cultivation practices are presented in following tables.

Technological constraints

Data depicted in (Table 1) reveals that the technological constraints namely, 'inadequate knowledge on chemical and

bio-fertilizer seed treatment' (67.33 percent), 'inadequate knowledge on herbicide' (72.67%), 'inadequate knowledge on pest and disease management' (76.00%) and 'inadequate knowledge on manuring' (65.33%) were experienced by majority of the non-trainee farmers. Whereas, only a smaller proportion of the trainee farmers experienced the technological constraints. As the trainee farmers have undergone training on soybean production technologies, they might have acquired required knowledge on the technological aspects of soybean cultivation. This in turn would have enabled them to get rid of these constraints. On the contrary, as the non-trainee farmers have not undergone training on soybean cultivation, they would have not acquired adequate knowledge on these aspects and hence would have experienced these constraints [6].

Table 1 Technological constraints experienced by the farmers in adoption of soybean production technology

Constraints	Trainees (n=150)		Non-trainees (n=150)	
	Numbers	Per cent	Numbers	Per cent
Inadequate knowledge on chemical and bio-fertilizer seed treatment	16	10.67	101	67.33
Inadequate knowledge on herbicide	21	14.00	109	72.67
Inadequate knowledge on pest and disease management	26	17.33	114	76.00
Inadequate knowledge on manuring	17	11.33	98	65.33

Table 2 Situational constraints experienced by the farmers in adoption of soybean production technology

Constraints	Trainees (n=150)		Non-trainees (n=150)	
	Numbers	Per cent	Numbers	Per cent
Labor scarcity	124	82.67	138	92.00
Non-availability of good quality seeds	116	77.33	132	88.00
Non-availability of farm yard manure (FYM)	98	65.33	84	56.00
Failure of seasonal rainfall	134	89.33	139	92.67
Severe pest and disease attack	87	58.00	119	79.33

Situational constraints

Data in (Table 2) shows that both the trainee and non-trainee farmers experienced the situational constraints namely 'labour scarcity' (92.00%), 'non-availability of good quality seeds' (88.00%), 'non-availability of FYM' (65.33%), 'failure of seasonal rainfall' (92.67%) and 'severe pest and disease attack' (79.33%). More than ninety per cent of the respondents expressed 'labour scarcity' (92.00%) as their constraints. Soybean cultivation requires more number of labourers from sowing to harvesting operations. Many of the agricultural labourers were demanding higher wages irrespective of the nature of the work [7]. Also, all of them would prefer to go for 100 days employment scheme implemented by the Government as they could get higher wages with minimum work. Hence labour scarcity arose as the major problem. This might have enabled majority of the respondents to report this as an important constraint. 'Failure of seasonal rainfall' was expressed as a constraint by majority of the respondents (92.67%). The farmers revealed that they depend mostly on seasonal rainfall for irrigation. But, for the past several years, the rainfall fails on the season and hence led to unassured irrigation. This in turn would have resulted in poor yield. This might be the possible reason for the reported constraint [8].

Non-availability of good quality of seeds was the constraint faced by 88.00 per cent of the respondents. Good quality seeds are must for getting high yield in crop cultivation. Most of the respondents are using the seeds harvested from their own field of sowing in the next season. Sometimes, the seeds are infected with fungus due to improper storage facilities. When these seeds are used for sowing that would result in poor germination, this might have enabled them to express the above-mentioned constraint. 'Severe pest and disease attack' was the constraint experienced by 79.33 per cent of the respondents. Soybean crop is affected by pests like girdle beetle, pod borer and stem fly and diseases like yellow mosaic virus and root rot [9]. The pest and disease infestation causes severe yield reduction in soybean and hence the farmers might have reported this constraint. The constraint experienced by 65.33 per cent of the respondents was 'Non-availability of FYM'. Basal application of farmyard manure (FYM) was the practice adopted by all the farmers to ensure soil fertility and virulent crop growth. Nowadays, the cattle population in the villages has been drastically reduced due to many reasons and hence led to unavailability of FYM. So, the farmers could not get adequate quantity of FYM for application in their soybean fields [10].

Table 3 Economic constraints experienced by the farmers in adoption of soybean production technology

Constraints	Trainees (n=150)		Non-trainees (n=150)	
	Numbers	Per cent	Numbers	Per cent
High cost of inputs	121	80.67	138	92.00
Inadequate credit facilities	101	67.33	124	82.67
High cost of labour	136	90.67	139	92.67
High cost of insecticide	92	61.33	128	85.33
Higher rent for threshing machine	131	87.33	129	86.00

Economic constraints

Data depicted in (Table 3) shows that economic constraints namely, 'high cost of inputs' (92.00 per cent), 'inadequate credit facilities' (82.67 per cent), 'high cost of labour' (92.67 per cent), 'high cost of insecticide' (85.33 per cent) and 'higher rent for threshing machine' (86.00%) were experienced by both the trainee and non-trainee farmers. The important constraint expressed by majority of the respondents (92.00%) was 'high cost of inputs'. This may be due to the increasing cost of inputs viz., seeds, fertilizers and pesticides etc., year by year. Whereas, the price of produce has not increased proportionality every year. Most of the respondents do not have adequate savings for purchase of inputs required for cultivation. They always depend upon private input dealers/commission agents and money lenders for financial assistance. By using this situation, these agencies exploit the farmers by selling inputs at high cost. This may be the reason for above reported constraints by the respondents [11].

High cost of labour was another major constraint faced by majority of the farmers (92.67 per cent). The farmers revealed that they had to pay more wages for the labourers irrespective of the work done due to scarcity of labour during crucial stages of cultural operations. 'Inadequate credit facilities' was the constraint expressed by 82.67 per cent of the respondents. The farmers could not avail of the credit facilities from banks because of its tedious and time-consuming procedure. They could not borrow money from non-institutional sources because of higher interest rates [12].

High cost of insecticide was the constraint revealed by 85.33 per cent of the farmers. As the crop is infested by pests like girdle beetle, stem fly and pod borer and hence the

farmers had to apply insecticides to control them. But the cost of plant protection chemicals is too high and hence the farmers could not afford the cost as revealed by them [13].

Majority of the farmers (87.33 per cent) expressed 'higher rent for threshing machine' as the constraint. The farmers could not hire threshing machines during peak harvest seasons and also had to pay higher rents for the machines they hired. This leads to increased production cost and resulted in poor net profit to the farmers [14].

CONCLUSIONS

The results of the study revealed that the major situational and economic constraints experienced by both the trainee and non-trainee farmers were labour scarcity, high cost of inputs, non-availability of good quality seeds, failure of seasonal rainfall, severe pest and disease attack, inadequate credit facilities, high cost of labour, high cost of insecticide and higher rent for threshing machine. The technological constraints were faced by majority of the non-trainee farmers, whereas the same were faced by only a lesser proportion of the trainee farmers. As the trainees have undergone training on technological aspects on soybean production, they might have not experienced these constraints. The scientists from agricultural universities, extension officials of KVK, extension workers from State Department of Agriculture and other officials concerned may have to take necessary efforts to help the farmers to overcome these constraints. The KVK may organize training programs on soybean production technology to all the farmers in the entire district so as to get rid of technological constraints.

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