Annals of Arid Zone 51(2): 115-121, 2012

Constraints in Adoption of Mung bean Production Technology

Bhagwan Singh[1]* and T.R. Chauhan[2]

[1] *Central Arid Zone Research Institute, Jodhpur 342 003, India*
[2] *R.B.S. College, Agra 282 002, India*

Received: August 2011

Abstract: The study was conducted in six villages of Jodhpur district of Rajasthan. From each village 30 mung bean growers were randomly selected. Thus total sample size was 180. Data were collected with the help of structured schedule through personal interview. Study revealed that major constraints perceived by the different categories of farmers were non-availability of high yielding varieties at proper time, lack of knowledge about the practices, lack of moisture in the field, lack of improved implements, lack of organic manure, lack of irrigation facilities, labor problem, high cost of inputs (seed, fertilizer and pesticides), lack of technical guidance and lack of finance. The study suggests that there is a need of educating the farmers about improved practices and supply of required input to them on reasonable cost at proper time to boost up the production of mung bean in arid areas of Rajasthan.

Key words: Mung bean, constraints, high yielding varieties, plant protection measures.

Mung bean is an important kharif pulse crop of Rajasthan. It occupies about 0.89 M ha area, which accounts for 24.13% of total pulse area of the state, but contributes only 20.44% to total pulse production of the state. Mostly, it is grown under rainfed condition. The average productivity of mung bean in the state is 200-400 kg ha^{-1}, which is very low as compared to other pulse crops grown in the state. There is considerable scope for increasing the production of the crop. The research institutes and agricultural universities have generated a number of technologies for the mung bean crop improvement, but farmers have accepted only few of them. Many constraints are responsible for low adoption of the technology. These constraints are required to be studied for increasing the adoption. Keeping this in view a study was undertaken to find out the constraints in adoption of improved practices of mung bean cultivation.

Materials and Methods

The study was conducted in Jodhpur district of Rajasthan. The list of all panchayat samities of Jodhpur District was prepared, out of nine panchayat samities, only two panchayat samities, namely Mandore and Bhopalgarh of Jodhpur and Bhopalgarh tehsils were selected randomly. In each panchayat samiti, based on distance all the villages were divided into three categories. First category of the villages was within 0 to 3 km distance from the panchayat samiti. Second category was within 3 to 6 km and third category was more than 6 km away from the panchayat samiti. One village from each category was selected randomly.

Total number of farm families in each selected village was listed and classified into three farm size groups viz. marginal (up to 3.5 ha unirrigated), small (3.51 to 7.0 ha unirrigated) and large (more than 7 ha unirrigated) with the help of Lekhpal and V.D.O. of the concerned village. Ten farm families, each from marginal, small and large farm size group, were selected by random sampling method. Thus, the selected respondents were 60 marginal, 60 small and 60 large. The total number of selected 180 respondents formed the sample of the study.

For studying the constraints, 11 important cultivation practices i.e. high yielding varieties, seed rate, seed treatment, time of sowing, method of sowing, spacing, application of organic manure, application of nitrogeneous fertilizers, application of phosphatic fertilizers, interculture and weeding and plant protection measures were considered.

Results and Discussion

Constraints in adoption of high yielding varieties

The data about constraints presented in Table 1 indicate that majority of the marginal farmers (66.7%) perceived lack of knowledge

*E-mail: singhbhagwan776@gmail.com

followed by non-availability of HYV seed at proper time (58.3%) and high cost of seed (45.0%), as the main constraints. Lack of proper guidance, low economic gain and impurity of seed were perceived as constraints by 38.3, 13.3 and 5.0% farmers, respectively. The small farmers perceived non-availability of HYV seed at proper time as the main constraint by 65.0% and lack of knowledge perceived as the second major constraint (46.7%). Srivastava and Singh (1990), Kher (1991), Jaulker *et al*. (1998), Desai *et al*. (1997), Singh (2000), Chaturvedi *et al*. (2001), Singh and Amtul (2000), Khothikhane and Lodh (2003), Kadam *et al*. (2003) and Singh and Singh (2005) also reported that non-availability of HYV seed at proper time was the main constraint in adoption of high yielding varieties. High cost of HYV seed, lack of proper guidance, lack of finance, low economic gain and impurity of seed were perceived as constraints by the farmers in the range of 6 to 28%.

It was found that 55% of the large farmers perceived non-availability of HYV seed at proper time as the main constraint and was followed by lack of knowledge (43.3%), lack of proper guidance (33.3%) and low economic gain (20.0%). The other constraints faced by the large farmers included high cost of HYV seed (15.0%), lack of finance (11.7%) and impurity of seed (10.0%).

Constraints in adoption of recommended seed rate

The majority of marginal farmers (75.0%) perceived lack of knowledge as the major constraint and ranked first. Similar findings are also reported by Srivastava and Singh (1990), Kher (1991), Jaulker *et al*. (1992), Singh and Amtul (2000) and Singh and Singh (2005). The second and third constraints were non-availability of seed (35.0%) and high cost of seed (25.0%). About 54% small farmers reported that lack of knowledge was the first constraint followed by non-availability of seed (45.0%) and high cost of seed (16.7%). In case of large farmers, majority of the farmers (61.7%) perceived the problem of lack of knowledge. The constraints non-availability of seed and high cost of seed perceived by 50.0 and 13.3% farmers, respectively. Low germination of seed was perceived 10.0, 5.0 and 6.7% by the different category of the farmers.

Constraints in adoption of seed treatment

On perusal of Table 1, it is evident that as high as 96.7% marginal farmers had no knowledge about seed treatment. The above findings were also reported by Singh and Chauhan (2000), Singh (2001), and Jayalaxmi and Alagesan (1998). Lack of technical guidance, high cost of fungicides and non-availability of fungicides were perceived by 50.0, 36.7, and 30.0% farmers respectively. The other constraints were lack of money (26.7%), lack of interest (21.7%) and ineffective fungicides (8.3%).

Among the small farmers, lack of knowledge was the first constraint (83.3%). The second important constraint was lack of technical guidance (45.0%). The constraints non-availability and high cost of fungicides, lack of interest, lack of money and ineffective fungicides were recorded in the range of 3 to 20%. Among the large farmers, 91.7% perceived lack of knowledge as first ranked followed by lack of technical guidance (40.0%) and non-availability of fungicides (25.0%). Lack of interest, high cost of fungicides, lack of money and ineffective fungicides were the other important constraints as perceived by 15.0, 10.0, 8.3 and 5.0% of respondents respectively.

Constraints in adoption of time of sowing

The lack of labor force was the main constraint (50.0%) perceived by marginal farmers (Table 1). The second constraint perceived by the farmers was lack of moisture in the field (35.0%). Lack of knowledge, non-availability of seed in time and weather infestation were the third (30.0%), fourth (23.3%) and fifth (15.0%) constraints. Among the small farmers, lack of moisture in the field and lack of labor force were the first (38.3%) and second (33.3%) constraints. Singh and Chauhan (2000), Singh and Singh (2005) reported that lack of moisture in the field was the main constraint. The other constraints perceived by the farmers were non-availability of seed in time (26.7%), lack of knowledge (21.7%) and weather infestation (8.3%).

Similarly, in case of large farmers, lack of moisture in the field was the first constraint (46.7%). The constraints recorded in the range of 13 to 28% were lack of labor force, lack of knowledge, non-availability of seed in time and weather infestation.

Table 1. Constraints perceived by the marginal, small and large farmers in adoption of improved practices of mung bean production technology

Practices	Marginal farmers		Small farmers		Large farmers	
	Number	% age	Number	% age	Number	% age
High yielding varieties						
Non-availability of HYV seed at proper time	35	58.3	39	65.0	33	55.0
Lack of knowledge	40	66.7	28	46.7	26	43.3
Lack of proper guidance	23	38.3	15	25.0	20	33.3
High cost of HYV of seed	27	45.0	17	28.3	9	15.0
Low economic gain	8	13.3	10	16.7	12	20.0
Lack of finance	25	41.7	12	20.0	7	11.7
Impurity of seed	3	5.0	4	6.7	6	10.0
Recommended seed rate						
Lack of knowledge	45	75.0	32	53.3	37	61.7
Non-availability of seed	21	35.0	27	45.0	30	50.0
Low germination of seed	6	10.0	3	5.0	4	6.7
High cost of seed	15	25.0	10	16.7	8	13.3
Seed treatment						
Lack of knowledge	58	96.7	50	83.3	55	91.7
Lack of technical guidance	30	50.0	27	45.0	24	40.0
High cost of fungicides	22	36.7	11	18.3	6	10.0
Non-availability of fungicides	18	30.0	12	20.0	15	25.0
Lack of money	16	26.7	9	15.0	5	8.3
Lack of interest	13	21.7	10	16.7	9	15.0
Ineffective fungicides	5	8.3	2	3.3	3	5.0
Time of sowing						
Lack of moisture in the field	21	35.0	23	38.3	28	46.7
Lack of knowledge	18	30.0	13	21.7	15	25.0
Weather infestation	9	15.0	5	8.3	8	13.3
Lack of labor force	30	50.0	20	33.3	17	28.3
Non-availability of seed in time	14	23.3	16	26.7	13	21.7
Method of sowing						
Traditional practice was better	6	10.0	3	5.0	2	3.3
Lack of knowledge	16	26.7	10	16.7	9	15.0
Lack of improved implements	28	46.7	14	23.3	7	11.7
Spacing						
Lack of knowledge	18	30.0	12	20.0	3	5.0
Lack of technical guidance	15	25.0	14	23.3	5	8.3
Lack of improved implements	25	41.7	18	30.0	4	6.7
Traditional practice was better	6	10.0	3	5.0	2	3.3
Application of organic manure						
Lack of organic manure	27	45.0	45	75.0	50	83.3
Lack of finance	40	66.7	23	38.3	12	20.0
Application of nitrogeneous fertilizers						
Lack of knowledge	51	85.0	39	65.0	36	60.0
Lack of technical guidance	27	45.0	36	60.0	29	48.3
High cost of fertilizers	31	51.7	44	73.3	18	30.0
Low economic gain	18	30.0	13	21.7	15	25.0

Continued ...

Table 1. Continued ...

Practices	Marginal farmers		Small farmers		Large farmers	
	Number	% age	Number	% age	Number	% age
Lack of irrigation facilities	57	95.0	50	83.3	45	75.0
Non-availability of fertilizers in time	16	26.7	22	36.7	34	56.7
Non-availability of credit	26	43.3	19	31.7	9	15.0
Deterioration of soil quality with their use	6	10.0	5	8.3	4	6.7
Lack of finance	38	63.3	28	46.7	13	21.7
Application of phosphatic fertilizers						
Lack of knowledge	41	68.3	21	35.0	24	40.0
Lack of technical guidance	33	55.0	19	31.7	22	36.7
High cost of fertilizers	36	60.0	30	50.0	26	43.3
Low economic gain	18	30.0	15	25.0	9	15.0
Lack of irrigation facilities	50	83.3	42	70.0	39	65.0
Non-availability of fertilizers in time	15	25.0	36	60.0	30	50.0
Non-availability of credit	26	43.3	18	30.0	11	18.3
Deterioration of soil quality with their use	9	15.0	7	11.7	4	6.7
Lack of finance	27	45.0	12	20.0	6	10.0
Interculture and weeding						
Lack of knowledge	10	16.7	6	10.0	7	11.7
Labor problem	24	40.0	30	50.0	36	60.0
Low economic gain	6	10.0	7	11.7	4	6.7
Lack of time	9	15.0	16	26.7	30	50.0
Lack of advice	33	55.0	20	33.3	25	41.7
Lack of interest	8	13.3	3	5.0	5	8.3
Plant protection measures						
Lack of knowledge	54	90.0	48	80.00	51	85.00
Lack of technical guidance	43	71.7	39	65.00	35	58.33
High cost of plant protection chemicals	30	50.0	25	41.66	18	30.00
Lack of finance	24	40.0	12	20.0	9	15.0
Low economic gain	12	20.0	9	15.0	15	25.0
Non-availability of plant protection chemicals	10	16.7	7	11.7	8	13.3
High cost of plant protection equipments	20	33.3	22	36.7	12	20.0
Ineffective of plant protection chemicals	4	6.7	8	13.3	7	11.7
Low incidence of insect/pest	9	15.0	5	8.3	6	10.0

Constraints in adoption of method of sowing

Table 1 reveals that among marginal farmers, lack of improved implements was the main constraint (46.7%). Second and third constraints were lack of knowledge (26.7%) and traditional practice (10.0%), respectively. Similarly, in case of small farmers, lack of improved implement was the first constraint (23.3%) and lack of knowledge and traditional practice were the second (16.7%) and third (5.0%) constraints, respectively. In case of large farmers, lack of knowledge was the first constraint (15.0%) while lack of improved implement and traditional practice was better.

Constraints in adoption of spacing

With regard to the spacing, lack of improved implement was the first constraint; it was expressed by 41.7% marginal farmers. Lack of knowledge, lack of technical guidance and traditional practice were observed by 30.0, 25.0 and 10.0% farmers, respectively. Similarly, lack of improved implement was the first constraint (30.0%) in case of small farmers. However, 23.3 and 20.0% recorded the constraints like lack of technical guidance and lack of knowledge, respectively. In case of large farmers, lack of technical guidance, lack of improved

implements, lack of knowledge and traditional practice were perceived in the range of 3 to 8%.

Constraints in adoption of application of organic manure

Table 1, reveals that lack of finance was perceived by marginal farmers as first constraint (66.7%). However, the constraint, like lack of manure was perceived by 45.0%. Among the small and large farmers, lack of manure was main constraint; 75.0 and 83.3% farmers expressed it respectively. Similar findings also reported by Kadam *et al*. (2003) and Khtikhane and Lodh (2003). Lack of finance was also the constraint and reported by 38.3% small farmers and 20.0% large farmers.

Constraints in adoption of application of nitrogeneous fertilizers

As high as 95.0% marginal farmers were not using nitrogeneous fertilizers due to the lack of irrigation facility (Table 1). Similar findings were also reported by Khar (1998) and Singh (2001). The second constraint was lack of knowledge and was expressed by 85.0% farmers. The third and fourth constraints were lack of finance (63.3%) and high cost of fertilizers (51.7%). The constraints like lack of technical guidance and non-availability of credit were reported by 45.0 and 43.3% farmers, respectively. The other constraints perceived by the farmers were low economic gain (30.0%), non-availability of fertilizers in time (26.7%) and deterioration of soil quality with their use (10.0%).

Among the small farmers, 83.3% farmers had no irrigation facility while high cost of fertilizers, lack of knowledge and lack of technical guidance perceived were by 73.3, 65.0 and 60.0% farmers, respectively. The constraints perceived by the farmers in the range of 31 to 47% were lack of finance, non-availability of fertilizers in time and non-availability of credit. The other constraints were low economic gain (21.7%) and deterioration of soil quality with their use (8.3%). In case of large farmers, lack of irrigation facilities was the main constraint (75.0%). The second constraint perceived by the farmers was lack of knowledge (60.0%) followed by non-availability of fertilizers in time (56.7%) and lack of technical guidance (48.3%). The other constraints like high cost of fertilizers, low economic gain, lack of finance and non-availability of credit perceived by 30.0, 25.0, 21.7 and 15.0% farmers, respectively.

Constraints in adoption of application of phosphatic fertilizers

On perusal of Table1, it is clear that lack of irrigation facilities was the major constraint (83.3%) perceived by the marginal farmers followed by lack of knowledge (68.3%), high cost of fertilizers (60.0%), lack of technical guidance (55.0%) and lack of finance (45.0%). Veer *et al*. (1993), Singh *et al.* (2000), Singh (2001), Singh and Amtul (2000) and Singh and Singh (2005) also reported that lack of irrigation facility was the main reason for non-adoption of fertilizers. Non-availability of credit was perceived by 43.3% farmers. The constraints perceived in the range of 15 to 30% were low economic gain, non-availability of fertilizers in time and deterioration of soil quality with their use.

Among the small farmers, 70.0% farmers had no irrigation facilities and ranked it first. Non-availability of fertilizers in time, high cost of fertilizers and lack of knowledge were perceived by 60.0, 50.0 and 35.0% farmers respectively. Lakhera and Panjabi (1991) found that most important constraint perceive by the farmers in use of chemical fertilizers was their high cost. The constraints perceived in the range of 12 to 32% were lack of technical guidance, non-availability of credit, low economic gain, lack of finance and deterioration of soil quality with their use. In case of large farmers, 65.0% were not using the fertilizers due to the lack of irrigation facilities followed by non-availability of fertilizers in time (50.0%), high cost of fertilizers (43.3%), lack of knowledge (40.0%) and lack of technical guidance (36.7%). The other constraints perceived by the farmers were non-availability of credit (18.3%), low economic gain (15.0%), lack of finance (10.0%) and deterioration of soil quality with their use (6.7%).

Constraints in adoption of interculture and weeding

It is evident from Table 1 that lack of advice was the main constraint and expressed by 55.0% marginal farmers followed by labor problem (40.0%), lack of knowledge (16.7%), lack of interest (13.3%) and low economic gain (10.0%). In case of the small farmers, 50.0%

farmers perceived the labor problem as main constraint. The other constraints perceived by the farmers were lack of advice (33.3%), lack of time (26.7%), low economic gain (11.7%) and lack of knowledge (10.0%). In case of large farmers, labor problem was the first constraint (60.0%) followed by lack of time (50.0%) and lack of advice (41.7%). The constraints like lack of knowledge, lack of interest and low economic gain perceived in the range of 6 to 12%.

Constraints in adoption of plant protection measures

It is evident from Table 1 that lack of knowledge was the major constraint and expressed by 90.0% marginal farmers. The second constraint was lack of technical guidance (71.7%) followed by high cost of plant protection chemicals (50.0%), lack of finance (40.0%) and high cost of plant protection equipments (33.3%). Girase *et al.* (2004) reported that marginal and small farmers felt lack of knowledge as most serious constraint. Mundhva and Patel (1991), Singh and Amtul (2000), Sharma and Sharma (2003) and Singh and Singh (2005) found that lack of knowledge and high cost of plant protection chemicals were the main constraints in adoption of plant protection measures. Kadam *et al.* (2003) reported that high cost of pesticides was the main constraints. The constraints low economic gain, non-availability of plant protection chemicals and low incidence of insect pest were recorded in the range of 15 to 20%. Ineffective of plant protection chemicals was the last constraint and expressed by only 6.7% farmers.

Among the small farmers, it was noticed that lack of knowledge was the first constraint and expressed by 80.0% farmers. The second constraint was the lack of technical guidance (65.0%). High cost of plant protection chemicals, high cost of plant protection equipments and lack of finance were the third (41.7%), fourth (36.7%) and fifth (20.0%) constraints, respectively. The other constraints perceived by the farmers were low economic gain (15.0%), ineffective of plant protection chemicals (13.3%), non-availability of plant protection chemicals (11.7%) and low incidence of insect pest (8.3%). It was observed that 85.0% large farmers were not using plant protection measures due to lack of knowledge. The second important constraint was lack of technical guidance (58.3%). Third and fourth constraints were high cost of plant protection chemicals (30.0%) and low economic gain (25.0%). The constraints like high cost of plant protection equipments lack of finance, non-availability of plant protection chemicals, ineffective of plant protection chemicals and low incidence of insect pests were recorded in the range of 10 to 20%.

Conclusions

From the above discussion, it may be concluded that the most constraints perceived by the different categories of farmers were non-availability of seeds of high yielding varieties at proper time, lack of knowledge about the practices, lack of moisture in the field, lack of improved implements, lack of organic manure, lack of irrigation facilities, labor problem, high cost of inputs (seed, fertilizer and pesticides), lack of technical guidance and lack of finance in adoption of improved mung bean production technology.

References

Chaturvedi, D., Panwar, J.S. and Sharma, S.K. 2001. Constraints of farmers with regards to improved practices of cotton cultivation. *Rajasthan Journal of Extension Education* 8&9: 62-66.

Desai, B.R., Girase, K.A. and Patil, R.P. 1997. Constraints faced by contact farmers an adoption of new technology. *Agricultural Extension Review* 9(2): 14-16.

Girase, C.P., Kalantri, L.B. and Tekale, V.S. 2004. Constraints faced by farmers in the adoption of recommended packages of practices of cotton. *Asian Journal of Extension Education 23*(1): 157-160.

Jaulkar, A.M., Singh, V.N. and Deopuria, O.P. 1992. Constraints affected crops productivity of wheat and mustard. *Maharashtra Journal of Extension Education* 11: 166-169.

Jayalakshmi, N. and Alagesan, V. 1988. Technology adoption and production constraints in sesamum in cauvery mettur project area. *Journal of Extension Education* 9(3): 2093-2096.

Kadam, R.P., Wangikar, S.D. and Panwar, G.S. 2003. Constraints in adoption of improved soybean cultivation practices in Marathwada region. *Maharashtra Journal of Extension Education* 22(2): 211-214.

Kar, A.K. 1988. Problems and prospects of fertilizers use in agro ecological regions of North Eastern India. *Fertilizer News* 43(5): 53-59.

Kher, S.K. 1991. Constraints in adoption of improved technology in rain fed maize. *Indian Journal of Extension Education 27*(1&2): 121-123.

Khothikhane, R.P. and Lodh, S.S. 2003. Cultivation practices and production constraints in pigeon pea. *Maharashtra Journal of Extension Education* 22(2): 47-50.

Lakhera, J.P. and Punjabi, N.K. 1991. Constraints in fertilizer use. *Indian Journal of Extension Education* 27(3&4): 114-115.

Mandhva, A.B. and Patel, H.L. 1991. Constraints in adoption of rain fed wheat technology in Bhal area of Gujrat state. *Maharashtra Journal of Extension Education* 10(1): 23-29.

Sharma, B.L. and Sharma, R.N. 2003. Technological gap and constraints in gram production technology in semi-arid Region of Rajasthan. *Rajasthan Journal of Extension Education* 11: 59-62.

Singh, B., Patidar, M. and Singh, R. 2000. Constraints in fertilizer use in arid zone of western Rajasthan. *Current Agriculture* 24(1&2): 93-95.

Singh, B. 2001. Adoption and constraints of improved practices of mung crop in arid area. *Current Agriculture* 25(1&2): 131-133.

Singh, B. and Amtul Waris 2000. Constraints in adoption of rainfed wheat technology in Bhal area of Gujrat state. *Rajasthan Journal of Extension Education* 10(1): 104-107.

Singh, B. and Chauhan, K.N.K. 2000. Adoption and constraints in improved practices of guar in arid area of Rajasthan. *Trans. ISDT Journal* 25: 133-138.

Singh, B. and Singh, R. 2005. Constraints in adoption of clusterbean production technology. *Journal of Arid Legumes* 2(2): 244-246.

Srivastava, S.N. and Singh, R.P. 1990. Identification of constraints in paddy production under rainfed condition. *Indian Journal of Extension Education* 26(3&4): 77-79.

Veer, K., De., Deepak and Mundra, S.N. 1993. Reasons responsible for technological gaps in the use of balance fertilizer. *Rajasthan Journal of Extension Education* 3(1): 33-37.