J. Cotton Res. Dev. **28** (2) 353-358 (July, 2014)

Impact of farm school on cotton production technology

SUBE SINGH*, MAHA SINGH, NEERAJ PAWAR, H. S. SAHARAN, JAGDISH BENIWAL AND B. S. GHANGHAS

CCS Haryana Agricultural University, Krishi Vigyan Kendra, Sirsa 125 055

**E-mail : sube73@gmail.com*

ABSTRACT : Farm school is the latest approach being adopted under Extension Reforms Scheme (ATMA, *i.e* Agricultural Technology Management Agency) by the extension officers and grass root workers to disseminate the farm technologies amongst the farming community. Thus, to know the impact of farm school among farmers this study was undertaken purposively to find out the impact of farm school conducted under ATMA Scheme on cotton production technology in selected villages. The data were collected from a total of 60 farmers. 30 farmers from farm school attended villages and 30 farmers from non farm school attended villages were selected for the study. The study revealed that 50 per cent farmers had fair knowledge followed by poor knowledge category (33.33%). A majority (86.66%) of the farmers in farm school villages had medium and high level of adoption followed by low adoption category (13.34%). There was a net saving of Rs. 10494/ ha on use of pesticides in farm school villages when all other parameters remain constant. As for as constraints related to cotton production technology is concerned, the most serious constraints perceived by farmers were high cost of seed, perception of seedling burning, use of chemical fertilizers at sowing time, less time available for deep ploughing, sale of pesticides by non technical persons, lack of knowledge about cotton diseases and no knock down effect of bio agents.

Key words: Adoption, *Bt* cotton, cost, constraints, farm school, farmers, impact, knowledge, SES, yield

Farm school is the latest approach being adopted under Extension Reforms Scheme, ATMA (Agricultural Technology Management Agency) by the extension officers and grass root workers to disseminate the farm technologies amongst the farming community. The National Commission on farmers has recommended that farm schools may be established in the fields of outstanding farmers based on the principles of "learning by doing" as well as 'seeing is believing' with focus on farmer to farmer extension. The farm school would help in developing a cost effective extension system. Thus, to know the impact of farm school among farmers the study was undertaken purposively with the objectives *i.e.* to find out the impact of farm school on cotton production technology in selected villages, to measure the knowledge and adoption level of farmers about cotton production technology, to identify the constraints in the adoption of cotton production technology and to suggest suitable extension strategy for promotion of cotton production technology through farm school.

The study was conducted in Barwala block of Hisar district. Two villages namely; Dhani Prem Nagar and Sarehra, in which farm schools were organized by department of Agriculture, Hisar under Extension Reforms Scheme during *kharif,* 2011 were selected purposively. Similarly, two villages namely; Behbalpur and Dhigtana were selected randomly, as in these villages farm schools were not organized during that season. From the selected Barwala block; 15 farmers each from two farm school villages namely Dhani Prem Nagar and Sarehra were selected purposively. Similarly, 15 farmers were also selected randomly each from two non farm school villages; namely Behbalpur and Dhigtana. Thus, a total of 60 farmers, out of which 30 farmers from farm school attended villages and 30 farmers from non farm school attended villages were selected for the study. A well structured interview schedule was developed for the study to collect the informations regarding profile of the respondents, knowledge, adoption and constraints in adoption of cotton production technology. A score of 2, 1 and 0 were assigned for adequate, fair and poor knowledge, respectively. Similarly, a score of 2, 1 and 0 were also assigned for high, medium and poor adoption level, respectively. To analyse the constraints faced by the farmers a score of 2, 1 and 0 were assigned for the seriousness of the constraints as very serious (2), serious (1) and not so serious (0). The suitable statistical tools like mean, frequency, cumulative frequency and rank order

etc were applied to interpret the results.

Profile of respondents: The distribution of respondents as/their background/socio economic status has been incorporated in the text under following sub heads:

Frequency distribution on socio personal variables : The data regarding socio personal variables of respondents *viz.* age, educational status, land holding and source of irrigation has been incorporated in the Table 1

Age: The data presented in Table 1 clearly revealed that majority (53.33 %) of farmers were of middle age followed by young (26.67 %) and old age (20.00 %).

Educational status: Majority (65 %) of the respondents attained education upto 10+2 standard followed by highly qualified (15 %). The percentage of literate and illiterate farmers was 11.67 and 8.33, respectively.

Land holdings: It was observed that 33.33 per cent farmers were medium followed by small (30%). The percentage of big and marginal farmers was 20 and 16.67, respectively.

Source of irrigation: It was found that 60 per cent farmers had both canal and tubewell source of irrigation. The percentage of farmers having only canal as was 23.33 per cent while only 16.67 per cent farmers were depend on only tubewells.

Quality of tubewell water: The 66.67 per cent of farmers opined that the quality of tubewell water was poor and not fit for irrigation. The percentage (10%) of farmers having good quality water while only 23.33 per cent farmers were opined normal quality of tubewell water.

Distribution of respondents on knowledge level : The data in Table 2 clearly revealed that majority (46.67%) of the respondents in FSV had fair knowledge followed by adequate knowledge (40.00 %) and poor (13.33 %) knowledge categories. NFSV 50 per cent farmers had fair knowledge followed by poor (33.33 %) knowledge category. The percentage of farmers having adequate knowledge was only 16.67.

While comparing knowledge level of farmers in SFV and NFSV, it was cleared that FSVpercentage of adequate knowledge was 40 and it was only 16.67 per cent in NFSV. Further,

Table 1. Frequency distribution of farmers according to their socio personal variables **(N=60)**

Variable	Category	Criteria	Frequency(n)	Percentage(%)
Age	Young	<25 years	16	26.67
	Middle	26-50 years	32	53.33
	Old	> 50 years	12	20.00
Educational status	Illiterate	Don't know read and write	07	11.67
	Literate	know read and write	09	15.00
	Qualified	Upto 10+2	39	65.0
	Highly qualified	Above 10+2	05	8.33
Land holdings	Marginal farmer	Upto 2.5 ac	12	20.00
	Small farmer	2.5 to 5.0 ac	18	30.00
	Medium farmer	5.0 to 10.0 ac	20	33.33
	Big farmer	>10.0 ac	10	16.67
Source of irrigation	Tubewell irrigated		10	16.67
	Canal irrigated		14	23.33
	Tubewell and canal irrigated		36	60.00
Quality of tubewell water	Good		6	10.00
	Normal		14	23.33
	Poor		40	66.67

Table 2. Distribution of farmers according to knowledge level in farm school (FSV) and non farm school villages (NFSV). **(N=30)**

Variable	Category	Criteria (%)	Freq-uency (n)	Percent-age
Knowledge in FSV	Poor	0-33	04	13.33
	Fair	33-66	14	46.67
	Adequate	66-100	12	40.00
Knowledge level in NFSV	Poor	0-33	10	33.33
	Fair	33-66	15	50.00
	Adequate	66-100	05	16.67

Table 3. Distribution of respondents according to adoption level of in farm school (FSV) and non farm school villages (NFSV) **(N=30)**

Variable	Category	Criteria (%)	Frequ-ency (n)	Perce-ntage
Adoption level in FSV	Low	0-33	04	13.34
	Medium	33-66	13	43.33
	High	66-100	13	43.33
Adoption level in NSFV	Low	0-33	08	26.67
	Medium	33-66	18	60.00
	High	66-100	04	13.33

comparing the poor knowledge categories, the percentage of farmers in FSV in this category was 13.33 and at the same time it was 33.33 per cent in NFSV. This clearly indicated the impact of farm school among farmers.

Distribution according to adoption level : The data in Table 3 clearly revealed that 43.33 per cent of farmers in FSV and NFSV had high and medium level of adoption followed by low adoption category (13.34%). As regards adoption level of farmers in NFSV, 60 per cent farmers had medium adoption followed by low (26.67%). The percentage of farmers having high adoption was only 13.33. Further, comparing the low adoption category, the percentage of farmers in FSV in this category was 13.33 and while it was 26.67 per cent in NFSV. This clearly indicated the impact of farm school among farmers.

Adoption and knowledge level on cotton production technologies : The data in Table 4 clearly indicated that overall knowledge level in FSVwas 72.94 per cent with a range of 46.34 to 81.65 per cent. Similarly, overall knowledge level in NFSV was 46.83 per cent with a range of 26.89 to 72.28 per cent. This clearly showed that overall knowledge level was more in FSVas compared to NFSV which was about 26 per cent. The knowledge level of farmers is positively correlated with their adoption level. As far as overall adoption level of farmers is concerned, it was found to be 60.45 per cent in FSVwith a range of 41.23 to 76.18 per cent. The overall adoption level in NFSVwas 41.86 pr cent with a range of 25.74 to 65.10 per cent. This showed that overall adoption level of farmers was more in FSVas compared to non farm school villages. This indicated the positive impact of farm school. Similar type of results have been reported by Khan and Muhammad (2005.)

Table 4. Overall knowledge and adoption level**(N=30)**

Parameters	FSV (%)	NFSV (%)
Knowledge level	72.94	46.83
Adoption level	60.45	41.86

Table 5. Cost of chemical used and yield of cotton in FSV and NFSV **(N=30)**

Parameters	FSV	NFSV
Number of sprays	3.32	4.87
Cost of chemical (Rs/ha)	3011	5810
Yield (kg/ha)	2738	2453

Cost of pesticide and yield comparison : The data in Table 5 revealed that average number of sprays in FSV was 3.32 as compared to 4.87 in NFSV. There was a difference of 1.55 sprays in both type of villages. On computation of cost of chemicals/ha, it was found to be Rs. 5810 in NFSV as compared to Rs. 3011 in FSV which is almost double to that of farm school villages. Average yield of seed cotton was recorded to be 2738 and 2453 kg/ha in farm school and NFSV, respectively.

The return on sale of this produce in the market at the rate Rs. 2700/q for FSV was Rs. 73926 in comparison to Rs. 66231 in NFSV. After deducting the cost of chemicals from their respective returns, it was found to be Rs. 70915 and Rs. 60421 in farm school and non farm school villages, respectively. Thus there was a net saving of Rs. 10494/ha in FSVwhen all other parameters remain constant.

Constraints for low adoption : Low adoption of cotton production technologies is an

Table 6. Constraints perceived by the farmers related to seed/varieties **(N=60)**

Constraints	Seriousness of constraints			Total score	Mean score	Rank order
	Very serious	Serious	Not serious			
High cost of seed	30	20	10	80	0.667	I
Lack of knowledge	21	29	10	71	0.592	II
Supply of spurious seed by agents	26	14	20	66	0.550	III
Prevalence of spurious seed in market	22	20	18	62	0.517	IV

Table 7. Constraints related to nutrient management in cotton **(N=60)**

Constraints	Seriousness of constraints			Total score	Mean score	Rank order
	Very serious	Serious	Not serious			
Seedling burning at sowing time	31	15	14	77	0.641	I
Non availability of quality FYM	28	14	18	70	0.583	II
Lack of knowledge	24	16	20	64	0.533	III
Less availability of seed cum fertilizer drill	22	17	21	61	0.508	IV

outcome of a number of negative forces prevails in the field conditions. Keeping this in view, the constraints perceived by farmers were analyzed and explained under sub heads as follows:

Constraints related to varieties : The data in Table 6 revealed that the constraints of 'high cost of seed' particularly of *Bt* seed was perceived as most serious. The constraint of 'lack of knowledge related to latest available varieties of *Bt* cotton in the market was ranked second. The other constraints were 'local supply of spurious seed by agents and 'prevalence of spurious seed in the market. Similar type of results have been reported by Singh (1999).

Constraints related to nutrient management : The data in Table 7 clearly indicated that the constraint of perception of seedling burning by use of chemical fertilizers at sowing time was perceived as most serious constraint. Non availability of quality FYM also considered as serious constraint by respondent farmers. The other constraints encountered by farmers related to nutrient management as less serious were lack of knowledge and less availability of cotton seed cum fertilizer drill. It has been observed that burning of seedling may be due to high temperature prevailing at that time.

Table 8. Constraints related to land preparation for cotton sowing **(N=60)**

Constraints	Seriousness of constraints			Total score	Mean score	Rank order
	Very serious	Serious	Not serious			
Less time available for deep ploughing	35	14	11	84	0.700	I
Less availability of water for pre sowing	29	12	19	70	0.583	II
High cost of deep ploughing	30	9	21	69	0.575	III
Non availability of improved implements	26	13	21	65	0.541	IV

Table 9. Constraints related to plant protection in cotton **(N=60)**

Constraints	Seriousness of constraints			Total score	Mean score	Rank order
	Very serious	Serious	Not serious			
Sale of pesticides by non technical persons	35	10	15	80	0.667	I
Uesticides on advice of commission agents	33	12	15	78	0.650	II
Lack of knowledge	28	14	18	70	0.583	III
Method of spraying is not proper	26	16	18	68	0.567	IV
Non availability of quality pesticides	18	20	22	56	0.467	V

Table 10. Constraints related to management of cotton diseases **(N=60)**

Constraints	Seriousness of constraints			Total score	Mean score	Rank order
	Very serious	Serious	Not serious			
Lack of knowledge	32	20	08	84	0.778	I
Non availability of disease resistant varieties	28	17	15	73	0.608	II
Etiology of some diseases not known	24	18	18	66	0.550	III
Fungicides not effective after appearance of diseases	19	20	21	58	0.483	IV

Constraints related to land preparation : Constraints related to land preparation for cotton sowing as shown in Table 8 revealed that most serious constraint faced by farmers was less time available for deep ploughing after the harvesting of wheat. The other constraints considered as serious were less availability of water for pre sowing irrigation, high cost of deep ploughing and non availability of implements.

Constraints related to plant protection : It may be concluded from data in table 9 that the constraint of sale of pesticides by non technical persons was considered most serious. The use of pesticides on the advice of commission agents was also considered equally serious, lack of knowledge, method of spraying is not proper and non availability of quality pesticides were considered less serious.

Constraints related to management of diseases : The data in Table 10 indicated that lack of knowledge regarding cotton diseases was perceived as most serious. Non availability of disease resistant varieties was also considered as serious constraint. Other constraints was etiology of some diseases is not known and fungicides are not effective after appearance of diseases. Similar type of reults have been reported by Puyun *et al.*, 2008.

Constraints related to IPM : It is cleared from data in Table 11 that the constraints of no knock down effect of bioagents, non availability of quality bio agents, pest and disease resistant varieties not selected were considered as most serious constraints related to adoption of IPM in cotton. The constraints that were considered as serious were no field sanitation, lack of local infrastructure for production of bioagents, optimum plant population is not maintained and lack on knowledge regarding defenders. Other constraints were multiplication of pests and diseases on weeds grown on uncultivated land, non standardization of quality parameters of bioagents, less population of predatory birds, lesser availability of bioagents and trap crops. Similar type of reults have been reported by Anonymous, 2003.

Table 11. Constraints related to integrated pest management in cotton production technology **(N=60)**

Constraints	Seriousness of constraints			Total score	Mean score	Rank order
	Very serious	Serious	Not serious			
No knock down effect of bioagents	42	10	08	94	0.783	I
Non availability of quality bioagents	35	12	13	82	0.683	II
Pest and disease resistant varieties	32	11	17	75	0.625	III
No field sanitation	28	14	18	70	0.583	IV
Lack of infrastructure for bioagent production	26	16	18	68	0.567	V
Optimum plant population not maintained	27	12	21	66	0.550	VI
Lack of knowledge regarding defenders	24	15	21	63	0.525	VII
Multiplication of pests and diseases on weeds and uncultivated land	23	15	22	61	0.508	VIII
Non standardization of quality parameters of bioagents	22	16	22	60	0.500	IX
Less population of predatory birds	22	12	26	56	0.467	X
Lesser availability of bioagents	19	16	25	54	0.450	XI
Trap crops not grown	16	18	26	50	0.416	XII

Strategy for promoting cotton production technology concept through farm school under ATMA Scheme.

- To improve their knowledge, FSV should be organized in each and every village on various crops.
- The selection of farmers for FSV should be on the basis of young and energetic.
- The Government should arrange *Bt* cotton seed to the farmers at reasonable price.
- Awareness campaigns to adopt the concept of integrated nutrient management.
- Effective check on the supply and stocking of unauthorized spurious *Bt* cotton seed by local agents/ traders.
- Persuaded to prepare quality FYM in compost pits at their own.
- Seed treatment chemicals should be available in the market in small packing.
- Government should provide more number of seed cum fertilizers drill to farmers at subsidized rates.
- Government should ensure the supply of canal irrigation water at sowing time.
- Government should take initiative to issue the license for pesticides sale only to the agriculture graduates.
- Sale of chemicals should be completely banned until and unless it is recommended by the SAU's.
- Develop disease resistant varieties.
- To popularize IPM, the literature related to IPM should be distributed among the farmers, and display hoardings showing photographs of pests and natural enemies.
- To produce the bio agents locally at large scale of local strains.

REFERENCES

Anonymous. 2003. Report on impact assessment of China/EU/FAO cotton IPM Program in Shandong Province, P.R. China. Unpublished Report, Ministry of Agriculture, Beijing.

Khan, A.M. and Muhammad, I. 2005. Sustainable cotton production through skill development among farmers: Evidence from Khairpur district of Sindh, Pakistan. *Pakistan Deve. Rev.* : **44** : 695-716.

Puyun, Y., Wenxin, L., Xunan, S., Ping, Li., Jinyu, Z., Jianping, Lu. and Yahong, Li. 2008. Effects of training on acquisition of pest management knowledge and skills by small vegetable farmers. *Crop Protection* : **27** : 1504-10.

Singh, Sube 1999. Technological gap and constraints in improved mushroom cultivation in Haryana. *(M.Sc. Thesis)* CCS Haryana Agricultural University, Hisar.

Received for publication : Novembr 29, 2012
Accepted for publication : May 31, 2013