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FACTOR AFFECTING COTTON QUALITY: STUDY ACCENTUATE TRAINING NEEDS OF COTTON GROWERS OF DISTRICT BAHAWALNAGAR, PUNJAB, PAKISTAN

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The quality of cotton crop is affected seriously during different agronomic practices as well as during picking, transportation, storage and ginning process. The trash contents are the main reason for producing low quality yarn. During the transportation the cotton crop is covered with jute bags, and jute fibre mixes with the cotton crop and creates problem in ginning as well as spinning process which deteriorates the quality of yarn for export purposes. Different varieties of cotton stored together is another factor that influence the quality of crop as the different varieties have different fibre characteristics like staple length, fineness, strength, color grades, trash contents etc. A multi stage random sample of 400 cotton growers was studied through personal interviews with the help of a pre tested validated interview schedule. Data were analyzed by using Statistical Package for Social Sciences (SPSS). It was found that the cotton growers needed level of training ranged between low to medium. However, the respondents require training in agronomic practices such as seed rate, sowing method, spacing, time of sowing and plant population.
Keywords: Cotton growers, training needs, cotton cultivation, extension

INTRODUCTION

The cotton fibre quality is affected seriously by mixing of different varieties, low viable seed, low active ingredient pesticides, improper picking methods, transportation, storage of different varieties together, and specially the ginning process have reduced the quality and quantity of seed cotton (Tunio, 2001). The role that quality plays in marketing is different and unique among all other crops like vegetables and fruits. Cotton quality is expressible by multitude of measurements. Cotton quality is affected by every production step, including selecting the variety and ginning. Certain quality characteristics are highly influenced by genetics, while others are determined by environmental conditions or by harvesting and ginning practices. Problem during any step of production or processing can cause irreversible damage of cotton fibre quality and reduce profit for the producer as well as textile manufactures. Fibre quality is the highest on the day a cotton boll opens. Weathering, improper picking, handling, ginning and manufacturing can diminish the natural quality. Both the constituents of seed cotton, seed and fibre are hygroscopic in nature. There are correspondence moisture for seed cotton, seed and fibre. Properly dry cotton benefits the producers, ginners and spinners. In addition to its principal function of separating lint from seed, the modern cotton gin is equipped to modify the moisture content and remove a large percentage of foreign matters that would significantly reduce cotton value.

Cotton is high value per hectare crop that is produced as raw material for the textile industry. Cotton quality is based on measurable quality properties and technological changes are being implemented rapidly. All the changes in spinning technology have in common the requirement of unique and often greater cotton fibre quality especially the strength for processing. In this concern for cotton growers to produce high quality fibre for increased textile automation requirements, and to maintain the strong competitive edge in changing world cotton market, fibre quality in addition to yield must be improved. Punjab and Sindh are the major cotton growing provinces and the respective share of the two provinces in cotton production are estimated at 81 and 19 per cent, respectively (Govt. of Pak., 2003).

According to current situation in Pakistan, there is a dire need of training, not only for these regulations but also on the quality parameters of cotton to enhance the fibre characteristic to meet the world market demands. Cotton is the most suitable cash crop of Pakistan cultivated on an area of 10% of the country, contributes 50-60% in the total foreign exchange. Cotton is also the major source of raw material for cotton industries comprising 521 textile mills and 1263 ginning factories. This crop also provides livelihood to millions of people at the farms and cotton based industries.

Farmers all over the world are suffering from a 'pesticides treadmill'. Pests are growing resistant to sprays. So farmers have to spray ever more to have any effect, or buy new, more expensive chemicals. But at the same time world

cotton prices have stagnated. So farmers face a serious squeeze on their profits combined with growing threats to their health from the pesticides (DFID, 2001). In the agrarian economy, cotton occupies a unique position In Pakistan, as the country has the potential to become a key player in the global cotton and textile market place, the Government has been giving priority to research and development programmes focusing on both the quantitative and qualitative improvements in cotton. According to one estimate, the country has been losing some 10-15% of the true commercial value of its cotton. The government has realized the necessity of inducing quality considerations in the marketing system and has introduced a grading system for cotton (Malik, 2003; Shahzad, 2003; Saeed, 2001; Tunio, 2001). Hence, contamination free cotton and storage at farm level is need of the day, cotton growers need to be educated for producing quality cotton. For this purpose training needs of cotton growers may be identified. So, this project was executed with the objective to find out their training needs.

MATERIALS AND METHODS

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The district Bahawalnagar is one of the major cotton growing districts. District Bahawalnagar comprises five Tehsils out of which four were selected randomly. The union councils in each selected Tehsil of district Bahawalnagar were as Tehsil Bahawalnagar (23 rural union council), Tehsil Chishtian (24 rural union council), Tehsil Haroonabad (19 rural union council) and Tehsil Fortabass (12 union council). One union council was selected from each Tehsil using simple random sampling technique. From each union council five villages were selected randomly. From each randomly selected village, 20 cotton growers were selected through simple random sampling. Thus, sample of the study consisted of four hundred cotton growers. The data were collected through personal interview with the help of validated interview schedule.

The collected data were analyzed through Statistical Package for Social Sciences (SPSS). A Likert scale was used for assessing the possessed knowledge about various aspects of recommended cotton cultivation practices, i.e. very low=1, low=2, medium=3, high=4, very high=5. The mean and standard deviation were computed based on that Likert scale observations. On the basis of mean X obtained, the needed level of training was calculated for each recommendation by subtracting the mean value X of the possessed knowledge from the maximum value, i.e. 5.

$$5 - X = \text{Needed level of training}$$

The needed level of training was described according to the following scale.

Above 3= very high, 2.5-3.0= high, 2.0-2.5= medium, 1.5-2.0= low, 1.00-1.5= very low, less than 1.00= not considerable.

RESULTS AND DISCUSSION

The results presented in Table 1 show that cotton growers need relatively more trainings on how to use furrow turning plough than the other agronomic practices. However, the knowledge of the cotton farmers regarding agronomic practices had a significant effect on the overall production and quality of the cotton (Taqvi, 2000; Tunio, 2001).

The results given in Table 2 show that the needed level of training regarding delinting of seed was low and medium in case of using sulphuric acid and using fuzzy seed and delinted and fuzzy seed together, respectively. Because it is argued that proper delinting of seed with sulphuric acid have a great influence on the crop production (Tunio, 2001).

The needed level of training about seed rate was medium in case of desi cotton (Table 3). As far as method of sowing of cotton crop is concerned, the needed level of training was 'medium' in all the three recommended methods of sowing. About spacing, the needed level of training was medium in case of American cotton, while it was high in case of desi cotton. Likewise, regarding time of sowing the needed level of training was more in case of late sowing, i.e. 1 June to 15 June. Similarly, the time of sowing have a significant effect on cotton crop production (Tunio, 2001).

The needed level of training about hoeing was high in both cases, while regarding chemical control, it was medium (Table 4). About plant population in case of 18000-22000 and 22000-28000, it was medium. On the other hand the needed level of training was 'medium' in case of gap filling. The results are in line with the findings of Iftikhar *et al.* (2007) that farmers need training in proper selection of variety, gap filling, plant protection measures, irrigation techniques etc. The training of farmers regarding agronomic techniques with respect to hoeing, chemical control measures, plant protection, gap filling and other practices play a vital role for improving the per acre yield of cotton (Taqvi, 2000).

Hassan *et al***.** (2007) reported that to enhance performance in agricultural operations, the professional education and improvement in skills is need of time and Extension Agencies/Organizations are responsible to provide such technical guidance to growers so that they can develop their abilities to perform different agricultural activities effectively and efficiently for the achievement of Green Revolution objectives. It may be concluded that there is a desperate need of provision to technical knowledge/training with motivation. A dire need of training of cotton farmers required regarding recommended cotton cultivation practices. Since knowledge is the pre-requisite for adoption. Furthermore, an institutional effort would improve the present situation and to inculcate more knowledge among cotton growers by a comprehensive training programme about agronomic practices, so farmers can get maximum knowledge about these practices and save time.

Table 1. Distribution of respondents according to their response regarding training needs about the preparatory tillage

Recommendation	N	Possessed Knowledge		*Needed level of training
		Mean	SD	
1- For cultivation in fallow land, irrigation+ 2-3 ploughing followed by planking and leveling	206	3.19	1.03	1.81
2- For cultivation after a crop, irrigation+ ploughing with furrow turning plough followed by planking and leveling	297	2.54	0.96	2.46

Table 2. Distribution of respondents according to their response regarding training needs about the delinting of seed

Recommendation	N	Possessed Knowledge		*Needed level of training
		Mean	SD	
Delinting seed with Sulphuric acid @ 1 lit./10 kg of seed	155	2.99	1.18	2.01
Using Fuzzy seed	160	2.66	0.59	2.34
Using both Delinted & Fuzzy seed	85	2.19	0.90	2.81

Table 3. Distribution of respondents according to their response regarding training needs about the seed rate, methods of sowing, spacing and time of sowing of cotton

Recommendation	N	Possessed Knowledge		*Needed level of training
Seed rate of cotton		Mean	SD	
8-10 Kg/acre (for upland varieties)	228	3.08	1.05	1.92
5-6 kg/acre (for Desi Cotton)	276	2.82	0.70	2.18
Method of Sowing of cotton				
Flat sowing	326	2.75	0.73	2.25
Ridge sowing	275	2.60	1.21	2.40
Flat top ridge sowing	120	2.88	1.10	2.12
Spacing of cotton				
Row to row distance American cotton (2.5 ft)	158	2.66	0.59	2.34
Plant to plant distance (9-12 inches)	97	2.63	0.60	2.37
Row to row distance Desi Cotton (2 ft)	293	2.36	0.59	2.64
Plant to plant distance Desi Cotton (9 inches)	276	2.09	0.34	2.91
Time of sowing of cotton				
1st May to 15-May (early sowing	231	2.82	0.70	2.18
15 May to 1-June (mid sowing)	89	2.64	0.61	2.36
1-June to 15-June (late sowing)	306	2.49	1.23	2.51

Table 4. Distribution of respondents according to their response regarding training needs about the hoeing, chemical control plant population, and gap filling

Recommendation	N	Possessed Knowledge		*Needed level of training
		Mean	SD	
Hoeing				
Before irrigation	120	2.27	0.45	2.73
After irrigation	202	2.17	0.70	2.83
Chemical control				
Pre-emergence stomp 330-E @ 1.5-2 lit/acre	123	2.60	0.86	2.40
Pendimethalin @ 1.0 lit/acre	372	2.57	0.83	2.43
Plant population				
18000-22000	216	2.09	0.69	2.91
22000-28000	277	2.04	0.68	2.96
28000-32000	368	2.66	0.88	2.34
Gap filling				
After 7 days of sowing	367	2.75	0.91	2.25

*Scale**:** 1= very low, 2= low, 3= medium, 4= High, 5= very high

***Conclusions*:** It was concluded from the study that cotton farmers needed training regarding cotton cultivation practices. The results predict that the cotton growers have low to medium level of knowledge about cotton cultivation practices. However, in some agronomic practices viz., hoeing, chemical control measures and plant population, the knowledge level was medium to high. It was recommended that extension service providers should organize training programme, formulate separate intensive communication strategies, conduct workshops, seminars and should educate all cotton growers regarding latest cotton production technologies to improve the quality and yield of cotton.

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