

# A study on farmers buying behaviour of cotton seeds in northern Karnataka

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Received : 06.02.2014; Revised : 24.02.2014; Accepted : 20.03.2014

## ABSTRACT

A study was conducted to know the farmers buying behaviour of cotton seeds in northern Karnataka. A multistage random sampling was adopted as appropriate sampling procedure and a total of 270 farmers were selected for the study. The popularity of the Bt cotton was found to be popular in Haveri as compared to Dharwad and Gadag district. In the case of non-Bt cotton, the purchase behaviour showed the popularity of adoption in Dharwad and Gadag districts as Jayadhar cotton seed occupied the major position (42.20%) among the other types of non-Bt cotton available in the market. Nearly 50 per cent of the farmers opined about their preference to private dealers for their purchases for availability, timely nearness of the stores, quality seed material and the technical advice received from private dealers. The KSDA was popular in Dharwad district due to the better services provided by them. However, the farmers were also approaching crops in Gadag district as the co-operatives are performing well in the district with better services in time supply and adequate quantities. The farmers of Haveri clarified to private dealer due to almost 100 per cent adoption of Bt cotton.

**KEY WORDS :** Buying behaviour, Multistage random sampling, Purchase behaviour

**How to cite this paper :** Benakatti, Timmanna R., Yeledhalli, R.A. Mokashi, Prakash, Patil, Somanagouda and Shrikrishna (2014). A study on farmers buying behaviour of cotton seeds in northern Karnataka. *Internat. J. Com. & Bus. Manage.*, 7(1) : 110-116.

In India, increasing agricultural production in future depends on the increase in productivity, as the sustainable limit in the case of acreage expansion has crossed. In the near future, the area under plough is likely to decrease with increasing urbanization, industrialization and expansion of urban infrastructural facilities. Now the solution to meet the increasing food grain demand is to produce more from limited land resources by the efficient use of improved agricultural technologies. The process of modernizing Indian

agriculture primarily involves the intensive use of non-conventional inputs such as quality seeds, chemical fertilizers, pesticides, weedicides, irrigation, farm machinery and a network of research and extension infrastructure. The quality seed is a trigger point which sets in motion the process of technological change. The returns to investment depend significantly on the quality of crops. Impact of quality seeds in enhancing the yield potential is highly felt now-a-days. Superior planting material and high quality seed is the single most important factor enabling a country to make its agriculture more productive and cost competitive especially in the scenario of world agricultural trade under the WTO regime.

In the development of agriculture, seed has been important since crops were first domesticated. In the traditional agriculture, the cultivators use to retain part of the produce for seed purposes. However, with the introduction of new technology in Indian agriculture which was based on

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the use of high yielding varieties and hybrids of crop plants responsive to high levels of chemicals of fertilizers and irrigation. With the development of plant breeding in the early twentieth century, improved crop varieties were evolved and their seed production was taken up in the organized sector.

Seed is a very vital input and dynamic instrument for increasing agricultural production. It has been one of the miraculous inputs responsible for green revolution in India and elsewhere. The green revolution has brought prosperity, stability and confidence not only in agriculture, but also in the economic well being of the country. This is also an established fact that amongst different critical inputs used in the process of agricultural production, quality seeds hold the key position as it alone contributes nearly 15-20 per cent more to the agricultural production. Farmers in India know the value of good seed from times immemorial and have contributed for improvement of seeds through selection and cultivation. Seed is a basic input and though it forms only a small part of the investment compared to investment on fertilizers, pesticides and other inputs. In fact, seed is the real vehicle of production and other inputs like water and fertilizers can be regarded as fuel. Quality seed production is a specialized activity and a portion of crop produce retained by the farmer as seed cannot substitute for quality seed since such seed is devoid of genetic vigour and may suffer from lack of desired qualities.

Seed industry is heterogeneous in many dimensions. The product segment corresponds to all the major field crops and vegetables. With respect to product type, a major distinction is between hybrids and open-pollinated varieties. As a result, beyond the initial purchase, farmers can multiply their own seed. This is not a viable strategy with hybrids because they suffer noticeable declines in yields in subsequent generations. As a result, hybrid seed need to be repeatedly purchased. Hybrids dominate in coarse cereals consisting of sorghum, pearl millet, maize, cotton and oilseeds.

In terms of organization, the seed industry consists of a large public sector and a growing private sector. The public sector consists of the National Seeds Corporation, the State Farm Corporation of India and 13 State Seeds Corporations. These corporations multiply and market varieties by the public institutes financed by the Indian Council of Agricultural Research (ICAR) and the State Agricultural universities. Seed firms, whether in the private or public sector, outsource the production of seeds through contract growers. These growers are supplied with the foundation seed that is used to produce commercial seed. The seed industry is one of the earliest examples of contract farming in India.

The value of the global seed market is estimated to be close to one billion U.S. dollars. The seed industry was probably half this size in the early part of the 1990s (Shiva

and Crompton, 1998). It has therefore grown rapidly in the last decade. Estimates of the share of the private sector range from 60 per cent to 70 per cent (Shiva and Crompton, 1998). Because the private sector sells high value hybrids, their share in value is greater than their share in quantity sold.

The government regulates the seed industry and the seed trade in various respects. The Seed Act of 1996, the Seeds Control Order of 1983 and the Seeds Policy of 1988 are the major components of policy specific to the industry. The seed industry has also been subject to policies relating to industrial licensing and direct foreign investment that are applicable to all industry. In September 2001, the Plant Variety Protection and Farmers Rights Act came into being. In June 2002, the government announced a new seeds policy that significantly alters the framework of regulation.

The Seed Act of 1996 and the Seeds Control Order of 1983 provides statutory backing to the system of variety release, seed certification and seed testing. Varieties are released after evaluation at multi-location trials for a minimum of three years. Varieties approved are "notified" which is a pre-requisite for certification. While all public sector varieties go through this process, it is not mandatory for private varieties.

#### **Cotton:**

Cotton is as ancient as the human civilization as the human civilization exclusive cotton fabrics have become a status symbol and are becoming increasingly costlier. Cotton the 'White Gold' and 'King of Fibres', is a crop of prosperity and is considered to be an industrial commodity of world wide importance. Cotton is the most vital crop of commerce to many countries such as USA, China, India, Pakistan, Uzbekistan, Australia, few African and South American countries. About eighty countries of the world are growing cotton.

Cotton occupies a pre-eminent place among cash crops touching country's economy at several points. Cotton occupies a place of pride being the prime supplier of raw material (85 %) for textile industry, which is one of the leading industry in the country. Cotton industries provides means of livelihood for about 250 million people in the world and about 60 million people through its cultivation, trade and industries in India (Basu,1995). Commercially cotton is one of the best export-earning commodities in the country.

In Karnataka, cotton is cultivated in about Bellary, Dharwad, Gadag, Haveri, Mysore, Raichur districts, mostly favoured with black soils and highly tropical climate. The area under cotton in Karnataka is estimate to about 9.13 million ha with annual production of 2.70 million bales. Karnataka is one of the fore runner in the production of long staple cotton, which is globally exported. Realizing the role of cotton in the Karnataka state with the liberated policy of



the Government of India, it was an opening for most of the multinational companies and Indian companies to enter into this mega demand based cotton crop to make huge profit through hybrid seed production. Since, then the seed industry, the pesticide and other supporting sectors have received a boost in terms of their trade with the rural market.

The marketing of seed has undergone a tremendous transformation in terms of seed logistics and farmer acceptance of varieties specially in the last decade. As is well known the technological breakthrough in development of Bt cotton also created a revolution in development of pest resistance hybrids etc. have all contributed for the overall improvement in the yields of cotton.

The cotton seed industry has emerged as an important component in the seed market basically due to its ability for development of hybrids and diversity of production etc. It becomes very important on the part of the seed producer to deliver good seeds at right time, at right place and required quantities for better performance of the company. The marketing of seeds involves demand assessment, structure, shares, farmers brand acceptance, logistics etc. Which is of considerable importance in the light of changing agricultural scenario.

The previous studies have been mostly concentrated on the technological breakthrough in hybrids, economics of production etc. But, in the present context of globalization, liberalization and privatization, it becomes more important that we should more focus on the marketing and services states which will ultimately bring the results of the technological changes in the near future. Hence, a study has been taken up in North Karnataka in which cotton is one of the major crops. Maintenance of the study is to focus on the marketing services and provide policy initiatives in the wake of development of this cotton economy. It is therefore decided to study the farmers buying behaviour of cotton seeds.

## METHODOLOGY

A multistage random sampling was adopted as appropriate sampling procedure for the study. The data on area under cotton in Karnataka when observed indicated that the three northern districts of Karnataka namely Dharwad, Gadag and Haveri reported to have the highest area under cotton which contributed about 30 per cent of the total area under cotton. Hence, it was proposed to select these three districts for the study so as to investigate into the research problem. In the second stage, it was proposed to select to taluks in each district which acted as hinterland markets for agriculture input agency supplying cotton seeds. These taluks ranked in descending order in order to their area under cotton crop. It was decided to select two taluks in each of the district based on area of cotton seeds, hence, total of six

talks were selected. Taluks selected Dharwad and Kalaghatgi in Dharwad districts; Haveri and Hirekerur in Haveri district and Gadag and Shirahatti taluks in Gadag district. In third stage, three villages in each taluk were selected based on the area coverage under cotton production. Hence, total of 18 villages were selected for the study. In order to initiate first hand information using primary source techniques on various variables in the purchase of cotton seeds, prices, brand, dealers preferences, source preferences etc., it was proposed to select 15 sample respondents who were growing cotton from each village on random basis accounting for 90 sample farmers in each of the selected districts. Hence, a total of 270 farmers were selected. These samples were then post classified as small, medium, large categories so as to meet the requirement of research study.

The primary data forms an important component of any research investigation. As the study focuses on the preferences of farmers over purchase of seeds. Hence, greater thrust was given to collect information at farmers level. The primary data was collected using a pre-structured questionnaire encompassing a number of variables/parameters which could explain their behaviour towards purchase of seeds. Percentages and simple averages were extensively used for the presentation of the aspects like buying behaviour of the farmers.

## ANALYSIS AND DISCUSSION

The findings of the present study as well as relevant discussion have been presented under following heads :

### Farmers buying behaviour:

#### *Purchasing behaviour of Bt and non-Bt cotton seeds:*

The market for cotton seed being monopolistic represented unique buying behaviour with respect to the various brands. Farmers had about seven important brands which were major players in the overall cotton seed market.

Table 1 represents the quantities purchased by farmers in Bt cotton. Bt cotton tends to be popular in Haveri district compared to Gadag and Dharwad districts. In Dharwad district, Bt cotton tends to be unpopular however few farmers (16) have purchased Bt cotton of which Banni brand was purchased by 94.75 per cent and Rasi by 6 per cent in case of Gadag district, 57 per cent of the farmers purchased rasi brand of cotton seed followed by 26 per cent Mahyco 6918 brand and about 13 per cent of the farmers purchased Banni. In the case of Haveri district, nearly 60 per cent of the farmers bought rasi brand. The other brands like banni and mahyco 6918 occupied second position accounting for 16 per cent each. The overall picture of cotton seed found that rasi brand was popular among the districts in the study area, which was to the extent of 50 per cent followed by banni, Mahyco 6918 and Varalaxmi. The popularity of the Bt cotton

was found to be popular in Haveri as compared to Dharwad and Gadag district. Farmers mostly purchased banni brand (94.75%) of Bt cotton followed by rasi (6.00%). In the case of Haveri district, 57 per cent of the farmers purchased rasi brand of cotton seed followed by 26 per cent in Mahyco 6918 brand, nearly 60 per cent of the farmers bought rasi brand. The other brands like banni and mahyco 6918 occupied second position to about 32 per cent. The rasi brand of cotton seeds occupied major portion followed by banni and mahyco in Haveri district. The private company seeds found to be popular in the study area. This is mainly attributed to better performance of quality and adoptive characteristics of cotton seeds in the study area.

Table 2 represents the purchase of non-Bt on the sample districts. The overall picture showed across the study area

showed that Jayadhar cotton seed was purchased by majority of the farmers (42.20%) followed by DCH-32 (29%), DCH-11 (6.09%) and Karnataka. Haveri district sold unique absence of non-Bt cotton. In Gadag district, Jayadhar was purchased by nearly 82 per cent of the farmers, which was found to be very popular in the area. Dharwad district represent a unique feature of purchase of non-Bt cotton seeds. However, DCH-32 cotton seeds were found to relatively popular and were purchased by nearly 46 per cent of the farmers. Other farmers showed mixed reaction with respect to the various other 11 brands of cotton seeds which range between 3 to 10 per cent.

In the case of non-Bt cotton, the purchase behaviour showed the popularity of adoption in Dharwad and Gadag districts as revealed by Table 2 Jayadhar cotton seed occupied

**Table 1: Purchasing behaviour of different brands of Bt cotton seed by the farmers (n = 90)**

Sr. No.	Brands	Quantity of Bt cotton purchase (in kgs)			
		Dharwad	Gadag	Haveri	Overall
1.	Banni	15 (93.75)	5.5 (12.7)	20.5 (15.47)	41 (21.40)
2.	Mahyco 6322	-	-	1 (0.75)	1 (0.52)
3.	Mahyco 6918	-	11 (25.58)	22 (16.60)	33 (17.23)
4.	Rasi	1 (6.25)	24.50 (56.97)	79 (59.62)	104.5 (54.56)
5.	Tulsi	-	2 (4.65)	2 (1.50)	5 (2.08)
6.	Varalaxmi	-	-	7.5 (5.66)	7.5 (3.91)
7.	Vedha	-	-	0.5 (0.37)	0.5 (0.26)
	Total	16 (100)	43 (100)	132.5 (100)	191.5 (100)

Figures in parenthesis indicate percentage to the total

**Table 2: Purchasing behaviour of different brands of non-Bt cotton seed by the farmers (n = 90)**

Sr. No.	Brands	Quantity of non-Bt cotton purchase (in kgs)			
		Dharwad	Gadag	Haveri	Overall
1.	Banni	11 (4.72)	-	-	11 (2.52)
2.	Brahma	10 (4.29)	2 (0.99)	-	12 (2.75)
3.	DCH-105	5 (2.14)	8 (3.98)	-	13 (2.98)
4.	DCH-11	19.5 (8.36)	7 (3.48)	-	26.5 (6.09)
5.	DCH-32	106.5 (45.70)	16 (7.96)	-	122.5 (28.16)
6.	DHH-91	12 (5.15)	-	-	12 (2.75)
7.	Gabbar	8 (3.43)	-	-	8 (1.83)
8.	Jayadhar	18 (7.25)	164 (81.59)	-	182 (41.83)
9.	JK-99	9 (3.86)	2 (0.99)	-	11 (2.52)
10.	Karnataka	21 (9.01)	-	-	21 (4.82)
11.	Mahyco	5 (2.14)	-	-	5 (1.14)
12.	NHH-44	-	2 (0.99)	-	2 (0.45)
13.	Rasi	-	-	1 (100)	1 (0.22)
14.	Tulsi	2 (0.85)	-	-	2 (0.45)
15.	Kaveri	6 (2.57)	-	-	6 (1.37)
	Total	233 (100)	201 (100)	1 (100)	435 (100)

Figures in parenthesis indicate percentage to the total

the major position (42.20%) among the other types of non-Bt cotton available in the market. This was followed by DCH-32 (29%) a traditional hybrid in the districts. In the case of Haveri district absence of non-Bt cotton was a unique feature. In Gadag district, Jayadhar was purchased by nearly 82 per cent of the farmers.

Dharwad district and Gadag district farmers have been growing Jayadhar and DCH-32 as important variety hybrid since long-time and have confidence over yields, quantities and prices received from production. They are not much responsive to the Bt cotton performance. The soils and other features have better performance on these non-Bt cotton varieties.

#### *Preferences for the source of supply:*

The sources of supply plays a very important role in the purchase behaviour of farmers for any seeds. Various factors would be responsible for a particular behaviour in their purchase. Therefore, it was essential to focus on the purchase behaviour with respect to the source of supply of cotton seeds by the farmers in the sample districts.

Table 3 showed the preference for source of supply for cotton seeds and the characteristics preferences made by the sample farmers in Dharwad district. As indicated in the table different source of supply were private fellow farmers, KSSC and co-operatives. The private dealers dominated the seed supply in the district followed by the KSDA a Government agency. Nearly 50 per cent of the farmers opined about their preference to private dealers for their purchases for availability, timely nearness of the stores,

quality seed material and the technical advise received from private dealers. Cost considerations and credit facility provided by the private dealers accounted for less than 30 per cent. Nearly 75 per cent of the farmers opined that the seeds obtained from KSDA was less priced and hence brought from that agency. Around 50 per cent of the farmers opined for the preferential characters listed in the table.

The results presented in the Table 3 clearly shows, that the private dealers dominated the seed supply in the district followed by the KSDA a Government agency. Nearly 50 per cent of the farmers opined about their preference to private dealers for their purchases for availability, timely nearness of the stores, quality seed material and the technical advise received from private dealers. Cost considerations and credit facility provided by the private dealers accounted for less than 30 per cent. Nearly 75 per cent of the farmers opined that the seeds obtained from KSDA was less priced and hence brought from that agency. Around 50 per cent of the farmers opined for the preferential characters listed in the table. The reasons attributed were the private dealers were selling seeds which were of high quality, high yield levels and the sources of supply were quite near and also supplied the seeds in time compared to other sources. The farmers were ready to pay higher prices for privately sold cotton seeds. However, with the policy of the government to sell private company brands of seeds through Raitha samparka Kendra also found second place in the source of supply and were also providing technical guidance to farmers while they visited the department in Dharwad district.

Table 4 shows the preference for particular source of

**Table 3: Factors considered by the farmers for the source of supply in Dharwad district**

Sr. No.	Factors	Sources of agencies		
		Private dealer	Fellow farmer	KSDA
1.	Availability of particular brand	41 (45.55)	-	49 (54.44)
2.	Timely supply	40 (44.44)	-	50 (55.55)
3.	Nearness source of supply	40 (44.44)	3 (3.33)	47 (52.22)
4.	Credit facility	30 (33.33)	-	-
5.	Cost consideration	23 (25.5)	-	67 (74.44)
6.	Quality seed material	50 (55.55)	-	40 (44.44)
7.	Provision for technical guidance	45 (50.00)	-	45 (50.00)

KSDA – Karnataka State Department of Agriculture, Note : Figures in parentheses indicate percentage to sample respondents

**Table 4: Factors considered by the farmers for the source of supply in Gadag district**

Sr. No.	Factors	Private dealer	Fellow farmer	KSSC	KSDA	Co-operative
1.	Availability of particulars brand	38 (42.22)	-	-	17 (18.88)	35 (38.88)
2.	Timely supply	37 (41.11)	-	-	13 (14.44)	40 (44.44)
3.	Nearness source of supply	35 (38.88)	-	-	16 (17.77)	39 (43.33)
4.	Credit facility	6 (6.66)	-	-	-	-
5.	Cost consideration	27 (30.00)	-	-	20 (22.22)	43 (47.77)
6.	Quality seed material	40 (44.44)	-	-	25 (27.77)	25 (27.77)
7.	Provision for technical guidance	30 (33.33)	-	-	50 (55.55)	10 (11.11)

KSDA – Karnataka State Department of Agriculture, Note : Figures in parentheses indicate percentage to sample respondents

supply by the sample farmers in Gadag district. Purchase of seeds from fellow farmers and KSSC was totally absent in the Gadag district. It was well distributed between private dealers and the co-operatives followed by KSDA. Nearly 45 per cent of the farmers opined that they preferred private dealers because they could get their preferred brand of cotton seeds. There was timely supply, quality material was found and above all the required quantities. The cost consideration was factor as opined by 30 per cent farmers and hardly few farmers opined that they did not prefer private dealers due to the credit facility rendered by them. The co-operatives found unique preference by the sample farmers in Gadag district. Nearly 45 per cent of the farmers preferred co-operatives because of timely supply, the society was near to them, cost considerations as they were available at lower prices compared to the private dealers. However, 90 per cent of the farmers opined that they did not receive any technical guidance by the co-operatives. Nearly 50 per cent of the farmers opined that they preferred KSDA as they could get good technical advises.

The results presented in Table 4 indicated relatively distributed agencies supplying cotton seeds in Gadag district. Nearly 45 per cent of the farmers opined that they preferred private dealers because they could get their preferred brand of cotton seeds. There was timely supply, quality material was found and above all the required quantities. The cost consideration was obtained by 30 per cent farmers and very few opined that they did not prefer private dealers due to the credit facility rendered by them. The co-operatives found

unique preference by the sample farmers in Gadag district. Nearly 45 per cent of the farmers preferred co-operatives because of timely supply, the society was near to them followed by cost considerations as they were available at lower prices compared to the private dealers. However, 90 per cent of the farmers opined that they did not receive any technical guidance by the co-operatives.

Table 5 shows the preferential character for the purchase of cotton seeds and the source of supply in Haveri districts. Private dealers dominated the market in the districts followed by KSDA for the preferential characteristics as stated in the table. Cent per cent of the farmers opined that they prefer private dealers as they were near to the place of purchase. Most of the farmers (98.00%) preferred private dealers as they found availability of preferred brand, timely supply and good quality seed material in their shops. Nearly 50 per cent of them opined that provision of technical guidance by the private dealers was one of the reason to purchase. KSDA was preferred for cost consideration and technical guidance by the sample farmers in Haveri district.

Table 5 shows the preferential character for the purchase of cotton seeds and the source of supply in Haveri districts. Private dealers dominated the market in the districts followed by KSDA for the preferential characteristics as stated in the table. Cent per cent of the farmers opined that they opted for private dealers as they were near for purchase. Most of the farmers (98.00%) preferred private dealers as they found availability of preferred brand, timely supply and good quality seed material in their shops. Nearly 50 per cent

**Table 5: Factors considered by the farmers for the source of supply in Haveri district**

Sr. No.	Factors	Private dealer	Fellow farmer	KSSC	KSDA	Co-operative
1.	Availability of particulars brand	88 (97.77)	-	-	2 (2.22)	-
2.	Timely supply	89 (98.88)	-	-	1 (1.1)	-
3.	Nearness source of supply	90 (100)	-	-	-	-
4.	Credit facility	8 (8.88)	-	-	-	-
5.	Cost consideration	60 (66.66)	-	-	30 (33.33)	-
6.	Quality seed material	80 (88.88)	-	-	10 (11.11)	-
7.	Provision for technical guidance	50 (55.55)	-	-	40 (44.44)	-

KSDA – Karnataka State Department of Agriculture , Note : Figures in parentheses indicate percentage to sample respondents

**Table 6: Preferences of the agencies for the Sources of supply of cotton seeds**

Sr. No.	Agencies	Sample districts			Overall
		Dharwad	Gadag	Haveri	
1.	Private dealer	45 (50.00)	33 (36.66)	89 (98.88)	167 (61.85)
2.	Fallow farmer	3 (3.30)	-	1	4 (1.48)
3.	KSSC	-	-	-	-
4.	KSDA	54 (60.00)	18 (20.00)	3 (3.33)	75 (27.77)
5.	Co-operatives	4 (4.40)	39 (43.33)	-	43 (15.92)

KSSC-Karnataka State Seeds Corporation, KSDA- Karnataka State Department of agriculture, Note: Figures in parentheses indicate percentage of sample respondent

of them opined about the provision of technical guidance by the private dealers.

*Sources of supply of Bt and non-Bt cotton seeds:*

The sources of seeds form an important component of seed marketing. The sources may have an impact on the quantities purchased by the sample farmers. Table 6 shows the percentage of farmers purchasing cotton seeds from a particular sources of supply. The overall figures indicate the dominance of private dealers in the marketing of cotton seeds. Nearly 62 per cent of the farmers bought from private dealers followed by KSDA to the extent of 28 per cent and about 16 per cent from the co-operatives. KSDA was found to be relatively popular in Dharwad district which was to the extent of 60 per cent followed by about 50 per cent of the farmers purchasing from private dealers. Gadag district farmers purchased cotton seeds from co-operative societies (43%) followed by private dealers to the extent of 37 per cent. In the case of Haveri district, almost all (99%) preferred the private dealers as source of supply compared to other sources of supply in the districts.

The overall figures indicate the dominance of private dealers in the marketing of cotton seeds as reviewed in the Table 6. Nearly 62 per cent of the farmers bought seeds from

private dealers followed by KSDA to the extent of 28 per cent and about 16 per cent from the co-operatives. KSDA was found to be relatively popular in Dharwad district which was to the extent of 60 per cent followed by about 50 per cent of the farmers purchasing from private dealers. Gadag district farmers purchased cotton seeds mainly from co-operative societies (43%) followed by private dealers to the extent of 37 per cent. In the case of Haveri district, almost all (99%) preferred the private dealers as source of supply compared to other sources of supply in the districts.

The KSDA was popular in Dharwad district due to the better services provided by them. However, the farmers were also approaching crops in Gadag district as the co-operatives are performing well in the district with better services in time supply and adequate quantities. The farmers of Haveri clarified to private dealer due to almost 100 per cent adoption of Bt cotton.

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