



Research Paper

A study of market structure and conduct of cotton seed market in Karnataka

■ TIMMANNA R. BENAKATTI, R.A. YELEDHALLI, SHRIKRISHNA, SOMANAGOUDA PATIL AND PRAKASH MOKASHI

See end of the paper for authors' affiliations

Correspondence to :

SOMANAGOUDA PATIL

Department of
Agribusiness Management,
University of Agricultural
Sciences, DHARWAD
(KARNATAKA) INDIA
Email: sipatil4626@gmail.com

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ABSTRACT : 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 so with this background study was conducted to study the market structure and conduct of cotton seed market in Karnataka. A multistage random sampling was adopted as appropriate sampling procedure and a total of 270 farmers were selected for the study and Gini ratio analysis was used to know market structure. The results of the study on market structure showed that there is in less inequality as indicated by the gini co-efficient ratio. This indicates that the market for cotton seeds is well distributed among different dealers and shows high competitive nature in the cotton seed trade. Adequate policy measures need to be directed towards stabilization of cotton seed trade in the interest of the farming community. The brand loyalty results showed that farmers wished to buy good seeds from the companies with good quality, timely supply, comparison of yield etc. which makes them more popular among private dealer as compared to KSDA and thus KSDA need strategies to become professional in seed marketing. To make KSDA brand loyal to avoid exploitation by MNCs and other indigenous private companies, it needs to gear up its activities. The State Department of Agriculture can make arrangement for supply cotton seeds with good quality and timely so that the farmers could procure seeds at lower prices.

KEY WORDS : Diversity, Multistage random sampling, Gini co-efficient ratio, Brand loyalty

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INTRODUCTION

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 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 know 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 content 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 market structure and conduct of cotton seed market.

MATERIALS AND METHODS

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 taluks 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 was collected using a pre-structured questionnaire encompassing a number of variables/parameters which could explain their behaviour brand loyalty and brand preferences. Percentages and simple averages were extensively used for the presentation of the aspects like buying behaviour of the farmers.

Gini ratio analysis :

This analysis was carried out in order to know the market structure in the agricultural input marketing system by different agencies in cotton trade. This helps in exploiting precisely the extent of inequality in distribution of volume of business. The agencies were arranged in the descending order of the volume of commodity transacted. The frequency distribution of different agencies and the actual volume of the business were worked out.

The co-efficient of inequality is given by $L = 1 - \sum (P_i - P_{i-1})(Q_i - Q_{i-1})$

where,

P_i : The cumulative per cent of agencies upto i^{th} agency.

P_{i-1} : The cumulative per cent of agencies upto $(i-1)^{\text{th}}$ agency.

Q_i : The cumulative per cent of quantity handled upto i^{th} agency.

Q_{i-1} : The cumulative per cent of quantity handled upto i^{th} agency.

L : The co-efficient of inequality.

The results of the analysis would suggest the extent of inequality in the distribution of business in cotton seed input marketing between different agencies. The gini co-efficient would indicate the extent of inequality in the marketing system, higher the co-efficient less be the inequality and *vice-versa*.

Tabular analysis :

Percentages and simple averages were extensively used for the presentation of the aspect like brand loyalty and brand preferences.

RESULTS AND DATA ANALYSIS

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

Extent of inequality in trade for cotton seed marketing :

The market structure determines the concentration on business in the hands of the marketing agencies. It may also mean the market share enjoyed by the agency's in the cotton

trade. In order to investigate the extent of concentration/market share in the hands of dealer, it was proposed to compute the cumulative per cent of the all dealers and also compute the cumulative per cent of the quantities handled by dealers in the study area. These values were subjected to Gini co-efficient ratio. The Gini co-efficient ratio helps in explaining precisely the extent of inequality in the districts of volume of business.

Table 1 represents the cumulative percentage of dealers in Bt cotton in the sample district and the cumulative percentage of quantity's handled by these agency's in the study area. Gini co-efficient was observed to be 0.95, which indicates that less is the inequality in the marketing of Bt cotton seeds in the study area. This means that the Bt cotton trade is well distributed among various dealers or evenly distributed among

different agency's in Bt cotton seeds trade. In the case of non-Bt cotton, the co-efficient observed to be 0.947 which was quite similar indicating less inequality showing the even distribution of cotton trade between different agency's involved in cotton trade.

Factors influencing brand loyalty :

In the course of investigation, it was found that the cotton seed trade was highly competitive with various types of players, MNC's, private companies and public sector companies. So, the market situation seems to be highly oligopolistic in cotton trade indicating the presence of innumerable brand of cotton seeds in market. This situation faces the farmers in a situation to decide and adopt a particular brand of cotton seeds. Hence,

Table 1 : Extent of inequality of trade in cotton seeds marketing

Bt cotton		Non-Bt cotton	
Cumulative percentage of dealers	Cumulative percentage of quantity	Cumulative percentage of dealers	Cumulative percentage of quantity
0.00	0.00	0.00	0.00
0.03	0.11	0.05	0.16
0.07	0.23	0.11	0.31
0.10	0.24	0.16	0.45
0.13	0.34	0.21	0.59
0.17	0.40	0.26	0.72
0.20	0.44	0.32	0.79
0.23	0.49	0.37	0.86
0.27	0.54	0.42	0.88
0.30	0.58	0.47	0.90
0.33	0.62	0.530	0.92
0.37	0.66	0.58	0.93
0.40	0.69	0.63	0.94
0.43	0.73	0.68	0.95
0.47	0.77	0.74	0.96
0.50	0.80	0.79	0.97
0.53	0.82	0.84	0.98
0.57	0.85	0.89	0.99
0.60	0.87	0.95	0.99
0.63	0.88	1.00	1.00
0.67	0.89	-	-
0.70	0.91	-	-
0.73	0.92	-	-
0.77	0.93	-	-
0.80	0.94	-	-
0.83	0.95	-	-
0.87	0.96	-	-
0.90	0.97	-	-
0.93	0.98	-	-
0.79	0.99	-	-
1.00	1.00	-	-
L = 0.9516		L = 0.9473	

it was thought to focus the study on how a farmer is brand loyal for cotton seeds. The analysis on Gini ratio for market structure indicated 0.95 for Bt cotton and 0.947 for non-Bt cotton for the three districts put together. The results showed that there was less concentration among traders in handling of the cotton trade. Almost everyone had role in the overall seed trade. Because the cotton being a commercial crop of the area, being very responsive to prices of cotton. The farmers take up cotton in large scale. Cotton demands for purchased inputs and investment. Many companies and dealers do participate in the trade. The market for cotton is highly competitive and the results analysed also indicate the same.

Table 2 represents the factor influencing brand loyalty of cotton seed for ten variables. Influence of price was found to be less important for brand loyalty by the farmers in all the districts. Across study area, price was the important factor as 75 per cent of farmers were influenced by these factors for brand loyalty followed by the influence of advertisement (63.00 %) of attractive package unit size, availability on credit, high yield compared to other brands and dealer influence on brand were found to be negligible importance in influencing the brand loyalty. The overall Fig. 1 showed that the percentage of farmers who responded to these aspects varied 15 to 36 per cent. The variable peer group influence is one of the dominant factor influencing brand loyalty as indicated by the overall Fig. 1, 94 per cent were influenced towards this variable. However, the variable resistant bollworm received 100 per cent brand loyalty among Haveri farmers as they were growing only Bt cotton. However, the availability of seeds on credit did not find any important place in brand loyalty in all the districts.

Price was found to be less important for brand loyalty by the farmers in all the districts. The overall figures showed 75 per cent of the farmers response was price which influence their brand loyalty followed by influence of advertisement was also found to be less important in influencing brand loyalty which indicated that only about 63.00 per cent of the farmers find about influence of advertisement the attractive package

unit size, availability on credit, high yield compared to other brands and dealer influence on brand were found to be negligible importance in influencing the brand loyalty. The overall Fig. 1 showed that the percentage of farmers who responded to these aspects varied 15 to 36 per cent. The variable peer group influence is one of the dominant factor influencing brand loyalty as indicated by the overall figures, 94 per cent were influenced towards this variable. However, the variable resistant

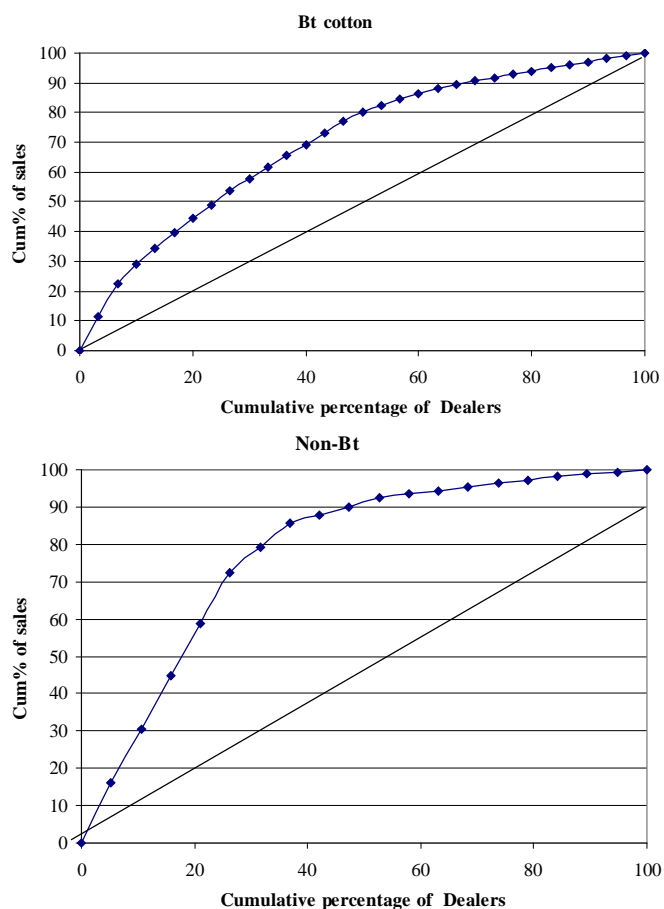


Fig. 1 : Extent of inequality of trade in cotton seeds marketing

Table 2 : Factors influencing brand loyalty for Bt and non-Bt cotton seeds					(n= 90)
Sr. No.	Particulars	Dharwad	Gadag	Haveri	Overall
1.	Price	67 (74.44)	76 (84.44)	59 (65.55)	202 (74.81)
2.	Influence of advertisement	61 (67.77)	44 (48.88)	66 (73.33)	171 (63.33)
3.	Attractive package and unit size	25 (27.77)	19 (21.11)	40 (44.44)	84 (31.11)
4.	Peer group influence	81 (90.00)	86 (95.55)	87 (96.66)	254 (94.07)
5.	Availability of brands	67 (74.44)	37 (41.11)	62 (68.88)	166 (61.48)
6.	Availability on credit	28 (31.11)	4 (4.44)	8 (8.88)	128 (47.40)
7.	Resistant to bollworm	7 (7.70)	31 (34.44)	90 (100)	202 (74.81)
8.	High yield compared to other brands	60 (66.66)	56 (62.22)	86 (95.55)	99 (36.66)
9.	Dealer influence on brand	34 (37.77)	18 (20.00)	47 (52.22)	40 (14.81)

Figures in parenthesis indicate percentage of sample respondent

bollworm received 100 per cent brand loyal Haveri farmers. The reasons attributed to this situation is that the districts are confined to adoption of single variety/hybrid in each district like Dharwad for non-Bt cotton, Haveri with Bt and mixture of these two cotton in Gadag district. This is relatively explained by the climatic and other features for their adoption. The commercial nature of the production of cotton does not have much influence on prices as farmers are ready to pay higher prices for seeds to get better germination, good quality and yields of cotton. However, the peer group influence was also high in case of Bt cotton in Haveri district. Though, government has not noticed Bt cotton but to be found popular with farmers. The farmers were brand loyal to same important brands

available in the market.

Authors' affiliations:

TIMMANNA R. BENAKATTI, R.A. YELEDHALLI, SHRIKRISHNA AND PRAKASH MOKASHI, Department of Agribusiness Management, University of Agricultural Sciences, DHARWAD (KARNATAKA) INDIA

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