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RESEARCH PAPER

Market structure for cotton seed in different markets of middle Gujarat

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Abstract : The present paper attempts to analyze the market structure, problems and prospects in marketing of cotton seeds and suggest improvement in marketing of cotton seed marketing. Required data were collected from 30 dealers spread over three selected districts on cross sectional basis keeping in mind the relative importance of agencies/companies in the total volume of business especially in cotton seed marketing for the time period of 2009 to 2011.The major methods employed for the analysis were Lorenz co-efficient of inequality technique, Bain's classification for market structure and Garrett ranking technique. The Lorenz co-efficient values were near to one which confirmed the inequality in the distribution of the dealers by sizes in the cotton seed market. Out of total sale of cotton seed in a year 2009-10, 2010-11 and 2011-12, top four dealers' transactions was less than 25 per cent, the selected cotton seed market was atomistically competitive market. The most important constraint viewed by the dealers was non-availability of seeds by desired quantity followed by non-availability of seeds in time.

Key Words : Market, Cotton seed, Market, Middle Gujarat

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INTRODUCTION

Cotton (*Gossypium* spp.) is one of the most important commercial crops which is considered white gold or king of fibres. India made the significant growth in the last ten years in area, production and yield of cotton; and in this growth the role of the cotton seed has been substantial. Given the fact that sustained growth to cope with increasing demand of cotton would depends more and more on the pace of development and adoption of innovative technologies as the sustainable limit in the case of acreage expansion has crossed. The seed would continue to be a vital component for decades to come.

Among the technological breakthrough, the development of Bt cotton contributed in yield improvement of cotton and also created a revolution in cotton seed production. The expansion of cotton seed industry has occurred in parallel with growth in cotton acreage, production and productivity. Further, the liberated policies and supportive role of government lead 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. Because of liberalization and globalization, Indian seed companies face a lot of competition among themselves and with multinational companies in terms

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infrastructure, investment, research and marketing. These factors plays significant role in determining product price and quality and over and above the market structure.

Market structure, for practical purposes, can be interpreted to mean those characteristics of the organization of the market which seem to influence the nature of competition and pricing within the market. The most emphasized characteristics are degree of sellers concentration described by the size-distribution of sellers in the market. Assurance of better returns, stable price and attractive terms of trade will go a longer way in inducing the sellers of cotton seed and cotton growers for buying and selling. Though, Gujarat is major cotton producing state, a little information is available on the structure of the cotton seed market in the state as the systematic study was not undertaken previously in Gujarat regarding structure of cotton seed market.

The economic viability of seed industries and efficient marketing system ensures the timely and adequate supply of seeds. However, there are problems faced by the seed dealers in selling of cotton seed. These problems or constraints are crucial issues which need to be identified. This paper aims to understand the market structure of cotton seed in Middle Gujarat and to identify the problems faced by the dealers of Middle Gujarat in cotton seed marketing.

MATERIAL AND METHODS

The present study was undertaken in three districts *viz.*, Ahmedabad, Vadodara and Kheda of Middle Gujarat. The data for the study were drawn from primary and secondary sources. To collect the primary data, from each selected district, 10 dealers were selected on cross sectional basis, keeping in mind the relative importance of agencies/companies in the total volume of business especially in cotton seed marketing. Thus, a total of 30 dealers were selected to elicit information required for the study. The data pertained to 2009-2011.

The Lorenz co-efficient of inequality technique was used for analyzing the market structure and power concentration with the dealers. To estimate the Lorenz co-efficient of inequality, the dealers were classified into five class-intervals based on number of seed packets sold (0-6500, 6501-13000, 13001-19500, 19501-26000 and 26001-32500) and then, the extent of inequality in seed transactions was computed numerically using the following formula (Acharya, 1988) :

$$L = 1 - \frac{\sum_{i=1}^{n} (X_i - X_{iJ1})(Y_i + Y_{iJ1})}{10{,}000}$$

where,

L = Lorenz co-efficient of inequality

X_i = Cumulative percentage of number of firms up to including i^{th} class

Y_i = Cumulative percentage of quantity handled or value of transaction by firms up to and including i^{th} class

n = Number of firms/size groups.

i take the value 1, 2, 3 ….n size groups

L value ranges between 0 and 1

when, L = 0, there is a perfect equality in the distribution.

when, L = 1, there is a perfect inequality in the distribution.

The nature of market based on competitiveness was studied on the basis of Bain's theory of market classification (Bain, 1956) as shown in Table A. On the basis of the extent of the total quantity/value controlled by the top four firms, a given market was classified into following four categories.

Table A : Classification of market based on competitiveness

Sr. No.	% of business controlled	Nature of market
1.	75-100	Highly concentrated oligopoly
2.	50-75	Moderately concentrated oligopoly
3.	25-50	Slightly concentrated oligopoly
4.	<25	Atomistically competitive

The Garrett ranking technique was used to study the constraints faced by the cotton seed dealers in context to cotton seed marketing. The per cent position of each rank was worked out by using following equation (Sita Devi and Ponnarasi, 2009) :

$$\text{Per cent position} = \frac{100\,(R_{ij} - 0.5)}{N_1}$$

where,

R_{ij} = Rank given for the i^{th} constraint by the j^{th} individual

N_j = Number of items ranked by the j^{th} individuals

The per cent position of each rank was converted into the scores according to the table given by Garrett and Woodworth (1971). Then, the scores for each factor were summed over the number of cotton seed dealers who ranked that factor. In this way total scores were arrived at for each of the factors and mean scores were calculated by dividing the total score by the number of

seed dealers, who gave ranks. These scores for all the factors were arranged in descending order of mean scores, and ranks were given and most important factors were identified.

RESULTS AND DISCUSSION

The results of the market structure pertaining to cotton seed tradeare discussed under the following heads:

Size distribution of the dealers :

The Lorenz curve is used to describe inequality in size. The Lorenz curve is a function of the cumulative proportion of ordered individuals mapped onto the corresponding cumulative proportion of their size. On the graph, a straight diagonal line represents perfect equality of distribution called 'line of equality' (45^0); the Lorenz curve lies beneath it, showing the reality of distribution. The Lorenz curve can be also used to show the affinity between number of dealers and total sale of cotton seed.

The data on the cumulative per cent of dealers and sale of seed is presented in Table 1 and the graphical presentation with Lorenz-curve is given in Fig. 1 to show the market power concentration with sellers in cotton seed marketing.

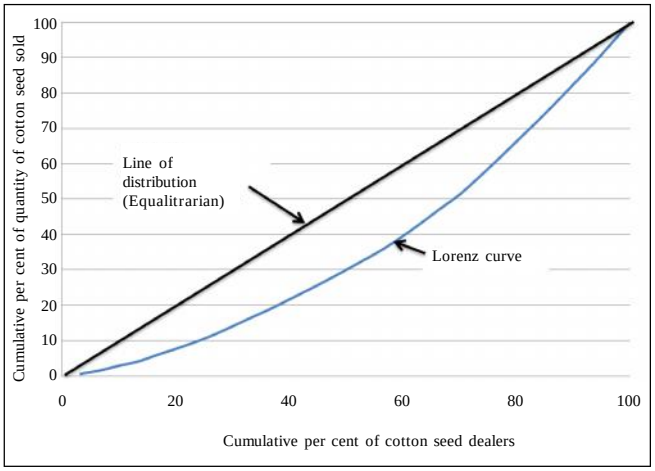

Fig. 1 : Market power concentration with the cotton seed dealers in Middle Gujarat

Table 1 : Cumulative per cent of the dealers and quantity of the cotton seed sold in year 2011-12 **(n=30)**

Sr. No.	Cumulative per cent of dealer	Cumulative per cent of sale of seed	Sr. No.	Cumulative per cent of dealer	Cumulative per cent of sale of seed
1.	3.33	0.76	16.	53.33	33.01
2.	6.67	1.72	17.	56.67	36.04
3.	10.00	2.91	18.	60.00	39.71
4.	13.33	4.20	19.	63.33	43.42
5.	16.67	5.93	20.	66.67	47.30
6.	20.00	7.77	21.	70.00	51.30
7.	23.33	9.68	22.	73.33	56.10
8.	26.67	11.68	23.	76.67	61.16
9.	30.00	14.08	24.	80.00	66.30
10.	33.33	16.58	25.	83.33	71.50
11.	36.67	19.12	26.	86.67	76.83
12.	40.00	21.70	27.	90.00	82.42
13.	43.33	24.38	28.	93.33	88.02
14.	46.67	27.22	29.	96.67	93.88
15.	50.00	30.07	30.	100.00	100.00

Table 2 : Size distribution of the dealers **(n=30)**

Size category range in packets of 450 g of cotton seed	2009-10		2010-11		2011-12		Average of three years	
	Per cent of dealers	Per cent of sales	Per cent of dealers	Per cent of sales	Per cent of dealers	Per cent of sales	Per cent of dealers	Per cent of sales
0-6500	13.33	3.43	13.33	4.09	10.00	2.91	12.22	3.48
6501-13000	16.67	7.56	20.00	10.88	20.00	11.17	18.89	9.87
13001-19500	23.33	21.22	23.33	21.61	26.67	21.97	24.44	21.60
19501-26000	20.00	24.67	16.67	20.12	16.67	20.06	17.78	21.62
26001-32500	26.67	43.11	30.00	43.31	26.67	43.90	27.78	43.44
Co-efficient of inequality	0.95		0.92		0.94		0.94	

The cumulative percentage indicates that first 10 per cent dealers transacted only 2.91 per cent of the total sale of cotton seed whereas first 50 per cent of the dealer contributed 30.07 per cent in the sale of cotton seed. Further, it was observed that last 50 per cent of dealer's contribution was 69.92 per cent in sale of cotton seed.

The Lorenz curve depicting the magnitude of variation between the number of the dealers and sale of the cotton seed was not close but concave to the line of distribution (equalitrarian line) indicating that there is some inequality in the distribution of sale of seed. For getting detail information, Lorenz co-efficient of inequality was worked out. Table 2 presents the pattern of distribution of the dealers among different size categories for the period of three years from 2009-10 to 2011-12. Average of three years data shows that small dealers whose sales were less than 19,500 packets of cotton seed accounted for 55.55 per cent of the total number of dealers in the sample. However, their sales were 34.95 per cent of the total sales. There was highest number of dealers (27.78 %) in size categories of 26001-32500 packets of sale. In size groups of 6501-13000, 13001-19500 and 26001-32500 year wise data shows continuous increase in sale of seeds. In other size groups, random variation was observed. This was because seed market was highly dynamic in nature and there were random fluctuations in demand for different brand of cotton seed varied over the years.

Data in Table 2 also revealed that the Lorenz co-efficient of inequality was 0.95 per cent for the year 2009-10, 0.92 per cent for the year 2010-11 and 0.94 per cent for the year 2011-12. These all figures are near to one which also confirmed the inequality in distribution of the dealers by sizes in the cotton seed market. This is because different dealers have dealership of varied number of companies and sale of seeds varies from company to company. Alternatively, there is differential demand for seed of different companies that lead to the differences in total sale of the seed.

Nature of market competition :

Bain's theory of market classification was used to analyze the competitiveness among the dealers in the market of cotton seed. In this method, four-firm concentration ratio was used to measure the fraction of the market accounted for by the four largest firms. So, the per cent contribution by top four dealers in terms of cotton seed sale to the total seed sale was calculated and presented in Table 3.

Out of total sale of cotton seed in a year 2009-10, 2010-11 and 2011-12, top four dealers' transactions was less than 25 per cent. Therefore, as per the Bain's classification, cotton seed market of Middle Gujarat was atomistically competitive market. Atomistically competitive market is a market structure where firms are so numerous that the market represents perfect competition and characterized by following features (Anonymous, 2012).

- Many small firms
- Absence of economies of scale
- Firms do not have the ability to set prices

Problems faced by the cotton seed dealers :

The problems faced by the dealers in marketing of cotton seeds in Middle Gujarat were ranked by using

Table 3 : Per cent of business controlled by the top four dealers

Year	Per cent of business controlled by the top four dealers	Nature of market
2009-10	23.17	Atomistically competitive
2010-11	22.67	Atomistically competitive
2011-12	22.27	Atomistically competitive

Table 4 : Constraints faced by the cotton seed dealers in selling of cotton seed in Middle Gujarat

Rank	Constraints	Score
I	Non-availability of seeds by desired quantity	58.66
II	Non-availability of seeds in time	57.15
III	Credit supply by the company	48.00
IV	Competition from the other dealers	39.35
V	Initial investment	38.57
VI	Delay in payment by the farmers	33.63

Garrett's ranking technique and presented in Table 4. The perusal of the Table 4 shows that the most important constraint viewed by the dealers was 'Non-availability of seeds by desired quantity' followed by 'Non-availability of seeds in time'. The next problems as viewed by the dealers in marketing of cotton seed were 'Credit supply by the company', 'Competition from the other dealers', 'Initial investment' and 'Delay in payment by the farmers'.

Conclusion :

The cotton seed market in the Middle Gujarat was atomistically competitive and there was inequality in distribution of the dealers by sizes. Though the market of cotton seed in Middle Gujarat was atomistically competitive, there was high inequality in distribution of cotton seed. This sort of market condition is not desirable as dealer can distort the market. Hence, priority should be given to bring equality in distribution through improvement in the existing level of inequality in distribution. The most important constraint viewed by the dealers in marketing of cotton seed was non-availability of seeds by desired quantity followed by non-availability of seeds in time. These problems should be resolved as it ultimately affects the interest of the cotton seed growers.

REFERENCES

Acharya-Madnani (1988). *Applied econometrics for Agricultural.* Economists, Himanshu Publications, Udaipur (RAJASTHAN) INDIA.

Bain, J.S. (1956). *Barriers to new competition*, Harward University Press, Cambridge.

Bhide, S., Chowdhury, A., Heady, E.O. and Muralidharan, M.A. (1981). Structural changes in an agriculture assembling markets: A case study of arecanut market in Mangalore, Karnataka state. *Indian. J. Agric. Econ.,* **36**(2) : 25-34.

Garrett, H.E. and Woodworth, R.S. (1971). *Statistics in Psychology and Education.* Vakils, Feffer and Simons Ltd., Bombay. p. 491.

Handiganur, S.S. and Kunnal, L.B. (1999). Market structure for chickpea in different markets of Karnataka. *Indian J. Agril. Mktg*., **13**(3) : 28-33.

Sankaranarayanan, K. and Padmanaban, N.R. (1999). Market structure for pesticides in south Tamil Nadu. *Indian J. Agril. Mktg*.,**13**(3) : 69-74.

Sankari, S., Ramasamy, C. and Punithan (1992). Retail market structure for pesticides in a cotton region. *Indian J. Agril. Mktg.*, **6**(2): 39-45.

Sita Devi, K. and Ponnarasi, T. (2009). An economic analysis of modern rice production technology and its adoption behaviour in Tamil Nadu. *Agril. Econ. Res. Rev.,* **22 :** 341-347.

WEBLOGRAPHY

Anonymous (2012). *http://www.economicshelp.org/dictionary/a/atomistic-competition.html*