BRAND PREFERENCE OF HYBRID COTTON SEEDS IN KURNOOL DISTRICT OF ANDHRA PRADESH

Thesis submitted in part fulfillment of the requirements for the Degree of **Master of Science(Agriculture) in Agricultural Marketing Management** to the Tamil Nadu Agricultural University, Coimbatore-3.

By

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CERTIFICATE

This is to certify that the thesis entitled **BRAND PREFERENCE OF HYBRID COTTON SEEDS IN KURNOOL DISTRICT OF ANDHRA PRADESH** submitted in part fulfilment of the requirements for the degree of **MASTER OF SCIENCE IN AGRICULTURAL MARKETING MANAGEMENT** to the Tamil Nadu Agricultural University, Coimbatore is a record of *bona fide* research work carried out by **Thiru.B.J.RAMA MOHANA RAO** under my supervision and guidance and that no part of this thesis has been submitted for the award of any other degree, diploma, fellowship or other similar titles or prizes and that the work has not been published in part or full in any scientific or popular journal or magazine.

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(B.J.RAMA MOHANA RAO)

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CHAPTER I
INTRODUCTION

Cotton is one of the most ancient and important commercial crop next only to food grains in India. In the fast emerging era of globalization and liberalized economies the prospects for cotton in India are very bright. As a result of GATT accord and the present World Trade Organisation (WTO) set up the restrictive trade practices in terms of quota system for import of textiles by many countries will have to give way to a regime of unrestricted entry[1].

In India, cotton is being cultivated in an area of 9 million hectares and produces nearly 170 lakh bales(2.89 million tonnes) of cotton annually. The country is the third largest producer of cotton in the world contributing to nearly 32 percent of the global production[2]

During 1997-98, India earned a foreign exchange to the tune of more than Rs 13,000 crore from export of cotton yarn, thread, fabrics, apparel and made-ups. Cotton industry provides gainful employment to 60 million people in the country who are engaged in its cultivation, trading, processing, manufacturing, fabricating and marketing[3].

Cotton constitutes nearly 70 percent of textiles as raw materials. Apart from fibre value, the potential of cotton in uses such as edible oil (cotton seed oil) and other byproducts like particle board, paper, corrugated boxes is

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[1]. M.S .Kairon.., "New Strategy Gains Urgency", **The Hindu Survey of Indian Agriculture**, 1997, pp.7-11.

[2] P.K.Ghosh, "Indian Experiments on Bt. Cotton", **Agro India**, April 2000,p.28.

[3] Vikas Singhal. "Cotton", **Indian Agriculture**, 1999, (New Delhi : Indian Economic Data Research Centre), p.215.

enormous. The internal demand is also on the increase due to rising population. The need therefore exists to enhance cotton production and productivity in the coming decades. The projected demand for cotton in 2020 AD is envisaged at 230-240 lakh bales as against the current production of 175 lakh bales and if the export potential is added the figure may be even more. As such the prospects for cotton cultivation in India are likely to be very much on the increase[4].

One of the major factors responsible for increased production since 1970 is the development of cotton hybrids and their commercial cultivation on a large scale. India is a pioneer among cotton growing countries in taking up large scale cultivation[5].

Cotton Crop Situation in India

The details on area, production and productivity are presented in Table.I.Area under cotton showed little fluctuations since 1950 and stagnated around 70-80 lakh hectares from 1955-56 to 1994-95. An additional 10 lakh hectares was added during 1995-96 to the existing area of 79 lakh hectares in the previous year and further a marginal increase of three lakh hectares was added during 1996-97 to 1998-99 with a decline of one lakh hectares in 1997-98.

Production has steadily increased during 90s from 98 lakh bales in 1990-91 to 166 lakh bales in 1998-99 with minimal inter-year fluctuations. On the contrary wide fluctuations in production was observed during early

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[4]M.S.Kairon.,P.Ramasundaram and M.V.Venugopalan., "Potential for Higher Yields", **The Hindu Survey Indian Agriculture**, 1999, p.114.
[5]M.S.Kairon.,Op.Cit., p.109.

TABLE I

ALL INDIA AREA, PRODUCTION AND PRODUCTIVITY OF COTTON

Area : lakh hectares
Production : lakh bales of 170 Kg each
Productivity : Kg lint/ha

S. No.	Year	Area	Production	Productivity
1	1950-51	58.82	30.44	88
2	1955-56	80.90	41.80	100
3	1960-61	76.10	56.04	125
4	1965-66	79.60	48.50	104
5	1970-71	76.05	47.63	106
6	1975-76	73.50	59.50	138
7	1980-81	78.23	70.10	152
8	1985-86	75.33	87.27	197
9	1990-91	74.40	98.42	225
10	1991-92	76.61	97.14	216
11	1992-93	75.42	114.03	257
12	1993-94	73.21	107.41	249
13	1994-95	79.25	119.09	257
14	1995-96	90.63	128.63	242
15	1996-97	91.24	142.52	265
16	1997-98	88.09	158.00	305
17	1998-99*	93.00	165.50	303
18	1999-00*	84.00	165.00	334

Source : Vikas Singhal,"Cotton", **Indian Agriculture**,1999(New Delhi:Indian Economic Data Research Centre) p.215

* "Cotton Acreage Seen Higher", **Business Line**,June10,2000, p.22.

60s, 70s and 80s respectively. The maximum production of 165.5 lakh bales was achieved from an area of 93 lakh hectares during 1998-99 with a highest productivity of 303 Kg lint per hectare.

In India, productivity of cotton during the year 1998-99 was 303 Kg lint per hectare as compared to 88 Kg per hectare in 1950-51. Productivity has almost doubled from 100 Kg per hectare in 1955-56 to 197 Kg per hectare in 1985-86 while it increased to 305 Kg per hectare by the year 1997-98. Since 1950-51, the productivity of cotton was increasing continuously with marginal inter year variations during eighties, early nineties, and it declined to 242 Kg lint per hectare in 1995-96. Productivity increase was consistent during 90s except during 1993-94 and 1995-96 and reached a maximum of 334 Kg lint per hectare in 1999-2000. Productivity of cotton in India was 214 Kg per hectare as against 590 Kg per hectare world average during 1997-98. Commercial cultivation of cotton hybrid is one of the solutions to enhance productivity. Estimate showed that cotton hybrids occupy 40 percent of total cotton area of 90 lakh hectares contributing 45 percent of total production during the year 1998-99. On the whole the increased production of cotton was contributed by both area and productivity.

According to International Cotton Advisory Committee, for increasing the output of cotton and growers' income, the productivity of cotton in India should be raised[6] .

The Government's decision to spend Rs 750 crores over five years from 1999 to 2003 on the Technology Mission for Cotton Development in order to improve both the yield and quality of cotton produced in the country would

[6].Vikas Singhal, Op.Cit., p.216.

help boost cotton productivity from current level of 256 Kg lint per hectare to 388 Kg lint per hectare and also achieve a total production of 207 to 215 lakh bales of cotton during the above period[7] .

As on date, 22 hybrids(officially released) are cultivated in the country in addition to many others belonging to private seed industry[8] .

Although cotton is cultivated in almost all the States in the country, the nine States viz., Punjab, Haryana, Rajasthan, Maharashtra, MadhyaPradesh, Andhra Pradesh, Tamilnadu and Karnataka account for more than 95 percent of area and production.

In India every year, the output of cotton is estimated by the Ministry of Agriculture and Cotton Advisory Board(CAB).The cotton industry and trade considers the CAB estimates as more reliable[9].

Cotton Seed Industry in India

Presently cotton seeds are being produced and marketed by State Agricultural Departments, Quasi-Government bodies like Central, State Seed farms, Agricultural Universities and Private agencies. Seed sellers are marketing the seeds by procuring it from seed growers under contract growing system. The quality of seed is confirmed as per the Seeds Act (1960) and Seed Control Order (1983).

Presently India uses nearly 25,000 tonnes of cotton seeds annually for planting, out of which 4,500 tonnes are hybrids(18 percent) and the rest certified varieties and own seeds. Among the main market players of hybrid

[7]D.K.Nair., Secretary General of the Indian Cotton Mills Federation, **Business Line**, April 19, 2000.
[8]M.S.Kairon., Op.Cit.,
[9]Vikas Singhal, Op.Cit., p.216.

and varietal cottonseeds, Rasi, Ankur, Mahyco, Mahindra, Ajeet Seeds, Vikram Seeds and Nuziveedu seeds are the most important ones. These seven companies account for 90 percent of the hybrid cotton seed market in India[10].

The cotton hybrid seed industry is one which requires some kind of regulation as it is mushrooming and the pricing is purely arbitrary in nature. Properly channeled, India may be in a position to export cotton hybrid seeds since it is pioneer in hybrid seed production[11].

Cotton Production in Andhra Pradesh

Area, production and productivity of cotton in Andhra Pradesh are given in TableII. Area and production showed a continuous increase, except for the years 1993-94 and 1997-98 which were 7.28 lakh hectares and 8.98 lakh hectares respectively. The production has declined during the years 1992-93 and 1997-98 from 12.99 lakh bales to 11.47 lakh bales and from 18.78 lakh bales to 13.00 lakh bales respectively.

Production of cotton in Andhra Pradesh was estimated at 13 lakh bales in 1997-98 against 18.78 lakh bales in 1996-97. The less crop was due to incessant rains in coastal regions of Krishna, Guntur, Prakasam, East and West Godavari districts and also in Ongole, Warangal, Adilabad and Kurnool districts and also damage due to white fly pest. This resulted in a fall in yield by two-thirds in several districts to 13 lakh bales.

Cotton productivity in Andhra Pradesh showed large year to year fluctuations. The highest productivity was recorded in the years 1993-94 and 1996-97 during the past one decade i.e., 315 Kg lint per hectare.

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[10]P.K.Ghosh., p.28.
[11]M.S.Kairon.,P.Ramasundaram., and M.V.Venugopalan., Op.Cit., p.114.

TABLE II
AREA, PRODUCTION AND PRODUCTIVITY OF COTTON IN ANDHRA PRADESH

Area : '000 hectares
Production : '000 bales of 170 Kg each
Productivity : Kg lint/ha

S. No.	Year	Area	Production	Productivity
1	1987-88	606	527	147
2	1988-89	628	566	153
3	1989-90	650	931	244
4	1990-91	655	1110	288
5	1991-92	707	1299	312
6	1992-93	805	1147	242
7	1993-94	728	1349	315
8	1994-95	845	1426	287
9	1995-96	1059	1610	259
10	1996-97	1015	1878	315
11	1997-98	898	1300	246

Source : **Statistical Abstract 1998** , Directorate of Economics and Statistics, Government of Andhra Pradesh

The major cotton hybrids grown in Andhra Pradesh are DCH-32, TCHB-213, Varalaxmi, H-4, HB-224, GCH-6, Savita and NHH-44. These hybrids are produced by several private agencies like Mahyco, Mahendra Hybrid Seeds Co., Ganga Kaveri Hybrid seeds, ITC Zeneca, Sree Mohan Seeds, Novartis, Nuziveedu Seeds, Amareswara Seeds, Ankur Seeds etc.

Problem focus

The nature of marketing activities of the firms depend on the market structure for the product. Non-price competition is the typical form of competition in oligoplistic markets. The demand for the product in these markets is determined not only by the price policy of the firm but also by the style of the product, the services associated with it and the selling activities of the firm, its competitors and other industries. Hence, a manufacturer tends to differentiate his product from that of the other manufacturers in the industry. This is established by (i) differences in the inherent characteristics of the product, viz., specification of the product, inputs used, convenient location for the consumer and services offered, and (ii) fancied differentiation. Fancied differentiation is established by advertising, differences in packaging, design and brand name. The object of product differentiation is to make the product unique in the mind of the consumer. Product differentiation creates brand loyalty among consumers which could be nurtured to increase the market share in future. Besides, the producer has some discretion in the determination of price but this is limited due to keen competition of close substitutes offered by other firms[12].

[12] A.Koutsoyiannis., **Modern Microeconomics** (HongKong : The MacMillan Press Limited,1983), p.264.

Distribution of seeds in India is done through dealers, either private traders or co-operative societies.

A private dealer is a separate entity and he is an important link in the marketing channel. Manufacturers have to necessarily make use of these marketing intermediaries[13].

There are several seed companies which market the seeds. They periodically review the extent of awareness about their brands among farmers, brand preferences by farmers, market share for their brands and that of their competitors in a geographical area. The seed companies should also know the problem faced in cotton cultivation as well as different sources of information. This would enable the company to ascertain its position in the market and formulate appropriate strategies to increase the number of brand loyal farmers, area under hybrid cotton and ultimately their market share in future. Considering the above, the present study was undertaken for GANGA KAVERI HYBRID SEEDS PVT. LTD. in Kurnool district of Andhra Pradesh to provide information on various brands preferred by farmers and to give an account on various factors influencing the brand preference with the following specific objectives.

Objectives

i. to examine the use pattern and awareness of different brands of hybrid cotton seeds by the sample farmers in Kurnool District;
ii. to analyse the brand image of leading brands among farmers;

[13] A.B.Thomas., "**Marketing Channels,Dealer Network and Development**", Text of Lecture presented at the 29th Fertilizer Association of India Seminar,Training Programme for Fertilizer Marketing Representatives,Trivandrum, April 2-7,1990.

iii. to determine the factors influencing the brand preference of hybrid cotton seeds;
iv. to estimate the market share of major hybrid cotton seeds; and
v. to identify the major constraints in using hybrid cotton seeds by the farmers and suggesting appropriate measures to overcome them.

Scope of the study

This study throws light on brand preference of seeds by farmers and dealers and the reasons for the same. Besides brand awareness, the market share of the brands was also assessed. The above information will be useful for the case firm in formulating appropriate strategies for enhancing their market share.

Limitation of the study

Since the study area is limited to Kurnool district, the findings may not be applicable to the entire State of Andhra Pradesh. This study is based on primary data collected from sample farmers and the dealers by survey method. As many of the farmers have not maintained proper records about farming operations, they furnished the required information from their memory and experience and hence, the collected data are subject to recall bias. However every effort had been taken to minimize the bias by including in the interview schedule, the questions that would facilitate cross checking. Hence, the findings of the study may be considered appropriate for the situations prevailing in the study area and extra care should be taken while generalizing the results.

ORGANISATION OF THE THESIS

The thesis is organised into six chapters as follows

Chapter 1: Problem setting, objectives, scope and limitations of the study are discussed.

Chapter 2: Concepts used in the present study and some of the concepts used earlier by other workers are presented and discussed.

Chapter 3: Specifies the sampling design, method of data collection and tools used in the conduct of research and analysis of data.

Chapter 4 : The general and agricultural characteristic features of the study area are described

Chapter 5: The results of the analysis are presented and discussed to draw inferences, with respect to the objectives.

Chapter 6: A summary of the results of the study is presented to draw specific conclusions and policy implications.

CHAPTER II
CONCEPTS AND REVIEW

Concepts related to the present study and precise definition of concepts used in the present study and a brief review of the past studies in the related topics would help to have a better understanding of the research problem. An attempt is also made to conceptualize them for the present study.

The first section deals with the conceptual review, while the second section deals with the review of past studies.

A. CONCEPTUAL REVIEW

In this section, the relevant aspects are reviewed under the following heads:

i. Brand
ii. Brand preference
iii. Brand image
iv. Market
v. Market Share
vi. Market functionaries
vii. Awareness
viii. Seed
ix. Hybrid Seed
x. Seed Enterprise
xi. Seed Industry

Brand

According to Branson, a brand had both a name, by which it was called and often a mark, by which it was recognized visually. A brand could facilitate communication for buyers at other levels than consumers. The brand name could communicate the retailers and consumers on what to expect from the product[1].

Stanton referred to a brand to a name, term, symbol or special design or some combination of those elements that were intended to identify the goods or services of one seller or a group of sellers. A brand differentiated one seller's product or services from those of its competitors[2].

Kapferer provides the world organisation for industrial property's legal definition of a brand as "a symbol serving to distinguish the products or the services of one company from those of another". He also identified two functions of a brand : (i)to distinguish different products from each other; and (ii)to indicate a product's origin[3].

A brand is a name, term, sign, symbol or design or a combination of them intended to identify the goods or services of one seller or a group of sellers and to differentiate them from those of competitors[4].

According to Day, the particular brand an individual would choose is neither wholly predetermined nor a matter of pure chance. Most consumers were predisposed to prefer some brand over others[5].

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[1] Robert E.Branson and Douglas A.Nowell, **An Introduction to Agricultural Marketing**,(New York:McGraw Hill Book Company,1983)p.351.

[2] William J.Stanton, **Fundamentals of Marketing** (New Delhi:Mc Graw Hill International Book Company,1984) p.120.

[3] Kapferer,Jean Noel, **Strategic Management** (2nd ed) 1997,London,Kogan)p.187.

[4] American Marketing Association, "**Marketing Definitions-A Glossary of Marketing Terms**", (Chicago:American Marketing Association,1960) p.35

Singh and Ahmed considered brand as a word, mark or symbol or some combination of these that identifies products or services and distinguishes them from the offering rivals[6].

Sivakumar viewed brand as an aggregate of all characteristics of a product of a firm that enabled to differentiate it from the similar product of other firms[7].

In general branding is a way for an organisation to identify it's offering and distinguish them from competitors[8].

A brand name is intended to identify the goods or services of one seller or group of sellers and to differentiate them from those of competitors[9].

A brand helps to identify a product by the consuming public followed by an awareness to the product. Brands are very valuable assets to the business firm and for their protection they are to be registered under the relevant law of the country[10].

What name means to a person, the brand name means to a product. It gives an identity, distinguishes from others and adds value to the product[11].

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[5]Ralph L.Day,**Marketing Models-Quantitative and Behaviour**, (Pennsylvania:International Text Book Company,1968) p.52

[6] Inderjeet Singh and Tauseef Ahmed, "Fertilizer Brand Preference : A Case Study of Meerut Division (UP)",**Indian Journal of Marketing**,15(10-12) : 28-29,1985

[7]S.D.Sivakumar.,"A Study on the Market structure and Buying Behaviour of the Farmers with reference to Pesticides", (Unpublished M.Sc(Ag) Thesis submitted to Dept. of Agrl. Economics, TNAU,1987), p.35.

[8] Tauseef Ahmed and Inderjeet Singh, Op.Cit., p.29-31.

[9]M.Ranganatham and R.Shanthi,"Brand Image among Refrigerators", **Indian Journal of Marketing**, 24(2-3) : 7-9,1995.

[10]N.R.Nagarajan, "Significance of Conflicting Brands in Marketing Unrelated Products", **Indian Journal of Marketing,** 25(7) : 5, July 1996.

[11] Teki Surayya, "Conusmer Behaviour – with Special Reference to Financial Instruments", **Indian Journal of Marketing,** 28(8-12) : 14, Nov 1998.

A Brand is a promise by a seller, a confidence building exercise where the promise and perception converge and diverge, buffeted by the pushing and jostling in the market place[12].

For the present study, a brand is considered as an aggregate of all the attributes of a product of a firm to distinguish it from the similar products of other firms.

Brand Preference

Martin stated that consumer favour a brand over most others, although if it is out of stock, they will accept a substitute[13].

Singh and Prabhakar defined consumer preference as an attempt to create a unique image for products-an image that enables them to achieve an advantage over their competitor's products[14].

For the present study, brand preference is defined as consumers preferring a particular brand over other brands based on the set of beliefs they develop on that particular brand.

Brand Image

Brand image represents the essence of all the impressions and imprints about the brands that have been made on the consumer's mind. The set of beliefs held about a particular brand is known as Brand image[15]

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[12]N.C.B.Nath, "Indian Brands : Quo Vadis", **Management Review**, 10(4) : 79,Oct-Dec 1998.

[13] Rom Martin,**Marketing,Strategy and Management** (New York:John Wiley and Sons,1982) p.635

[14] Manmohan Singh and B.C.Prabhakar,"Consumer Perception of Certain Product Features of Steel Almirah", **Indian Journal of Marketing**,19(5) : 18, June1989

[15] M.Ranganatham and M.S.Shanthi.Op.Cit.,p.7

Brand image is a pattern in the mind which is projected on the brand and which sets up a dynamic relationship rather than one of passive consumption[16].

Brand image is a combination of a number of variables which interact together to assess the overall perception of the audiences with whom the organisation interacts on a regular basis[17].

For the present study, brand image is defined as set of beliefs a consumer develops over a brand based on past experience and observation.

Awareness

Rogers and Shoemaker defined awareness as a function or a stage of decision process when the individual is exposed to an innovation, existence and gains some understanding of how it functions[18].

Venugopal and Perumal defined awareness as the things known to an individual is presented as cognitive domain. It is a pre-requisite for adoption of innovation as this would enable the farmers to completely understand the aspects behind a technology and also its relative advantages[19].

According to Supe, awareness is the first stage of the innovation-decision process wherein the individual is exposed to an idea but lacks detailed information about it[20].

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[16] Freda Gnanaselvam, "New Year Day Discount Sale : The Psychology of Price", **Indian Journal of Marketing**, 24(2-3) :13, Feb-Mar,1995

[17] Prashant Mishra and Upinder Dhar, "Marketing of Image-The New Corporate Imperative", **Indian Management**, 39(1) : 47, Jan 2000.

[18] E.M.Rogers,and F.F.Shoemaker, **Communication of Innovations** (New York:The Free Press,1971)p.142.

[19] M.Venugopal. and G.Perumal,"Farmers Knowledge on Dryland Technology and it's Importance in Adoption", **Rural Development Review**, 19(3-4) : 11-14,1991.

[20] S.V.Supe, **An Introduction to Extension Education** (New Delhi:Oxford and IBH Publishing Co.,Pvt. Ltd.,1994) p.58.

Thanulingam defined awareness as the ability of consumer to recall more or less currently the various aspects of consumer movement and consumer rights and the respondents' clarity of understanding of the selected aspects[21].

Giram and Sawarkar defined awareness as the type of social component that increases as the consciousness among the people and generate confidence in the individual completely[22].

In the present study, by awareness, it is meant the knowledge of existence of various brands in the market with regard to cotton hybrid seeds among the farmers.

Market

According to Kotler, a market comprised of all the potential customers sharing a particular need or want who might be willing and able to engage in exchange to satisfy that need or want. Originally, the term market stood for the place where buyers and sellers gathered to engage in exchange[23].

The American Marketing Association opined market as expression of the aggregate forces of condition within which buyers and sellers make decisions resulting in the transfer of goods and services consequent to the aggregate demand of the potential buyers of a commodity or service[24].

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[21] N.Thanulingam, "Awareness of Consumer Rights among the Educated", **Indian Journal of Marketing**,25(10-13) : 1996.

[22] J.Giram and J.G.Sawarkar, "Consumer Awareness : A Survey Analysis", **Indian Journal of Marketing**, 25(10-12) : 13, 1996

[23] Phillip Kotler, **Marketing Management - Analysis, Planning and Control**,(New Delhi:Prentice Hall of India Pvt. Ltd.,1998) p.13

[24] American Marketing Association.Op.Cit., p.15.

A market was defined by Stanton as people with needs to be satisfied, money to spend and willingness to spend it[25].

Elling defined market as a place (or) area where physical transfer of merchandise takes place[26].

Acharya and Agarwal referred market as a social institution, which performs activities and provides facilities for exchanging commodities between buyers and sellers[27].

A market was found at every point at which a specific commodity was concentrated for sale. A market was a centre about which or an area in which the forces leading to exchange of title to a particular product operated towards which and from which the actual goods travel[28].

According to Cundiff and Still, the market indicated the aggregate of forces or conditions within which buyers and sellers would make decisions that would result in the transfer of goods and services[29].

Hill described that market is some sphere or space, where the forces of demand and supply are at work, the price is determined or modified, the ownership of goods and services is transferred and certain physical and institutional arrangements are exchanged[30].

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[25] William J.Stanton,Op.Cit.,p.14

[26] K.A.Elling, **Introduction of Modern Marketing-An Applied Approach**.(New York:The Mac Millan Company,1969),p.4

[27] S.S. Acharya,and V.L.Agarwal, **Agricultural Marketing in India** (New Delhi:Oxford and IBH Publishing Co.,1987),p.9.

[28] Tousley Clark and E.Clark, **Principles of Marketing** (London : The Mc Millan Company,1962), p.10.

[29] E.N.Cundiff and S.R.Still, **Basic Marketing Concepts, Environment and Decisions**, (New Delhi : Prentice Hall of India Pvt. Ltd., 1968) p.21.

[30] Berkely Hill, **An Introduction to Economics for Students of Agriculture**, (Oxford : Perguman Press,1980), p.91.

Kerr et al. defined market as a social institution that would facilitate the free exchange of commodities for buyers and sellers, usually for money, but sometimes for barter too. Markets in this sense do not refer to a specific location where goods and services are exchanged, but rather to the process by which the exchange is done[31].

For the present study, the market was considered as a place where exchange of hybrid seeds took place between sellers (dealers) and buyers (farmers).

Market Share

Kotler defined market share as one company's share of the total industry's sales in a given market for the given product at a particular time period[32].

Davar defined market share as the ratio of company's sales to the total industry sales on either actual or potential basis[33]

Boone defined market share as the percentage of the market controlled by a certain company, product or service[34].

Wallace and Flynn explained that market share is the proportion of a market which prefers to buy a company's product[35].

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[31] John M.Kerr, Dinesh K.Marothia, Katar Singh, C.Ramasamy and Williams Bentley, **Natural Resource Economics-Theory and Application in India** (New Delhi : Oxford and India Book House Publishing Co. Pvt. Ltd.,1997), pp. 631-632.

[32] Phillip Kotler,Op.cit.,p.13

[33] R.Davar, "**Modern Marketing Management**", (Bombay : Progressive Corporation Pvt. Ltd., 1975), p.279-280.

[34] Louis E.Boone & David L.Kurthy,**Contemporary Business** (New York:Dryden Press,1982), pp.13-14

[35] Michael J.Wallaceand Patrick J.Flynn,**Dictionary of Business English** (Calcutta:Rupa & Co., 1984)p.14.

For the present study, market share is considered as the proportion of a company's sales to the total sales of a product in a specified area at a specified time period.

Market Functionaries

Market functionaries are those who engaged in the process of marketing. Market functionaries are of different types based on the functions performed by them.

Dealer

According to Kulshreshtha, the term dealer included the wholesalers, retailers, distributors, stockists or any other designation by which a distribution intermediary was known[36].

Pandey and Vivek defined dealer as a person or institution carrying on the business of selling fertilizers either wholesale or retail[37].

In the present study, dealer was considered to be the one who carried on business of selling hybrid seeds. He may be a wholesaler, a retailer or cooperative society.

Wholesaler

Mamoria and Joshi referred wholesalers to those who bought and resold merchandise to retailers and other merchants and to industrial and commercial users but did not sell in significant amounts to ultimate consumers[38].

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[36] Renu Kulshreshtha, "Sales Promotion Techniques", **Indian Journal of Marketing**, 16(10) : 6, 1986.
[37] S.N. Pandey and Sunita Vivek,"Efficiency in Fertilizer Marketing", **Fertilizer News**, 28(7) : 22-26,1992.
[38] C.B. Mamoria, and R.L.Joshi,**Principles and Practices of Marketing in India** (Allahabad:Kitab Mahal,1975),p.445

According to Kotler, wholesaling included all those activities involved in selling goods and services to those for resale or business use. It would exclude manufacturers engaged in production and it would also exclude retailers[39].

Vacharajani defined wholesaler as an institutional agency or private organisation that might be one or more in a given area. They would normally distribute principal products through a number of retailers and in some cases, they would also retail themselves[40].

For the present study, wholesaler has been considered as one who buys hybrid seeds in bulk and sells it to either retailers or ultimate consumers i.e., farmers.

Retailer

Retailer is a merchant or a business establishment who sell goods and services mainly to final user[41].

Cundiff and Still defined retailer as a merchant or occasionally an agent whose main business is selling directly to ultimate consumers for non-business use[42].

According to Kotler, retailer is a business enterprise that engaged in selling goods or services directly to final consumers for their personal and non-business use[43].

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[39] Phillip Kotler, Op.Cit., p.576

[40] N.N.Vacharajani, "Establishing Distibution Network : Methods and Criteria", **Hand Book of Fertilizer Marketing** (New Delhi : Fertilizer Association of India, 1976), pp.135 –147.

[41] Bell L.Martin, **Marketing Concepts and Strategy**, (London: Mac Millan and Company Ltd.,1966), p.105.

[42] E.N.Cundiff and S.R.Still, Op.Cit., p.21

[43] Phillip Kotler, Op.Cit.,p.13.

Any trader whose primary sales volume was from selling to farmers for farm-business use was considered as retailer of inputs[44].

Stanton defined retailer as a business enterprise that sold primarily to household consumers for non-business use[45].

Retailers have been defined in the present study as those who buy hybrid seeds from wholesalers and sell them to consumers in small quantities.

Seed

Agarwal defined seed as an "embryo", a living organism embedded in the supporting or the food storage tissue[46].

According to Gurudev Singh and Asokan, seed is a very vital input and a dynamic instrument for increasing agricultural production. Good quality seed in most crops is the cheapest of all inputs required for increased production[47].

Seed is a critical and basic input for attaining agricultural production and productivity in different agro-climatic regions[48].

Seed is a critical and basic input for attaining sustained growth in agricultural production. Seed is a carrier of new technology for crop production[49].

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[44] R.Thiruneelkandan, "Study on Market Potential for Pesticides in Salem and Periyar Districts-A Case Firm Approach", (Unpublished M.Sc(Ag) Thesis submitted to Dept. of Agrl. Economics, TNAU,1991),p.13

[45] William J.Stanton,Op.cit.,p.74

[46] R.L.Agarwal, **Seed Technology** (New Delhi : Oxford and IBH Publishing Co., Pvt. Ltd.,1980),p.663.

[47] Gurudev Singh and S.R.Asokan, "Marketing of Seeds in India : Status and Issues", **Indian Journal of Marketing**, 6(2):p.34, 1992.

[48] Research, Reference and Training Division, "Agriculture", India 2000-A Reference Manual,(New Delhi : Publications Division, Ministry of Information and Broadcasting, Govt. of India,2000), p.393.

Heydecker stated that a seed is an end and a beginning, it is the bearer of the essentials of inheritance, it symbolizes multiplication and dispersal, continuation and innovation, survival, renewal and birth[50].

Hybrid Seed

According to Douglas, Hybrid seed means first generation seed of a cross, produced by controlling the pollination of and by combining (i) two or more inbred lines (ii) one inbred or a single cross with an open pollinated variety, and (iii)two varieties or species except open pollinated varieties of maize. The second generation or subsequent generations from such crosses, would not be regarded as hybrids[51].

For the present study, hybrid seed is considered as the unique biological input in agriculture which gives maximum yield to farmers, inturn maximum profits to the producers.

Seed Enterprise

Douglas defined seed enterprise as any organisation involved in seed growing either directly or through contracts with others, drying, processing, storage and marketing. It may be private or Government organisation[52].

For the present study, any organisation or an enterprise involved in production, processing and marketing of hybrid seeds considered as seed enterprise.

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[49] Agri India **GREEN PAGES - 1999-2001**, Chapter III, Seeds Division, Agri Information Services Pvt. Ltd., p.98.

[50] W. Heydecker, "**Seed Ecology**", (London : Butterworth Group, 1973),p.1.

[51] John E.Douglas, **Successful Seed Programme,** (New Delhi : Tata Mac Graw Hill Publishing Co.,1980), p.287.

[52] John E.Douglas Op.Cit., p.254.

Seed Industry

According to Agarwal, seed industry referred to the entire complex of organisations, institutions and individuals associated with the seed programme of country. The commercial seed industry included those individuals, seed enterprises and marketing groups involved in producing and marketing seeds for sale to farmers[53].

For the present study, the seed industries dealing with seeds of hybrid cottonseeds are considered.

B. REVIEW OF PAST STUDIES

Sources of information

Selvi and Gajre listed the sources of information used by the farmers in relation to the stages of adoption of recommended practices as radio, exhibition, printed material and extensive peer group influence, commercial agents and institutions in that order[54].

Namasivayam reported that the socioeconomic factors such as age, education, income influenced their preference. The results indicated that uneducated persons preferred the media television and cinema for soap advertisement. Similarly the influence of income on advertisement media was studied and found that the low income group people (below Rs 1000) preferred cinema as a medium[55].

Goyal found that friends played a major role as informants and advertising and dealers promotion were the secondary sources of information to farmers, in buying tractors[56].

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[53] R.L..Agarwal.,Op.Cit., p. 523.

[54] P.V.Selvi and V.G.Gajre, "Sources of information used by farmers in stages of adoption of recommended farm practices", **Pesticides,**19(6) : 68, 1985.

[55] P.Navasivayam, "Advertising Media Preference", **Indian Journal of marketing**, 18 (5-7):22-28, 1998

[56] B.B.Goyal, "Buyer Behaviour of Tractor Owners-A Case Study of Farmers of Bathinda District", **Indian Journal of Marketing**, 26(10) : 29-30, 1986.

Sivakumar analyzed the factors influencing the farmers in purchasing a particular brand of pesticides by scoring each factor in a four point continuous scale. He found that the quality of preferred brand advertisement and price of the brand had significantly influenced the farmers in purchasing that brand[57].

Ramalingam found that radio advertisement, wall paintings, film shows and slides and dealer promotion were found to be most effective promotional activities among farmers on fertilizer use while exhibition shows was found to be least effective[58].

Saravanan reported that 79 percent of farmers were influenced by the dealers and 29 percent of farmers used pesticides following the advice of other farmers[59].

Ravichandran inferred that dealers (86.3 percent) were the major source of information for hybrid tomato seeds followed by seed company's representatives(60 percent) and neighbours (36.7 percent)[60].

Dayalane in his study on acceptance and market potential for 'Karate'(Insecticide), observed that peer group farmers formed primary source of information on Karate followed dealers and company campaign in that order[61].

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[57] S.D.Sivakumar, Op.Cit.,p.73.

[58] K.Ramalingam, "Fertilizers Brand Preference of Farmers & Dealers in Pollachi Taluk-An Analysis" (Unpublished M.Sc(Ag) Thesis submitted to Dept. of Agrl. Economics, TNAU,1994), pp.172-173.

[59] Saravanan, "Study on Market Potential for Pesticides in Adilabad and Karimnagar Districts of Andhra Pradesh" (Unpublished M.B.M. Thesis submitted to Dept. of Agrl. Economics, TNAU, Coimbatore,1995).

[60] A.Ravichandran, "Study on Market Potential for Hybrid Tomato and Hybrid Bhendi seeds in Karnataka" ,(Unpublished M.B.M. Thesis submitted to Dept. of Agrl. Economics, TNAU, Cimbatore,1995).

[61] J.Dayalane," A Study on the Acceptance and Market Potential for 'Karate' (Insectcide) for Rice in Thanjavur District" ,(Unpublished M.B.M. Thesis submitted to Dept. of Agrl. Economics, TNAU, Cimbatore,1999).

Brand

Deepa Rao in his study observed that if a branded product he had bought repeatedly might have been substandard or faulty by chance, the consumer remain potential energy of the brand and he could usher in adverse publicity for the brand in the market[62].

Brands are created and fought in consumer's mind, through effective communication. Generally a brand can convey upto six levels of meaning depending on the choice by the marketer at which level to deeply anchor the brand's identity. They include attributes or characters of the brands. There are five perceived levels of benefits that accrue from the brands to its promoters and users. They are (i) functional (ii) emotional (iii)producer's value (iv) brand availability; and (v)Consumer identity[63].

Raghuvir Vedantham, tracing the chain of intermediaries between the manufacturer and end consumer stated that brochures on brand features, which can be displayed at the point of sale for customer information, are a valuable way of presenting the brand in its best light from the manufacturers point of view[64].

Brand Preference

In a study on factors influencing consumer decision making process toward biscuits, it was found that quality and taste were considered as prime reasons for buying a particular brand of biscuit. Low price and easy

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[62] Deepa Rao, " Consumer : A King, a Slave and an Adversely", **Indian Journal of Marketing**, 29(1-3) : 30, Jan-Mar 1999.

[63]P.Balaji Prasad, and M.Chandrasekar, "The Power of a Brand", **Indian Management**, 37 (8) : 88. Aug.1998.

[64] Raghuvir Vedantham, "The Marketing Story", **Indian Management**, 37(4) : 28, April 1998.

availability were the other reasons considered for buying a particular brand[65].

Gupta and Singh found that durability and brand image were two major reasons for preferring a particular brand of television by consumers. These were followed by family linking after sales service, price and guarantee/warrantee on the product. The other reasons for brand preference were attractiveness, advertisement and size of the screen[66].

Senthilvelan observed that effective control of pests by quality and credit availability as the factors that influenced farmers in pesticide purchase[67].

Ranganathan and Shanthi used functional and psychological attributes for measuring the consumer's perception of competitive brands, services or companies on a 5-point scale, for refrigerators. The attributes considered were quality of compressor, suitable size, reasonable price, appearance, working of auto defrost system, trouble free performance, warrantee, reliable service, cooling that lasts longer and new features. The mean scores of the respondents of each brand of refrigerators brand attribute are obtained by converting responses into scores. The individual scores are then averaged to get a composite mean score for each brand attribute, which helps in identifying the strengths and weakness of a particular brand and its position in relation to other competing brands[68].

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[65]H.Venkateshwarlu,Kishore Kumar.M., and Rajanath.M., "Factors Influencing Consumer Decision Making Process Towards Biscuits-A Behavioural Analysis", **Indian Journal of Marketing**, 17(9-10) : 3-7,1987.

[66]P.Gupta, and Raghbir Singh, "Consumers Brand Choice Behaviour for Television", **Indian Journal of Marketing**, 19(5) : 17-22, 1989.

[67]T.G.Senthilvelan,"An analysis into the Market Potential for Acephate" (Unpublished M.B.M. Thesis submitted to Dept of Agrl. Economics, TNAU, Coimbatore,1995), p.83.

[68] Ranganathan. M. and R.Shanthi, "Brand Image among Refrigerators", **Indian Journal of Marketing**, 14(2-3) : 7, Feb-Mar1995.

Tauseef and Inderjeet analysed the factors that influenced the preference of a particular brand of fertilizer and they found that the farmers were not influenced by the price of fertilizer. The farmers' purchase preference was based on easy availability of fertilizer, good quality of fertilizer, good packaging of the fertlizer and its good effect on soil structure[69].

Ramaswamy and Chandrasekharan identified the factors influencing the purchase of cotton seeds and buying behaviour of farmers. The purchasing decision of farmers were influenced by the distance travelled by the farmer to purchase cotton seeds, source of purchase, varietal performance, seed quality, source of information, about supply of cotton by different agencies and brand preference. Dealers with a credit sale facility, availability of seed at lower prices and premises located nearer to the farmer's locality attracted the farmers[70].

Awareness

Nagarajan observed that after getting awareness, the consumers moves for the brand trial and gets satisfaction or disappointment in varying degree[71].

Shekar reported that 92 percent of farmers were aware of pesticides. Among the farmers who were aware, 58 percent used pesticides while 34 percent had not used pesticides. 8 percent of farmers were not aware of pesticides[72].

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[69] Tauseef Ahmed and Inderjeet Singh, Op.Cit., p.28-29.
[70] C.Ramasamy. and M.Chandrasekharan., "Buying Behaviour of Farmers-The Case of Cotton Seed", **Indian Journal of Agricultural Marketing**, 4(2) : 166-172, 1990
[71] N.R.Nagarajan., Op. Cit., p.6.
[72] Shekar V., "Product Awareness and Use in Rural market", **Indian Journal of Marketing**, 23(9-12) : 16, 1994.

SathyaPrakash in his study on Gabardines market in Coimbatore observed that 86 percent of respondents were aware of 5-pocket style of Gabardines, 75 percent were aware of cross pocket style and 66 percent were aware of Cargos[73].

Muthukumar in his study on total awareness of Stanchart Global Credit Cards, found that Top of the Mind Awareness (TOMA) was 43.9 percent, unaided awareness was 28.6 percent and aided awareness was 16.9 percent.10.6 percent of the respondents were not aware of it. He also found that TOMA of Standard Chartered global Credit Card was 17 percent high in Chennai compared to Bangalore but total awareness was higher in Bangalore[74].

Dayalane in his study on the Acceptance and Market Potential for 'Karate' (Insecticide), observed that majority of farmers (80.83 per cent) could immediately recall about Karate, 4.17 per cent could recall with minimum aid, 1.67 per cent could recall with maximum aid while 13.33 per cent of farmers were unaware about Karate[75].

Source of Purchase

According to Agarwal and Jalan , the farmers purchased pesticides more often from private dealers (retailers) and co-operative societies than Government agencies[76].

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[73]V. Sathya Prakash, "A Study on Gabardines Market – For K G Denim Ltd., (Garments Business Division), Coimbatore", (Unpublished M.B.A. Project Report submitted to Bharathiar School of Management and Entrepreneur Development, Coimbatore-46, 1998).

[74]S.Muthukumar, "Evaluation of Standard Global Credit Card Advertisement Campaigns", (Unpublished M.B.A. Project Report Submitted to Bharathiar School of Management and Entrepreneur Development, Coimbatore-46, 1998.)

[75] J.Dayalane, Op.Cit.,

[76]O.P.Agarwal, and M.L.Jalan, "Marketing of Pesticides- A case Study of Gorakhpur District", **Indian Journal of Agricultural Economics**. 6(2) : 25-29,1986.

Nirmal Kumar et al., also expressed that the private agencies played more efficient role as compared to the Government and co-operative sector agencies in helping farmers for adoption of plant protection measures[77].

Sureshkumar observed that purchase of vegetable seeds by farmers from private dealer was predominant followed by Government depots and co-operative societies. He also found that purchase of seeds by means of cash was maximum (90 percent)[78].

Sujatha observed that the farmers purchased hybrid tomato and bhendi seeds from private dealers only. The major reasons for purchase from private dealers were timely availability, long term practice and credit facility in that order[79].

Market Share

Thiruneelkandan estimated the market share for pesticides of different companies in Periyar and Salem districts using the total quantity of pesticides sold by sample dealers and average quantity of pesticides sold per dealer and expressed in percentage[80].

Chandrasekaran in his study on market share of various brands of vacuum cleaners in India, found that total market share is shared by three

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[77] Singh Nirmal Kumar, P.K.Singh and V.K.Singh, "Constraints to use of Plant Protection Measures", **Pesticide Information**, 14(5) : 10-12,1989.

[78] S.Sureshkumar, "An Economic analysis on the Production and Marketing of Vegetable Seeds" (Unpublished M.Sc(Ag) Thesis submitted to Dept. of Agrl. Economics, TNAU, Coimbatore,1992),p.32.

[79] S. Sujatha, "Market Potential for Tomato and Bhendi Hybrid Seeds in Salem and Dharmapuri Districts", (Unpublished M.Sc(Ag) Thesis submitted to Dept. of Agrl. Economics, TNAU, Coimbatore, 1998).

[80] R.Thiruneelkandan, "Study on market potential for pesticides in Salem and Erode Districts(Unpublished M.B.M.Thesis submitted to Dept. of Agrl. Economics, TNAU, Coimbatore, 1991),p.28-29.

major players, Eureka Forbes with a market share of 37 percent followed by BPL constituting 31 percent, Modi Hoover(21 percent)respectively. Philips recently introduced the product and its share is 4 percent. Others constituted 7 percent[81].

Sathya Prakash in his study on Gabardines market observed that the different sources of information by which the consumers were aware of Gabardines were Magazines/Newspaper Advertisement (29 percent), friends (27 percent), Television Advertisements (14 percent), Shop Salesmen (13 percent), Noticed someone wearing (9 percent), others (5 percent) and Shop Display (3 percent)[82].

Kalugasalamurthy analysed the market share for fungicides in TamilNadu at both retailer level and farm level. At retailer level, the quantity sold in different brands, what the dealer dealt during the reference year were collected and worked out. At farm level, the use of particular brand of fungicides during the same period for different crops in the study region were obtained and the market share was worked out[83].

Ravichandran estimated the market shares of leading vegetable seed firms in Karnataka in respect to tomato hybrid and bhendi hybrid using farm level data and he identified that Indo-American Hybrid Seeds has a larger market share (37.13 percent) followed by Mahyco Seeds (20.16 percent). In case of bhendi also, Indo-American Hybrid Seeds had major market share

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[81] V. Chandrasekaran, "A Study on Market Share of Vacuum Cleaners", (Unpublished M.B.A. Project Report submitted to Bharathiar School of Management and Entrepreneur Development, Coimbatore-46, 1998).

[82] V.Sathya Prakash., Op.Cit.,

[83] S.Kalugasalamurthy, "Fungicides Marketing in TamilNadu", (Unpublished M.B.M. Thesis submitted to Dept. of Agrl. Economics, TNAU, Coimbatore, 1991).

(36.3 percent), followed by Ankur Seeds (28.42 percent). Higher yield and more profit were the major reasons for using Indo-American Hybrid Seeds[84].

Karthikeyan found that of the total sample respondents of 140 in Coimbatore, have gone in to use a wide range of soaps amounting 20 different brands. The maximum preferred soaps are Hamam and Mysore Sandal soap with a share of 18 percent and 19 percent respectively, followed by Pears (14.5 percent). He inferred that percentage of the respondents preferring a soap ranges according to the mildness of the soap and the amount of the natural ingredients used in the soap[85].

Probit analysis

Pelzer *et al.,* in their study to identify factors which influenced consumer rankings of vacuum skin package steaks and roasts used ordered probit model. Variables included selected demographic characteristics and concerns regarding retail beef packaging. They observed that the information pertaining to the colour of the beef in, and the benefits of, the vacuum package was among the most important factors[86].

Kwakyi in their study on participants' attitudes toward selected market alternatives for US farmers stock peanuts, analysed attitudes of producers and buyers of stock peanuts used alternative probit model to ascertain profiles of producers favouring the private treaty market and the

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[84] A.Ravichandran, "Study on Market Potential for Hybrid Tomato and Hybrid Bhendi Seeds in Karnataka", (Unpublished M.B.M. Thesis submitted to Dept. of Agrl. Economics, TNAU, Coimbatore, 1995).

[85] V.Karthikeyan, "A Market Research Conducted for an Ayurvedic Company "Heritage Herbal India Ltd., "to position their upcoming Herbal Cosmetic products. (Unpublished M.B.A. Project Report Submitted to Bharathiar School of Management and Entrepreneur Development, Bharathiar University, Cbe-46.1998).

[86] Pierre M.L. Pelzer, "Factor Influencing Consumer Rankings of Alternative Retail Beef Packaging", **Agribusiness, 7(3): 253-261, 1991.**

proposed organised markets. They found that computerization of the private treaty market might serve as a basis for implementation of an organised market for farmers' stock peanuts[87].

Jeffry and Stallman in their study on trade-off between benefits and wages paid to full-time hired workers used probit model to analyze the influence of selected farm and local economic conditions on the decision to provide health benefits. Variables considered were health, house, sales, machinery, farm, dairy, beef, fruits / vegetable crops, distance, unemployment and wage. They found that the combination of expensive machinery and a partnership or corporate farm leads to a greater likelihood that full time workers will be provided health benefits[88].

Seeds and Seed industry

Manmohan inferred that the high cost of hybrid seeds was one of the many factors limiting the extent of spread of these seeds. But the higher yield compensated more than that of the increased seed cost[89].

Newlin and Kuster in their study about the changing structure of the seed industry, found that the change in farmer profiles and farmer expectations of input suppliers have changed the way of companies' market strategies and sale of products and conduct business[90].

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[87] P.K.Kwakyi *et al.* "Probit Analysis of Market Participants' Attitudes toward selected Market Alternatives for US Farmers' Stock Peanuts", **Agribusiness,** 5(2): 107-119, 1989.

[88] Jeffry Alwang and Judith I. Stallmann, "The Interactions between Health benefits and Farm Wages in Virginia", **Agribusiness,** 10(2): 229-240, 1994.

[89] Manmohan Attawar, "Hybrid seeds Catching Up", **The Hindu Survey of Indian Agriculture**,pp.147-149,1988.

[90] O.J.Newlin and C.R.Kuster, "The Changing Structure of the Seed Industry", **Food and Agricultural markets – The Quiet Revolution**, National Planning Association, p.77-95,1994.

Ramalingam in his study on brand preference regarding fertilizers among farmer and dealer in Pollachi Taluk used Garrett's Scoring Technique to rank the brands. He found that SPIC fertilizers was mostly preferred by both farmers and dealers[91].

Wilkening found that mass media were particularly effective at the stage of awareness and that the word of mouth was more effective in the evaluation stage of adoption process[92].

Sriram found that age, education, experience and mass media exposure showed a significant relationship with the adoption of eco-friendly agricultural practices in cotton[93].

Other Related Studies

Hemalatha in her study on Total Quality Management in SIMA-CDRA observed five qualities expected by farmers in a good cotton crop and ranked them based on the weightages obtained. Resistance to pests has emerged as the most important quality desired in cotton crop, with a weightage of 82.8 and ranked first. It is closely followed by the high yield with a weightage of 80 and ranked second. Resistance to diseases ranked third with a weightage of 63.6. Other two qualities were large number of bolls per plant and good stand with weightages of 50.18 and 22.8 respectively[94].

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[91] K.Ramalingam, Op.Cit.,p.74.

[92] E.A.Wilkening, "Role of Communication Agents on Technical Change in Agriculture", **Social Force**, p.361, May 1986.

[93] N.Sriram, "Ecofriendly Agricultural Practices in Cotton Cultivation-Farmers Awareness, Attitude, Adoption"Unpublished M.Sc(ag) Thesis submitted to Dept. of Agrl. Economics, TNAU, Coimbatore,1997), p83.

[94] Hemalatha.S.,"Total Quality Management in SIMA-CDRA", (Unpublished M.B.M.Thesis submitted to Dept of Agrl. Economics, TNAU, Cimbatore,1998), pp.57-58.

CHAPTER III

DESIGN OF THE STUDY

Any meaningful research initiative should always be preceded by carefully prepared research design. A perfect research design is essential to evaluate systematically the problems and to find solutions for the same. It also helps in arriving at unbiased estimates of facts and figures.

In this chapter, a brief description of the research methodology adopted in selection of study area, selection of sample respondents, method of collection of data and the various tools of analysis used are presented and discussed.

(i) Selection of the study area

In Andhra Pradesh, during 1997-98, maximum area under cotton is in Guntur district, which was 1,62,000 hectares with a productivity of 454 kg lint(ha followed by Adilabad with an area of 1,45,000 hectares, with a productivity of only 78 kg lint/per hectare. Warangal had an area of 1,01,000 hectares with a productivity of 224 kg lint/ha. Kurnool stood fourth in area, with 90,000 hectares and its productivity was 220 kg unit per hectare. Area, production and productivity of cotton in different districts of Andhra Pradesh are presented in Table III.Details regarding the same are presented in Fig. I, II and III.

Kurnool was purposively selected since the case firm was interested in knowing the brand preference of hybrid cotton seeds by cotton farmers.

TABLE III
AREA, PRODUCTION AND PRODUCTIVITY OF COTTON IN ANDHRA PRADESH (1997-98)

Area : '000 hectares
Production : '000 bales of 170 Kg each
Productivity : Kg lint per hectare

S.No.	District	Area	Production	Productivity
1	Srikakulam	1	2	340
2	Vizianagaram	4	10	425
3	Visakhapatnam	2	4	340
4	East Godavari	10	24	408
5	West Godavari	4	8	340
6	Krishna	26	63	412
7	Guntur	162	433	454
8	Prakasam	40	48	204
9	Nellore	9	21	397
10	Kurnool	90	117	221
11	Anantapur	7	10	220
12	Cuddapah	13	17	222
13	Chittor	Neg.	Neg	220
14	Ranga Reddy	22	22	169
15	Hyderabad	Nil	Nil	Nil
16	Nizamabad	17	18	178
17	Medak	13	13	178
18	Mehboobnagar	58	52	153
19	Nalgonda	51	65	216
20	Warangal	101	132	224
21	Khammam	71	89	214
22	Karimnagar	61	106	299
23	Adilabad	145	66	78
	State	**906**	**1320**	**246**

Source : Directorate of Economics and Statistics, Govt. of Andhra Pradesh, Hyderabad.

FIG. I

COTTON AREA IN DIFFERENT DISTRICTS OF ANDHRA PRADESH

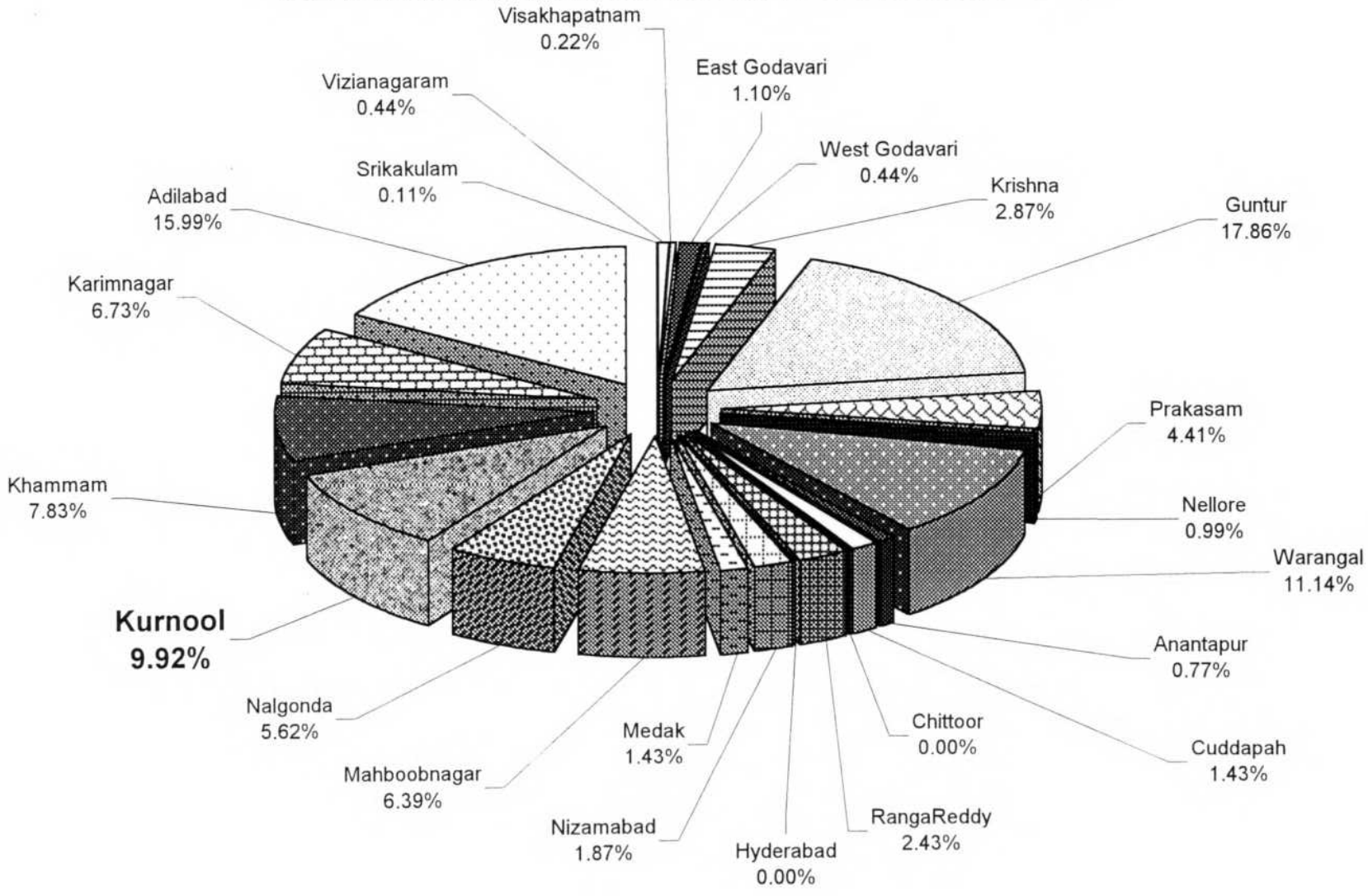


FIG. II

PRODUCTION OF COTTON IN DIFFERENT DISTRICTS OF ANDHRA PRADESH IN 1997-98

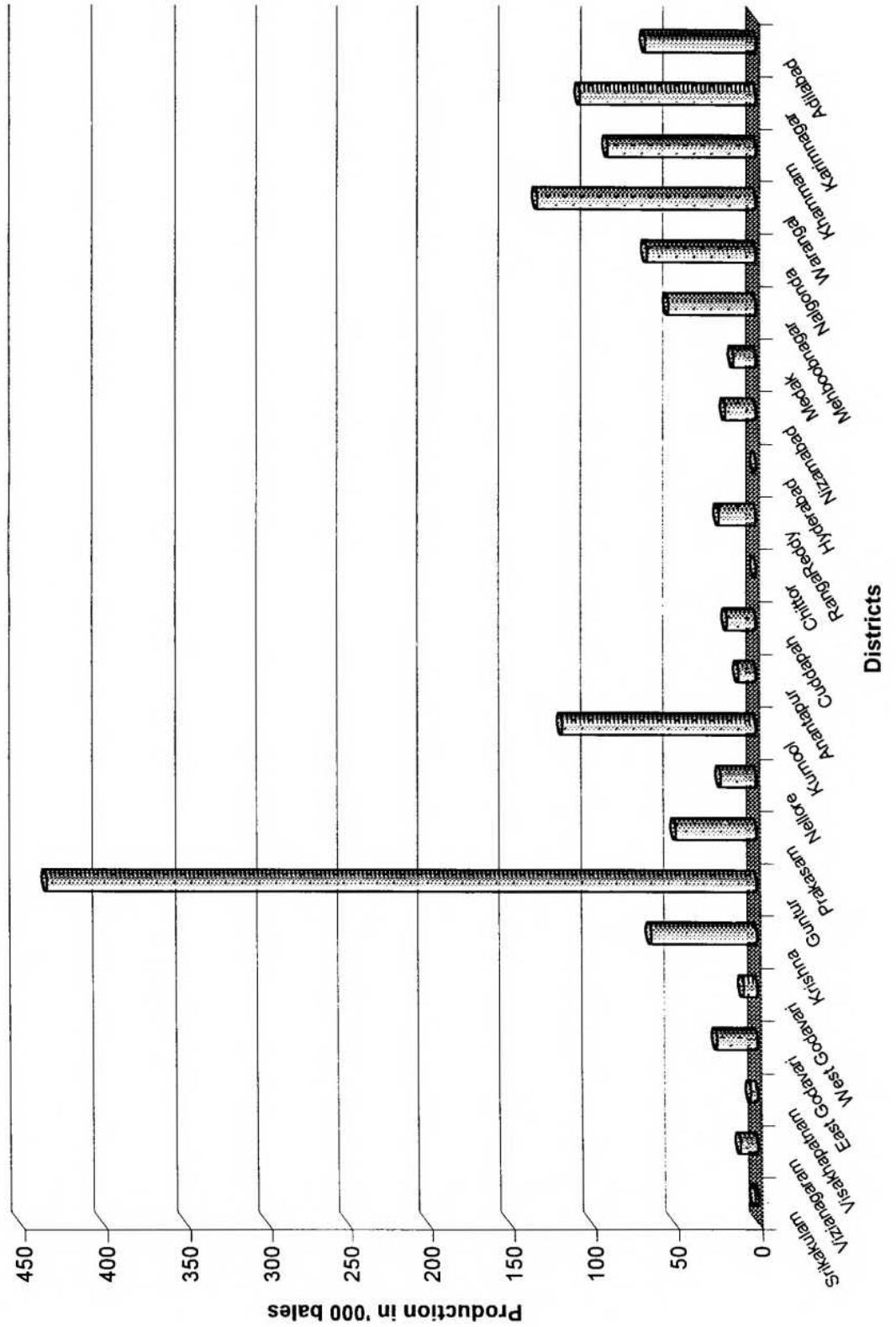
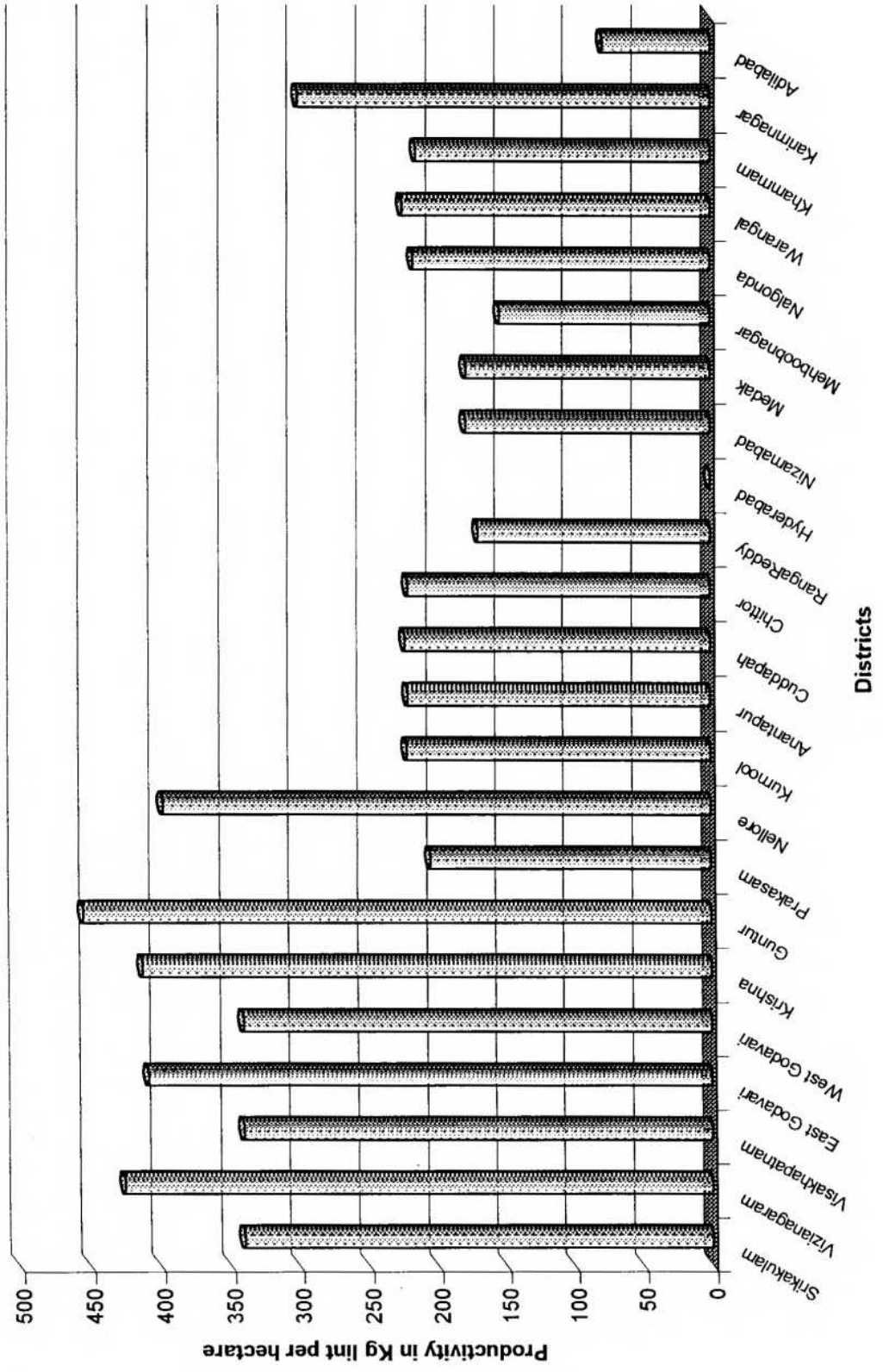


FIG. III

PRODUCTIVITY OF COTTON IN DIFFERENT DISTRICTS OF ANDHRA PRADESH IN 1997-98



(ii) Sampling design

Multistage random sampling technique was used to select mandals, villages and sample respondents. List of mandals having more than the average area under cotton is prepared. From this list three mandals viz., Kowthalam, Yemmiganur, and Mantralayam were selected at random as indicated in Fig.IV. List of villages growing cotton in each mandal was obtained from the office of the Assistant Director of Agriculture. Four villages were selected at random in each mandal. From each village, a list containing the names of hybrid cotton growing farmers was obtained from the Village Administrative Officer and ten farmers in each village were selected at random.

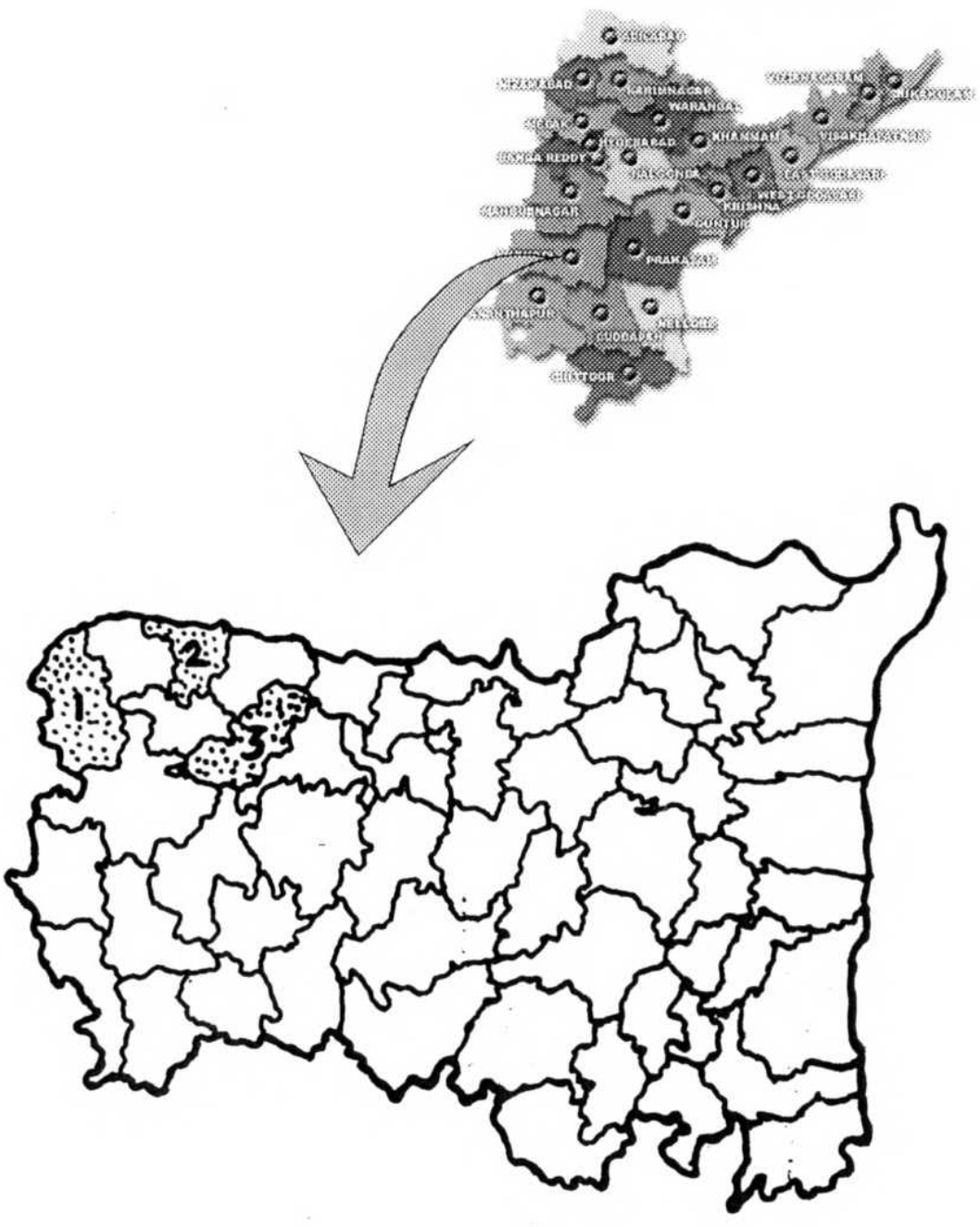
Thus a multistage simple random sampling procedure was followed and the ultimate sample size of 120 cotton farmers at the rate of 40 per mandal. The selected villages and the number of farmers selected in each village are given in Table.IV.

The dealers formed as yet another group of respondents of present study. Therefore names and addresses of all the seed dealers in each sample mandal were collected from the respective offices of Assistant Director of Agriculture. In each mandal 10 dealers were selected at the rate of 3 dealers from two villages and 2 dealers from other two villages based on the concentration, after preparing list of dealers in each village. Thus a sample of 30 dealers were selected at random.

(iii) Method of Data Collection

For collection of data two sets of questionnaires were prepared based on the objectives of the study, i.e., one for the sample farmers and another for

FIG.IV. DISTRICT MAP OF KURNOOL SHOWING THE STUDY AREA



1. KOWTHALAM
2. MANTRALAYAM
3. YEMMIGANUR

TABLE IV

DETAILS OF SAMPLE VILLAGES, FARMERS AND DEALERS

S.No.	Mandal	Village	No.of sample farmers	No. of sample Dealers
1	KOWTHALAM	Kowthalam	10	3
		Katriki	10	3
		Valluru	10	2
		Urikunda	10	2
2	MANTRALAYAM	Choutpally	10	3
		Sunkeswara	10	3
		Vagaruru	10	2
		Ramapuram	10	2
3	YEMMIGANUR	Kalagatta	10	3
		Pesaladinne	10	3
		K.Thimmapuram	10	2
		Yerrakota	10	2
	TOTAL	--	**120**	**30**

seed dealers. The data required for the study were gathered by personal interview method, with the selected respondents.

The data collected from the sample cotton growers included the general particulars like age, education level, farming experience, awareness about different brands of hybrid cotton seed, brand image, sources of information on hybrid cotton cultivation, factors influencing brand preference of hybrid cotton seeds by farmers and problems faced in hybrid cotton cultivation.

Details on general particulars, product line dealt, details of sales were collected from sample dealers.

As a prelude to the interview, the sample farmers and dealers were briefed about the scope and importance of this study, so as to get maximum possible realistic data.

The secondary data required for the study about cropping pattern, land use pattern, irrigation pattern, location of the study area, rainfall pattern and climate and other related information were collected from District Statistical Offices, Directorate of Economics and Statistics Office, Office of the Joint Director of Agriculture and District Collectorate.

(iv) Period of study

Field survey was conducted during the months of February - March, 2000. The data and information collected were related to the agricultural year 1998-99.

Tools of Analysis

1. Conventional analysis

The percentage analysis was used to study the general characteristics like age, education, experience, size of holding, market share of different seed companies, brand awareness etc.

2. Garett's Ranking Technique

This technique was used to rank the sources of information on hybrid seeds, and problems faced by the farmers in cotton cultivation.

In the Garett's scoring technique, the respondents were asked to rank the factors or problems and these ranks were converted into per cent position by using the formula.

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

Where

Rij = Rank given to the i^{th} attribute by the j^{th} individual

Nj = Number of attributes ranked by the j^{th} individual

By referring to the Garett's table, the percent position estimated were converted into scores. Thus for each factor, the scores of the various respondents were added and the mean value was estimated. The means thus obtained for each of the attributes were arranged in a descending order. The attributes with the highest mean value was considered as the most important one and the others followed in order.

3. Attribute Evaluation Test

This test was carried out using the following formula

$$\text{Perceived attribute value of a brand} = \sum_{i=1}^{n} A_i W_i$$

Where A = Ranking given to i^{th} attribute by a respondent;

W = Weightage given to the i^{th} attribute by the same respondent, and

n = number of attributes.

After obtaining the values of each brand by a respondent, the values of various respondents were added separately for each brand and the mean value was estimated. The means thus obtained for each brand were arranged in a descending order. The brand with the highest attribute value is considered to be the most chosen one.

There are several brands in the market and farmers would have developed a set of brand beliefs about where each brand stands on each attribute. Assuming that farmers are interested in five attributes: pest resistance, quality seeds, drought tolerance, quality of cotton and yield, farmers were asked to give weightage to each attribute so that total would be 100.

Farmers were asked to rank the brand for each attribute based on their belief from 5 to 1, standing for Very Good, Good, Average, Low and Very Low.

4. Sources of Information and Brand Preference – Factors Influencing Brand Preference of Seeds

The process of acquiring knowledge about the availability of seeds in the market would effectively influence the adoption decisions of the farmers

in utilising the seeds. The sources of acquiring new technology or information about availability of various brands of seeds available in the market would influence the farmers in taking a decision relating to use of the seeds. There are a number of sources through which farmers obtain information to assess the quality and other related aspects of seeds.

Therefore, the need is to assess the relative importance of several sources and the extent to which the farmers gain knowledge and information about the company's product. Such kind of analysis would help the companies to take appropriate decisions in disseminating the technologies to reduce adoption lags and improve their marketability.

In the present analysis a discrete dependant variable model of type PROBIT was used to analyse the extent of influence of the sources of information on brand preferences.

It was observed from the field data that the Mahyco seed company had the maximum market share (52 per cent) and more so ever farmers preferred Mahyco seeds constantly over the period of time. If a farmer used Mahyco seeds in his production process, is assigned with value of '1' or '0' otherwise.

The various sources of information like peer group influence, packaging, education level, dealer's influence and agricultural institutions were hypothesized to influence the decision to prefer the brand.

Among several sources of acquiring new knowledge about agricultural technology, role of peer group has been well established and documented. To investigate its role in influencing the brand preference, this was considered as one of the independent variable. The market participants were confronted

with a choice. If peer group is influencing them in brand preference, a score of '1' was given, '0' otherwise.

Seeds are available in varying quantities and different styles of packages. Based on the quantity requirement, farmers may go for desired quantity pack. This may also influence farmers in preferring a brand. If the farmer is buying some other brand based on the quantity, a score of '0' was given, otherwise '1' , if the farmer uses the same brand.

Education influences application and adoption of new technology. Education will influence how frequently the farmers contact extension agents, refer to agricultural magazines, view television programmes, attend farmers' day and so on. Hence this is included as a variable in the function. If the farmer is having school education upto VIII class (Secondary education), a score of '0' was given. If the farmer is having education above VIII class (Higher Secondary), a score of ' 1' was given[1].

Dealers act as a link between the firms and farmers. They also aid in providing feedback to the firms. Input suppliers (dealers) may also be an important source of technological information. These agencies adopt different modes to influence farmers' decision-making process. Hence, this is also included in the model. If the farmers respond positively a score of '1' was given, '0' otherwise.

There are several programmes sponsored by the Government to promote adoption of improved technologies. Institutes like Seed Certification Agencies and Agricultural Research Stations will test the seeds of the firms and certify them to be released into market. As such there exists a linkage

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[1] Pierre M.L. Pelzer, et al. "Factors Influencing Consumer Rankings of Alternative Retail Beef Packaging" Agribusiness, 7(3): 259,1991.

between seed producing firms and agricultural institutions. They also help in dissemination of information on various technologies so as to enhance agricultural productivity and may play an important role in preferring a brand by the farmers. Hence this is also included in the model. The model equation is

$$Y=\beta X_i + e_i$$

Where Y=1 if a farmer used Mahyco Seed

=0 , otherwise

The 'X' is the vector of explanatory variables, 'β' is the vector of parameters and 'e_i' follows standard normal density function with zero mean and constant variance.

The goodness of fit of the model was tested using count R^2 and log-likelihood ratio test.

The log-likelihood ratio test is given as

$$LLR = -2 (\log l - \log M)$$

The above function was estimated using MLE method with the help of LIMDEP 6 package.

The estimated β coefficients were converted into probabilities using the standard normal density function. The following partial derivative formula was used to estimate the probabilities.

If $Ti = F(Wi)$ and $Wi=\beta Xi$

$$\frac{\partial T_i}{\partial X_i} = \frac{\partial F}{\partial W} \cdot \frac{\partial W}{\partial X_i}$$

$$= f(W_i)\,\beta$$

Where f(Wi) is the standard normal density function

CHAPTER IV

DESCRIPTION OF THE STUDY AREA

A thorough understanding of agro-climatic condition of study area relating to rainfall, topography, soil type, temperature, cropping pattern, infrastructural facilities is essential for any study pertaining to agricultural development. It provides background for analysis, interpretation and discussion of results and helps in drawing meaningful inferences.

Location

Kurnool district derives its name from its chief town Kurnool, the capital of former Nawabs and was capital of Andhra Pradesh State from 1st October 1953 to 1st Nov 1956. The name 'Kurnool' is said to have been derived from "Kandanavolu'.

Kurnool district lies between the Northern latitudes of 14° 54' and 16° 11' and Eastern longitudes of 76° 58' and 78° 25'. The altitude of district varies from 1000feet, above mean sea level. The district is bounded on the North by Tungabhadra and Krishna rivers as well as Mahaboobnagar district, on the South by Cuddappah and Ananthapur district, on the West by Karnataka State and on the East by Prakasam district.

Nallamalas and Erramalas are the two important mountain ranges in the district running in parallel from North to South. The Erramalas divide the district into two well defined tracts from East to West.

The area of the district is 17,658 sq.km with a population of 29,73,024 as per 1991 census with a density of 168 persons per sq.km.

At present Kurnool district comprises 3 revenue divisions, 54 revenue mandals, 53 mandal parishads, 821 Gram Panchayats and 918 revenue villages.

Demographic Pattern

The demographic feature of Kurnool district are presented in Table V.

The total population of Kurnool district is 29.73 lakhs as per 1991 census, which accounts for 4.4 percent of the State's population. Males constituted 51.21 percent of the total population and the rest 48.7 per cent are females. The literacy level of the district is found to be very low of 32.52 percent. However literacy rate among men is found to be as high as 68.23 percent, while it is only 31.77 percent among women. The percentage of Scheduled castes and Scheduled tribes population constitutes 17.42 percent and 1.89 percent respectively.

Climate and Rainfall

The District's maximum and minimum temperatures are indicated in Table VI. The climate of the district is normally good. January, February and March months are usually pleasant with moderate winds from South-East. April and May are the hottest months of the year. During these months the wind shifts to South West with increased force and brings welcome showers by the end of May. During the succeeding four months, the wind blows from Western side in major parts of the district and brings fair quantum of rainfall. By the end of September the wind is light and pleasant, reflecting the onset of North East monsoon. In November and December the weather is fine. Rainfall is rare and wind is light with occurrence of heavy dew. District's normal rainfall in a year is 630 mm. Rainfall is one of the important

TABLE V

DEMOGRAPHIC FEATURES OF KURNOOL DISTRICT AS PER 1991 CENSUS

S.No.	Particulars	Male	Female	Total
1	Total Population	15,22,618 (51.21)	14,50,406 (48.79)	29,73,024 (100)
2	Rural Population	11,28,618 (51.19)	10,76,306 (48.81)	22,04,924 (100)
3	Urban Population	3,94,000 (51.3)	3,74,100 (48.7)	7,68,100 (100)
4	Literates	6,59,794 (68.23)	3,07,180 (31.77)	9,66,974 (100)
5	Agricultural labour	3,06,223 (46.09)	3,58,126 (53.9)	6,64,349 (100)
6	S.C.s Population	2,65,918 (51.32)	2,52,190 (48.68)	5,18,108 (100)
7	S.T.s Population	29,201 (51.72)	27,254 (48.28)	56,455 (100)

(Figures in parenthesis indicate percentage to total)

Source : Directorate of Economics and Statistics, Govt. of Andhra Pradesh,Hyderabad.

TABLE VI
MAXIMUM AND MINIMUM TEMPERATURES IN KURNOOL DISTRICT IN °CENTIGRADE

S. No.	Month	Maximum			Minimum		
		Normal	1997	1998	Normal	1997	1998
1	January	31.3	33	31.5	17.0	17.1	18.4
2	February	33.3	34.3	34.3	19.3	19.0	21.4
3	March	37.5	37.9	38.9	22.5	23.9	24.1
4	April	39.3	40.7	39.5	26.0	26.9	26.4
5	May	40.0	41.9	41.1	27.2	28.1	28.5
6	June	35.6	38.0	35.6	25.0	26.0	36.1
7	July	32.5	34.8	33.3	23.8	25.0	24.3
8	August	32.1	33.0	32.6	23.5	23.9	24.1
9	September	31.9	32.5	34.6	23.3	23.3	24.3
10	October	32.4	32.1	31.9	22.4	22.4	23.1
11	November	31.0	31.2	29.4	19.2	20.6	19.8
12	December	30.3	29.1	29.6	16.6	17.7	16.2

Source : Directorate of Economics and Statistics,Govt. of Andhra Pradesh,Hyderabad.

factors that influence the cropping pattern in the district. The season wise rainfall is presented in Table VII.

The mean annual rainfall of the district for the past one decade was 505.6 mm which was less than the annual normal rainfall of 630 mm. It could be observed that maximum rainfall (69 percent) was received in South West Monsoon period followed by North-East monsoon (20.15 percent). It was also observed that rainfall received in the past 12 years during South-West monsoon period was more than Normal rainfall, upto 1991-92 except for the year 1990-91, during which it was 389 mm. From 1992-93, it showed variations and has also recorded lowest rainfall in the year 1994-95 which was 195 mm. Average rainfall received during North-East monsoon was 146.83 mm. Except for four years, i.e., 1990-91, 1993-94, 1994-95, 1995-96 the district received less than average rainfall. Highest rainfall was recorded in 1994-95, which was 299 mm followed by 289 mm in 1995-96. Rainfall was very low during the years 1988-89 and 1989-90 which were 42 and 43 mm respectively. Details on average rainfall received from 1988-89 to 1998-99 is presented in Fig.V

Soil Type

Major part of the district is predominantly endowed with black cotton soils. The soils in the North Western traversed parts by the river Hundri are black cotton soils while the South Eastern parts are predominantly poor red soils.

Irrigation intensity

Intensive cultivation of land depends on the availability of water which is an important determinant of production and performance of agriculture.

TABLE. VII

SEASON-WISE RAINFALL IN KURNOOL DISTRICT FROM 1988-89 to 1998-99

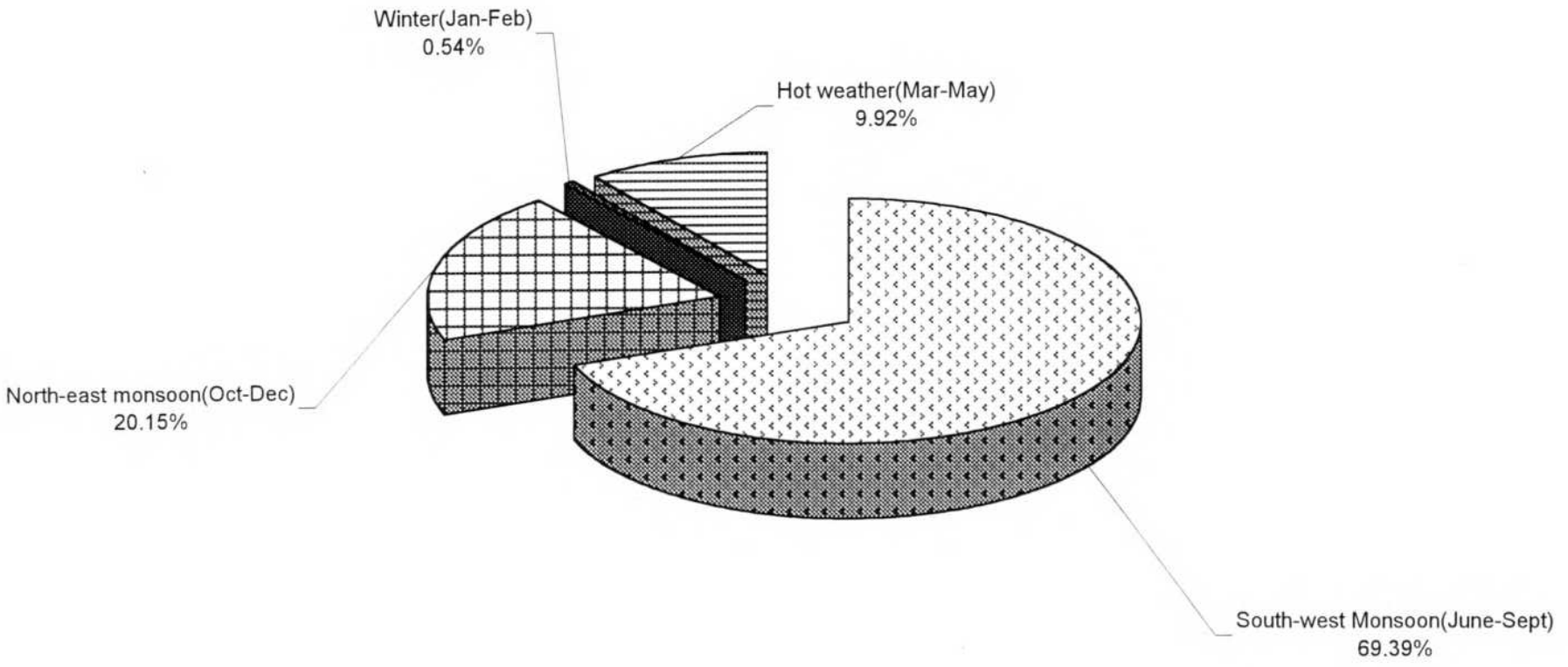
S. No	Year	Soth-West monsoon(Jun-Sep)		North-East monsoon (Oct-Dec)		Winter(Jan-Feb)		Hot Weather (Mar-May)		Grand Total	
		Normal	**Actual**	**Normal**	**Actual**	**Normal**	**Actual**	**Normal**	**Actual**	**Normal**	**Actual**
1	1988-89	449	555	112	42	4	2	65	144	630	743
2	1989-90	449	547	112	43	4	4	65	149	630	743
3	1990-91	449	389	112	162	4	1	65	57	630	609
4	1991-92	449	516	112	82	4	Nil	65	54	630	652
5	1992-93	449	404	112	122	4	Nil	65	48	630	574
6	1993-94	449	417	112	217	4	14	65	66	630	694
7	1994-95	449	194	112	299	4	10	65	60	630	563
8	1995-96	449	493	112	121	4	Nil	65	51	630	665
9	1996-97	449	661	112	289	4	14	65	64	630	1028
10	1997-98	449	408	112	121	4	Nil	65	45	630	574
11	1998-99	449	649	112	247	4	2	65	68	630	966
12	**Mean**	**449**	**505.6 (69.39)**	**112**	**146.83 (20.15)**	**4**	**3.91 (0.54)**	**65**	**72.33 (9.92)**	**630**	**728.6 (100)**

(Figures in parenthesis indicate percentage to total)

Source : Director, Meteorological centre, Hyderabad-18.

FIG. V

SEASON-WISE RAINFALL FROM 1988-89 to 1998-99 (AVERAGE)



The gross cropped area of the district is 8.44 lakh hectares of which 1.77 lakh heactares are irrigated through canals, tanks, wells and other sources (Table IX). The details of the area irrigated by different sources from 1993-94 to 1997-98 are presented in Table VIII.

On an average, the major source of irrigation was canals, constituting 46 percent of total irrigated area during the years from 1993-94 to 1997-98. Next major source of irrigation was Tube Wells and filter points which covered an area of 30,124 hectares (18 percent). The other sources of irrigation were tanks (7 percent) and lift irrigation (4 percent). It could be observed that irrigation intensity varied from 123 percent in 1993-94 to 116 percent in 1997-98.The same are presented in Fig.VI.

Land Utilisation Pattern

A study on land use pattern is essential to know the extent of area used for crop cultivation. The details of land utilisation pattern are presented in Table IX. Total geographical area was 17,28,359 hectares. Total Cropped area constituted the maximum of 48.89 percent of total geographical area(8,44,922 hectares). Forests covered an area of 3,18,250 hectares (18.41 percent). Current fallows covered a substantial area of 1,46,003 hectares which is 8.45 percent of the total geographical area, while land under other fallow lands was also substantial which was 1,31,395 hectares (7.60 percent). The cropping intensity for the year was found to be 115 percent.

Cropping Pattern

Details on area under principal crops during the year 1997-98 is presented in Table X. Cereal crops occupied nearly one-third of the area of which jowar has the maximum area of 2.02 lakh hectares constituting nearly

TABLE VIII

SOURCE-WISE AREA IRRIGATED IN KURNOOL DISTRICT (1993-94 to 1997-98)

(Hectares)

S.No.	Source	1993-94	1994-95	1995-96	1996-97	1997-98	Average
1	Canals	83,827	72,538	81,241	77,994	74,295	77,979(45.8)
2	Tanks	11,672	9,027	11,211	14,011	11,300	11,444(6.7)
3	Tubewells & Filter points	28,367	21,700	30,341	34,500	35,710	30,124(17.7)
4	Other wells	44,991	33,050	36,873	38,396	36,726	38,007(22.3)
5	Lift irrigation	7,579	9,640	6,250	6,572	6,982	7,405(4.4)
6	Other sources	2,099	6,190	9,329	9,722	1,228	5,276(3.1)
7	Net area irrigated	1,51,750	1,41,510	1,50,186	1,56,674	1,52,369	1,50,498
8	Gross area irrigated	1,87,245	1,92,195	1,87,241	1,78,535	1,77,045	1,84,452
9	Irrigation Intensity	123	136	125	114	116	123

(Figures in parenthesis indicate percentage to average gross area irrigated)

Source : District Collectorate, Govt. of Andrha Pradesh,Kurnool.

FIG. VI

SOURCES OF IRRIGATION FROM 1993-94 to 1997-98 (AVERAGE)

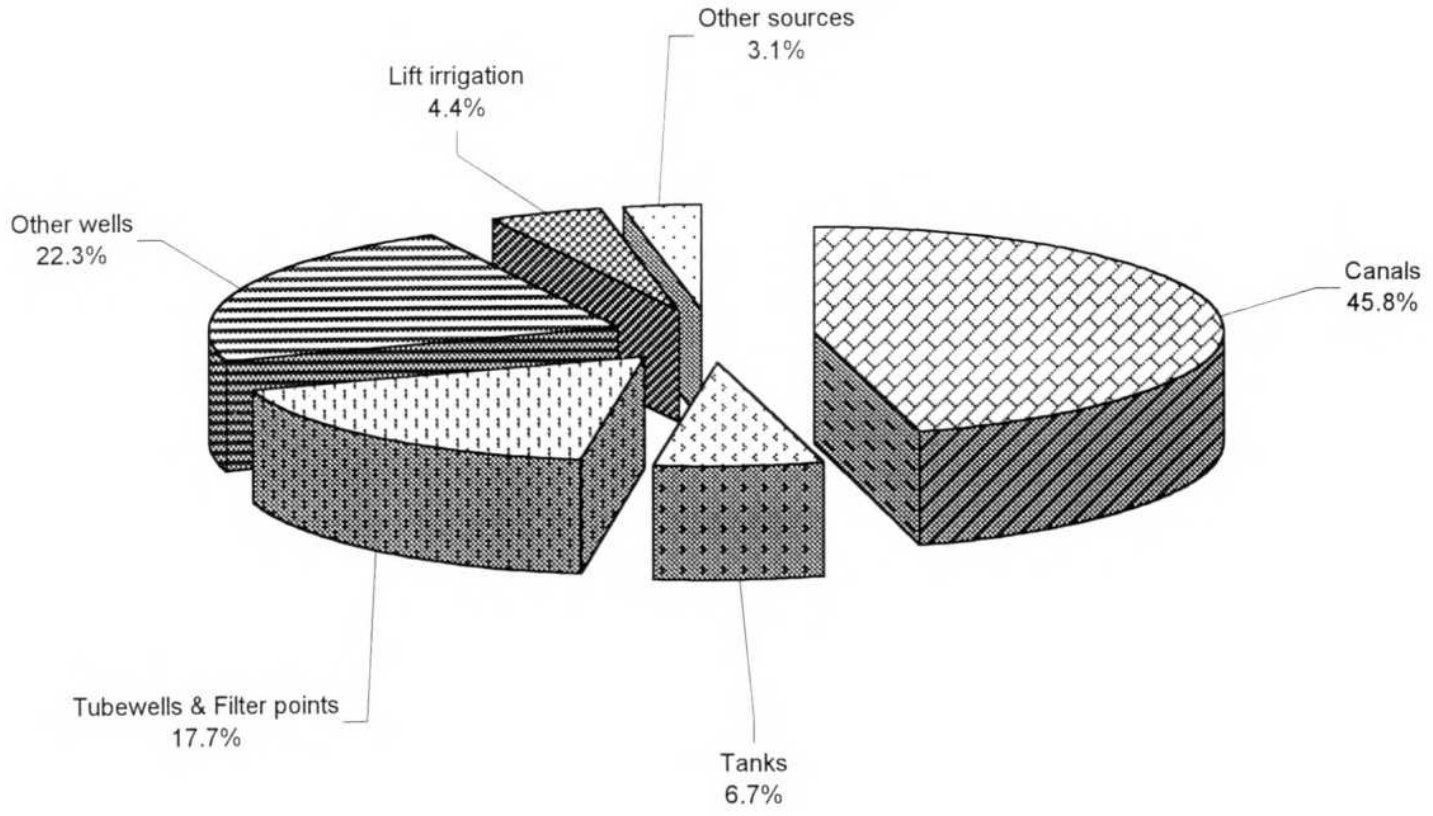


TABLE IX
LAND UTILISATION PATTERN IN KURNOOL DISTRICT IN 1997-98

(hectares)

S. No.	Particulars	Area	Percentage to total geographical area
1	Total geographical area	1728359	100
2	Forest	3,18,250	18.41
3	Barren and uncultivable land	99,374	5.74
4	Land put to non-agricultural use	1,00,808	5.83
5	Cultivable waste	81,502	4.72
6	Permanant pasture and other grazing land	4,075	0.24
7	Land under miscellaneous tree crops grown, not included in net area sown	2,030	0.12
8	Current fallows	1,46,003	8.45
9	Other fallow lands	1,31,395	7.60
10	Net area sown	734167	--
11	Area sown more than once	1,10,755	--
12	Total cropped area	844922	48.89
13	Cropping intensity	115	--

Source : District Collectorate, Govt. of Andhra Pradesh , Kurnool.

TABLE X
AREA UNDER PRINCIPAL CROPS IN 1997-98

(Hectares)

S. No.	Crop	Area	Percentage to total cropped area
1	Paddy	1,08,055	11.77
2	Maize	1,503	0.16
3	Jowar	2,01,977	21.99
4	Bajra	24,128	2.63
5	Wheat	4,234	0.46
6	Ragi	1,310	0.14
	Total Cereals	**3,41,207**	**37.15**
7	Bengal garm	48,519	5.28
8	Redgram	39,882	4.34
9	Blackgram	6,104	0.66
10	Greengram	5,781	0.63
11	Horsegram	3,024	0.33
	Total Pulses	**1,03,310**	**11.24**
12	Groundnut	2,33,643	25.43
13	Sesamum	1,408	0.15
	Total Oil Seeds	**2,35,051**	**25.58**
14	Cotton	1,83,974	20.03
15	Tobacco	22,347	2.43
16	Chillies	13,952	1.52
17	Sugarcane	541	0.06
	Total Commercial Crops	**1,56,625**	**24.04**
18	Fruits & Vegetables	12,922	1.41
19	Other Crops	5,308	0.58
	Total Cropped Area	8,44,922	100.00

Source : District Collectorate, Govt. of Andhra Pradesh, Kurnool.

22 percent. Among oilseed crops, Groundnut has the maximum area of 2.34 lakh hectares constituting 25.4 percent. Cotton ranked third in the area with an area of 1.84 lakh hectares accounting for 20 percent. Thus major crops grown in the district are jowar, groundnut and cotton respectively. The same are presented in Fig.VII.

Crop Rotation

The cropping rotation observed in the district are as follows:

(i) Paddy ------> Paddy ---> Rice fallow pulses (Groundnut)
(June-July) (Sep-Oct) (Jan-Feb)

(ii) Cotton ------> Pulses
(Aug/Sep) (Feb/Mar)

Cotton Production in Kurnool

Area, production and productivity of cotton in Kurnool for the period 1988-89 to 1997-98 are given in TableXI. Area has steadily increased during this period, reached a peak of 1.33 lakh hectares in 1996-97 as against 0.57 lakh hectares in 1988-89 except 1997-98 where it had declined to 0.90 lakh hectares.

Similar trend was observed in production also where production has increased steadily from 0.50 lakh bales in 1988-89 to 2.17 lakh bales in 1995-96, but showed a decline during the years 1996-97 and 1997-98 which were 0.20 lakh bales and 1.17 lakh bales respectively.

Productivity of cotton widely fluctuated. It was 146 Kg lint per hectare during 1988-89 and reached a maximum of 282 Kg lint per hectare in 1995-96.Erratic rainfall during this period might be the one of the factors which

TABLE XI

AREA, PRODUCTION AND PRODUCTIVITY OF COTTON IN KURNOOL DISTRICT

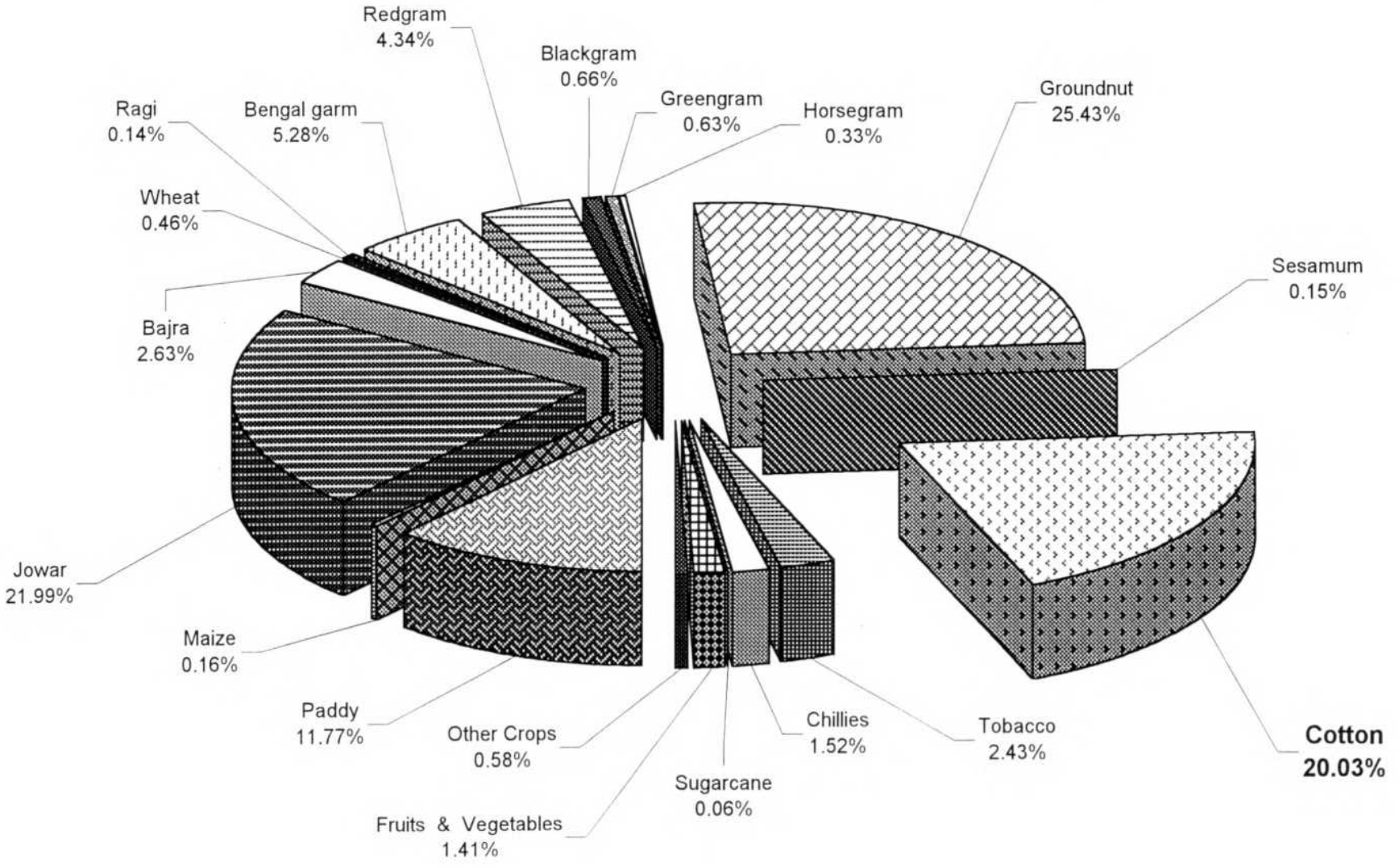
Area : '000. hectares
Production : '000. bales of 170 Kg each
Productivity : Kg lint/ha

S.No.	Year	Area	Production	Productivity
1	1988-89	57	50	146
2	1989-90	67	82	209
3	1990-91	77	77	170
4	1991-92	82	113	234
5	1992-93	83	125	244
6	1993-94	86	131	258
7	1994-95	87	138	269
8	1995-96	131	217	282
9	1996-97	133	200	254
10	1997-98	90	117	220

Souce : District Collectorate, Govt. of Andhra Pradesh ,Kurnool.

FIG. VII

PERCENTAGE OF AREA UNDER DIFFERENT CROPS IN KURNOOL DISTRICT IN 1997-98



caused variation in productivity. Thus the cotton production in this district was influenced by both area and productivity.

Infrastructural facilities:

There are 184 Primary Agricultural Credit Societies and 213 branches of various commercial banks functioning in the district and cater to the needs of credit of farmers. Besides 703 small scale industries are also in the district. There are 30 colleges for general education in the district under the management of both Private and Government, and 15 colleges for professional and special education with an agricultural college. There are three seed certification agencies and an agricultural research station which enables the seed growers to produce quality seeds and develop location specific technologies. Rural Development schemes viz., 20 point programme, Pragathipathan, Jawahar Rojgar Yojna programme and Indira Awaj Yojna programme are being implemented in the district.

Several seed producing firms in the district include Mahyco, Mahendra Hybrid Seeds Co., Zuari Agrochemicals Limited, Nath Seeds, T.N.Amareshwara Hybrid Cotton Seeds, Novartis Seeds, Ankur Seeds, Pro Agro. Hybrid seeds are made available through 878 retail outlets comprising of 593 private dealers and 285 co-operatives/ Government Depots in 1997-98.

CHAPTER V
RESULTS AND DISCUSSION

The data collected from the sample respondents were subjected to statistical analysis and the results are presented and discussed in this chapter in the light of objectives set forth. The results are discussed separately for the two groups, viz., farmers and dealers under the following heads.

A. General characteristics of the sample farmers.
B. General characteristics of the sample dealers.
C. Market share of different brands.
D. Brand awareness of different brands among farmers.
E. Attribute evaluation of different brands by sample farmers.
F. Factors influencing brand preference
G. Sources of information.
H. Problems faced by sample farmers in Hybrid cotton cultivation.

A. General Characteristics of the Sample Farmers

The general characteristics of the sample farmers have a significant bearing on the marketing of seeds by the companies. Therefore, the details of the same were analysed and the results are presented and discussed.

As the age, education and farming experience would influence the decision making of the farmers, the same were analysed and presented in Tables XII, XIII and XIV.

i. Age

The selected farmers are classified into three groups as young (less than 35 years), middle (35-45 years) and old (more than 45 years)[1]. It could be observed from Table XII that about 47 percent of the sample farmers in the district were in middle age group category, followed by young and old age groups equally which accounted to 27 percent each. In the present study, majority of the farmers (73.32 per cent) were in the young and middle age group, aged between 35-50 years. Hence, age is not a major constraint in adoption of new technology.

TABLE XII
DETAILS OF THE AGE OF SAMPLE FARMERS

S.No.	Age Group	Number of sample respondents	Percentage to total
1	Young (less than 35 years)	32	26.7
2	Middle (35 to 45 years)	56	46.7
3	Old (above 45 years)	32	26.6
	Total	**120**	**100**

ii. Education Level

It could be seen from Table XIII that 60 per cent of the sample farmers in the district had school education upto higher secondary level, only 25

[1] S.Ramesh, "An Analysis of Market Potential for Hybrid Cotton Seeds in TamilNadu", (Unpublished M.B.M. Thesis submitted to Dept. of Agrl. Economics, TNAU, Cbe, 1998).

percent were illiterates, 15 per cent of them had collegiate education. Thus education level may not be a constraint for adoption of new technologies.

TABLE XIII

EDUCATION LEVEL OF SAMPLE FARMERS

S. No.	Education level	No. of sample farmers	Percentage to total
1	Illiterate	30	25.00
2	Primary	17	14.16
3	Secondary	31	25.84
4	Higher secondary	24	20.00
5	Collegiate	18	15.00
	Total	**120**	**100.00**

iii. Farming Experience

The number of years of experience in cotton cultivation may have an important bearing on the preference of a particular brand. Therefore, number of years of experience in farming of sample farmers were examined and presented in Table XIV. It could be seen from the Table that nearly 78 percent of the total sample farmers are having an experience between 11 and more than 30 years. Thus experience in cotton cultivation may be considered

TABLE XIV

FARMING EXPERIENCE OF SAMPLE FARMERS

S.No.	Experience in years	No. of sample farmers	Percentage to total
1	Less than 10 years	27	22.5
2	11 to 20 years	27	22.5
3	21 to 30 years	52	43.3
4	More than 30 years	14	11.7
	Total	**120**	**100.0**

as one of the factors influencing brand preference. Experience in farmers in agricultural farming would have significant bearing in identification of pests and diseases and pesticides use. If experience could help them to understand the benefits of modern technology, then that would contribute to a progressive farming and use of more hybrids.

iv. Size of Land Holding of Sample Farmers

Size of land holdings of sample farmers are classified into four categories. The holdings less than one hectare comes under the category of marginal farmer, holdings between 1-2 hectares comes under small farmer and between 2-4 hectares comes under the category semi-medium, farmers having holding between 4-10 hectares comes under medium farmer and 10 and holding of above 10 hectares comes under large farmer.

Details on size of holding are presented in Table XV. Size of holdings may have a relationship with demand for a particular brand of inputs.

TABLE XV

SIZE WISE DISTRIBUTION OF LAND HOLDING SAMPLE FARMERS

S. No.	Size Group	No. of sample farmers	Percentage to total
1	Marginal (less than 1 hectare)	0	0.00
2	Small (1.01 to 2.0ha)	11	9.16
3	Semi-medium (2.01 to 4.0 ha)	34	28.34
4	Medium (4.01 to 10.0 ha)	72	60.00
5	Large (more than 10 ha)	3	2.50
	Total	**120**	**100.00**

It was observed that 60 percent of the sample farmers were under medium category of 4.01 to 10 hectares, 28 percent of farmers are of semi medium category, 9.16 percent of the farmers were having a land size holding of 1.01 to 2 hectares.

B. General Characteristics of Dealers

As the age, education and experience would influence the decision making of the dealers, the same were analysed and presented in Tables XVI,XVII & XVIII.

i. Age

The selected dealers were classified into three groups as young (less than 35 years) middle (35-50 years) and old (more than 35 years). It could be observed from the Table XVI that, 50 per cent of the sample dealers were in middle age group, followed by the young age group category (46.66). Old age group accounted for only 3.33 percent. Thus the major dealers were in the category of young and middle age groups.

TABLE XVI

AGE OF SAMPLE DEALERS

S.No.	Age group	No. of sample respondents	Percentage to total
1	Less than 35 years	14	46.7
2	35 to 45 years	15	50.0
3	More than 45 years	1	3.3
	Total	**30**	**100.0**

ii. Education Level

Based on the educational status of the dealers, they were classified into illiterates, primary (upto V Standard), secondary (upto VIII Standard), Higher secondary (upto X Standard) and collegiate (XI and above). Most of the sample dealers were having secondary education which accounted for 33.3 per cent. This is followed by dealers with higher secondary education (26.7 percent) and with collegiate education (26.7 percent). Dealers with

primary education level constituted only 13.3 percent. The details are presented in Table XVII

TABLE XVII

EDUCATION LEVEL OF SAMPLE DEALERS

S. No.	Education level	No. of sample respondents	Percentage to total
1	Illiterate	0	0.0
2	Primary	4	13.3
3	Secondary	10	33.3
4	Higher secondary	8	26.7
5	Collegiate	8	26.7
	Total	**30**	**100.0**

iii. Business Experience of sample Dealers

Dealers were classified based on their experience, with less than 5 years, 5-10 years, 11 to 15 years and above 15 years respectively. It could be observed from the Table XVIII that majority of the sample dealers were having experience between 11 to 15 years, who constituted 36.3 percent. This was followed by dealers having an experience between 5 to 10 years (33.3 percent). The number of sample dealers with less than 5 years were 5 (16.7 percent), while dealers with more than 15 years experience constituted the least which is only 13.3 percent.

TABLE XVIII

BUSINESS EXPERIENCE OF SAMPLE DEALERS

S. No.	Experience in years	No. of sample dealers	Percentage to total
1	Less than 5 years	5	16.7
2	5 – 10 Years	10	33.3
3	11 –15 Years	11	36.7
4	More than 15 Years	4	13.3
	Total	**30**	**100.0**

In the study area, it was observed that majority of the dealers were in the active age group and their educational status was appreciable in spite of their lesser experience. Hence cooperation and enthusiasm could be expected from the dealers towards the seed firms for promoting the product. Experience is not a major constraint in adoption of different promotion methods.

C. Market Share of Different Seed Producing Firms

i. Brands Sold by Dealers During 1998

Brands preferred and sold by the dealers are the reflections of the farmers preference. Therefore the brands preferred and sold by the dealers were analysed and discussed in this section.

It could be seen from the Table XIX that, Mahyco seeds was dealt by almost all the dealers, constituting 96.7 percent of the total sample. This was followed by Mahendra, where 43.3 percent of the sample dealers sold it during 1998. Next leading brand was MSSC, sold by 36.7 percent of dealers.

This was followed by Ankur and Rallis each with a percentage of 23.3. Zuari, Novartis, Amareshwara were sold by each of 16.7 per cent of dealers, Nuziveedu by 13.3 per cent of dealers. Quantity of seeds sold by dealers also gives an idea about the market share of different brands. Regarding the quantum of seed sold it was observed that nearly 58 percent of the total sales was made by Mahyco. This was followed by Mahendra, with 18.24 percent. MSSC stands third in the market share with 10.57 per cent, Rallis ranked fourth with 3.63 per cent and Ankur ranked fifth with 3.42 per cent followed by Amareshwara, Zuari, Novartis, Nuziveedu with less than 2 per cent. The details are also depicted in Fig. VIII and IX.

TABLE XIX

BRANDS SOLD BY DEALERS IN 1997-98

S.No.	Brand	No. Of Dealers sold		Quantity sold in Kgs	Percentage to total
		Numbers	Percentage to total		
1	Mahyco	29	96.7	20925	57.83
2	Mahendra	13	43.3	6600	18.24
3	MSSC	11	36.7	3825	10.57
4	Rallis	7	23.3	1313	3.63
5	Ankur	7	23.3	1238	3.42
6	Amareshwara	5	16.7	712	1.97
7	Zuari	5	16.7	675	1.86
8	Novartis	5	16.7	450	1.24
9	Nuziveedu	4	13.3	450	1.24
	Total	--	--	**36,187**	**100.00**

FIG. VIII

BRANDS SOLD BY DIFFERENT DEALERS IN 1997-98

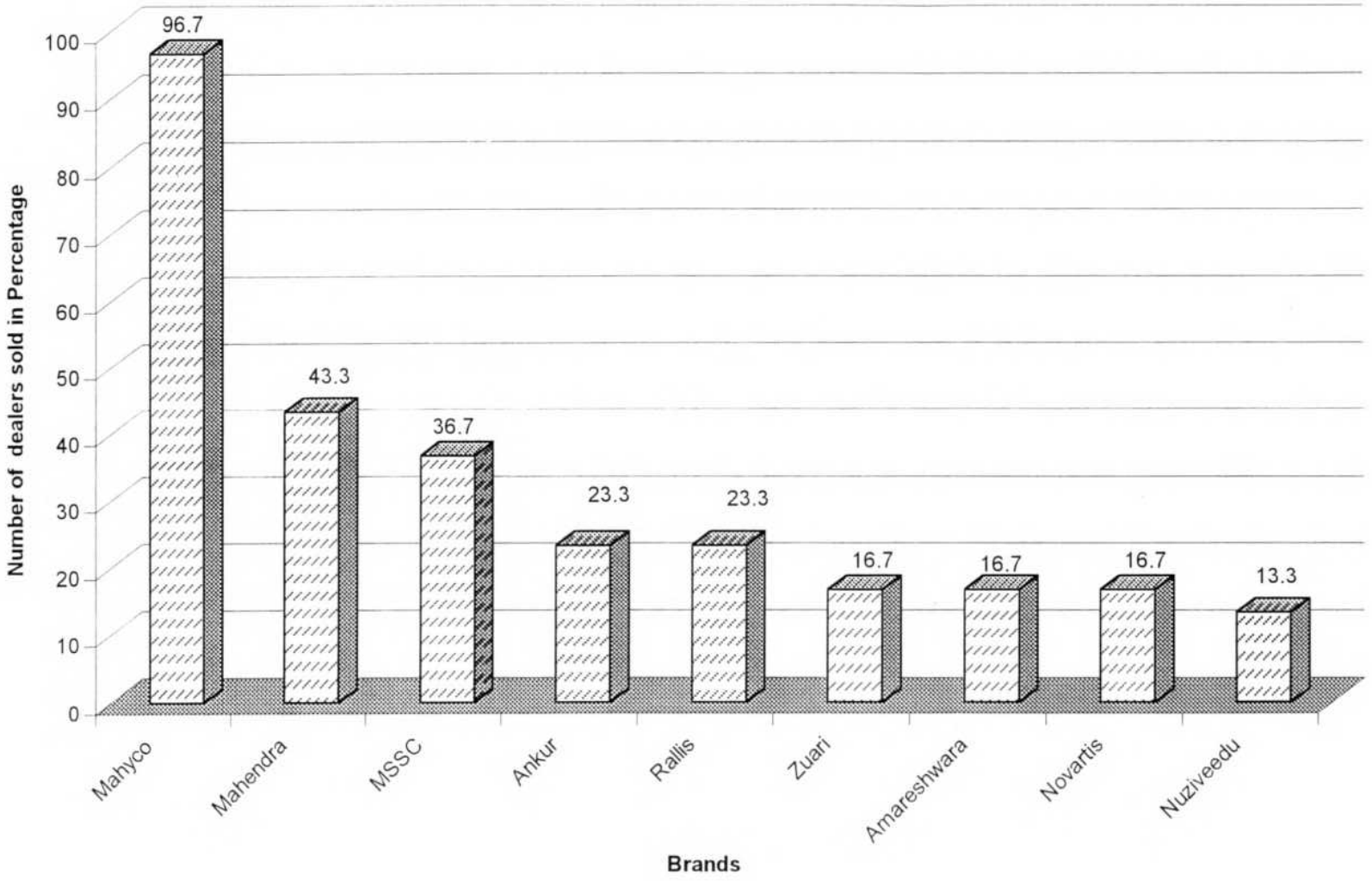
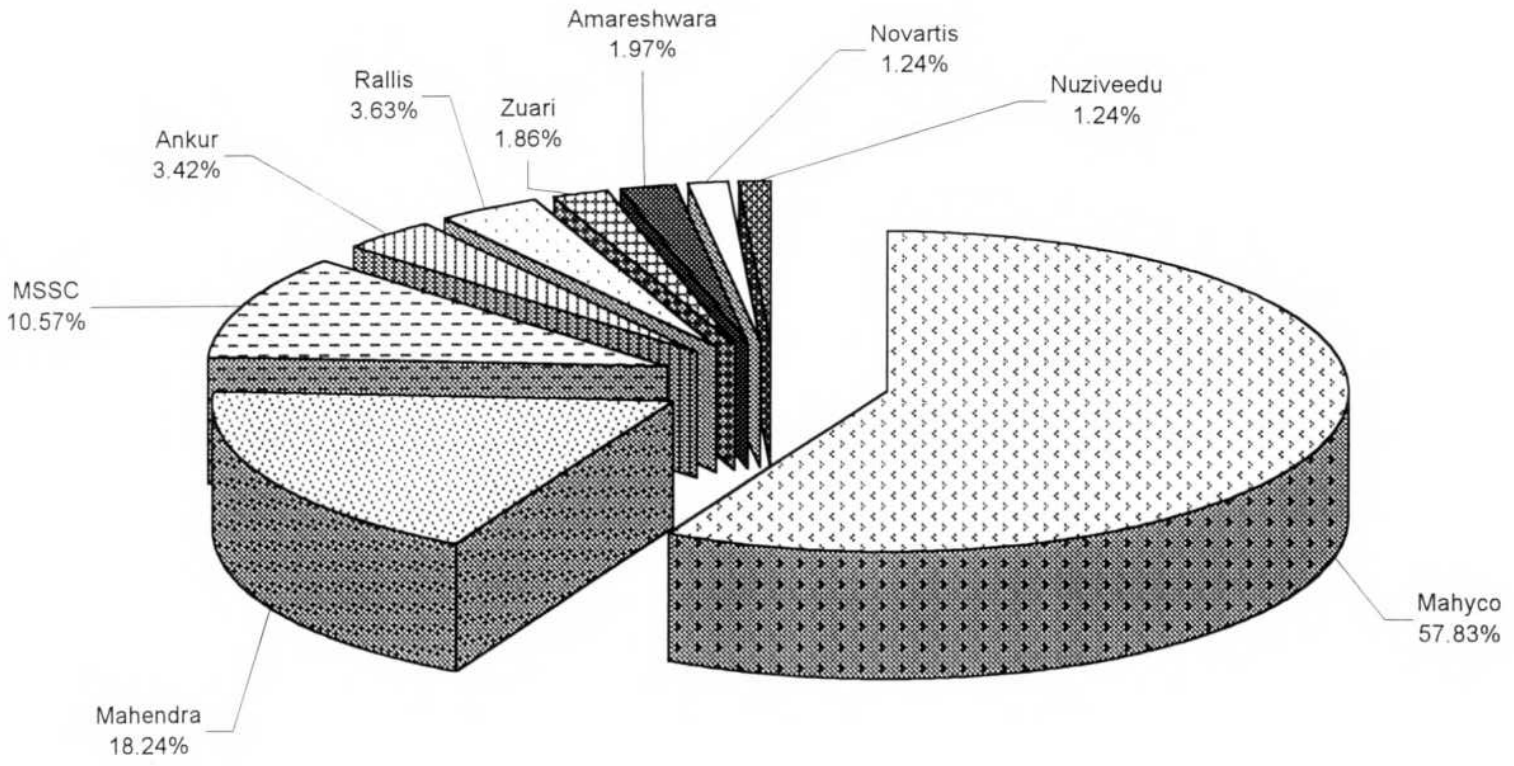


FIG. IX

MARKET SHARE OF DIFFERENT BRANDS AT DEALER LEVEL IN 1997-98



ii. Market Share of Leading Seed Firms

The market share of leading seed firms were estimated at farmer level also considering the purchase of different brands of hybrid cotton seeds in the year 1998 and presented in Table XX.

TABLE XX

MARKET SHARE OF DIFFERENT BRANDS AT FARMER LEVEL DURING 1997-98

S.No.	Brand	Quantity purchased by sample farmers in Kgs	Market share (percent)
1	Mahyco	498.00	52.05
2	Mahendra	138.00	14.42
3	Ankur	79.50	8.30
4	MSSC	68.25	7.13
5	Zuari	67.50	7.05
6	Rallis	51.75	5.40
7	Novartis	24.75	2.59
8	Nuziveedu	18.75	1.95
9	Amareswara	10.50	1.10
	Total	**957.00**	**100.00**

The total quantity of seeds purchased by sample farmers were calculated and the market share of individual firms was estimated using percentage analysis.

It could be observed that Mahyco was having a higher market share of 52.03 percent followed by Mahendra with 14.42 per cent. Ankur ranks third in market share with 8.3 percent. MSSC has a market share of 7.13 percent followed by Zuari (7.05 percent) and Rallis (5.4 percent). Novartis, Nuziveedu and Amareshwara are having a market share of less than 5 percent. The details are also depicted in Fig. X.

D. Brand Awareness among Farmers

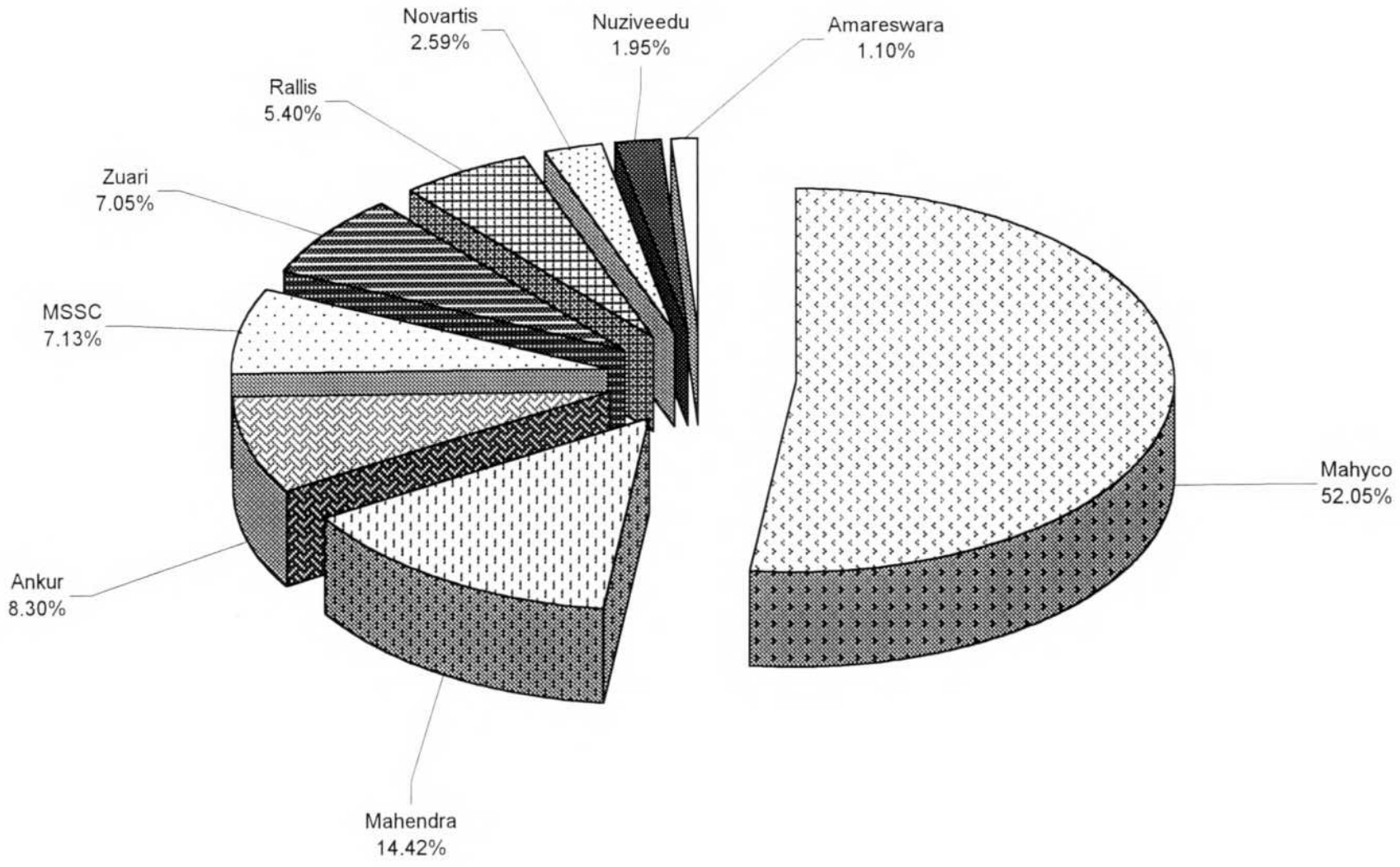
i. Awareness of Different Brands of Hybrid Cotton Seeds

The extent of awareness about the existence of different brands of hybrid cotton seed produced by several firms were assessed and the results are presented in Table. XXI.

It could be noted from Table XXI, that almost all the sample farmers (99.2) percent of the sample farmers were aware of Mahyco, Mahendra was known to 85 percent of the sample farmers. It could be seen further that 77.5 percent of the sample farmers were aware of Ankur and 76.7 percent were aware of MSSC brand. Another brand is Rallis, which was known among 68 percent of sample farmers. Other brands viz., Zuari, Novartis, Nuziveedu and Amerashwara brands, were known only among less than 28 percent of the sample farmers. Thus more than 68 percent of sample farmers were aware of brands viz, Mahyco, Mahendra, Ankur, MSSC and Rallis. Because these brands are existing in the market since a long time. Brands viz., Zuari, Novartis, Nuziveedu and Amareshwara were known to less number of

FIG. X

MARKET SHARE AT FARMER LEVEL IN 1997-98



farmers. Firms like Zuari though existing since a long time, it is not doing much campaigning, while Novartis has recently entered into the market. The details are depicted in Fig. XI.

TABLE XXI

BRAND AWARENESS BY SAMPLE FARMERS

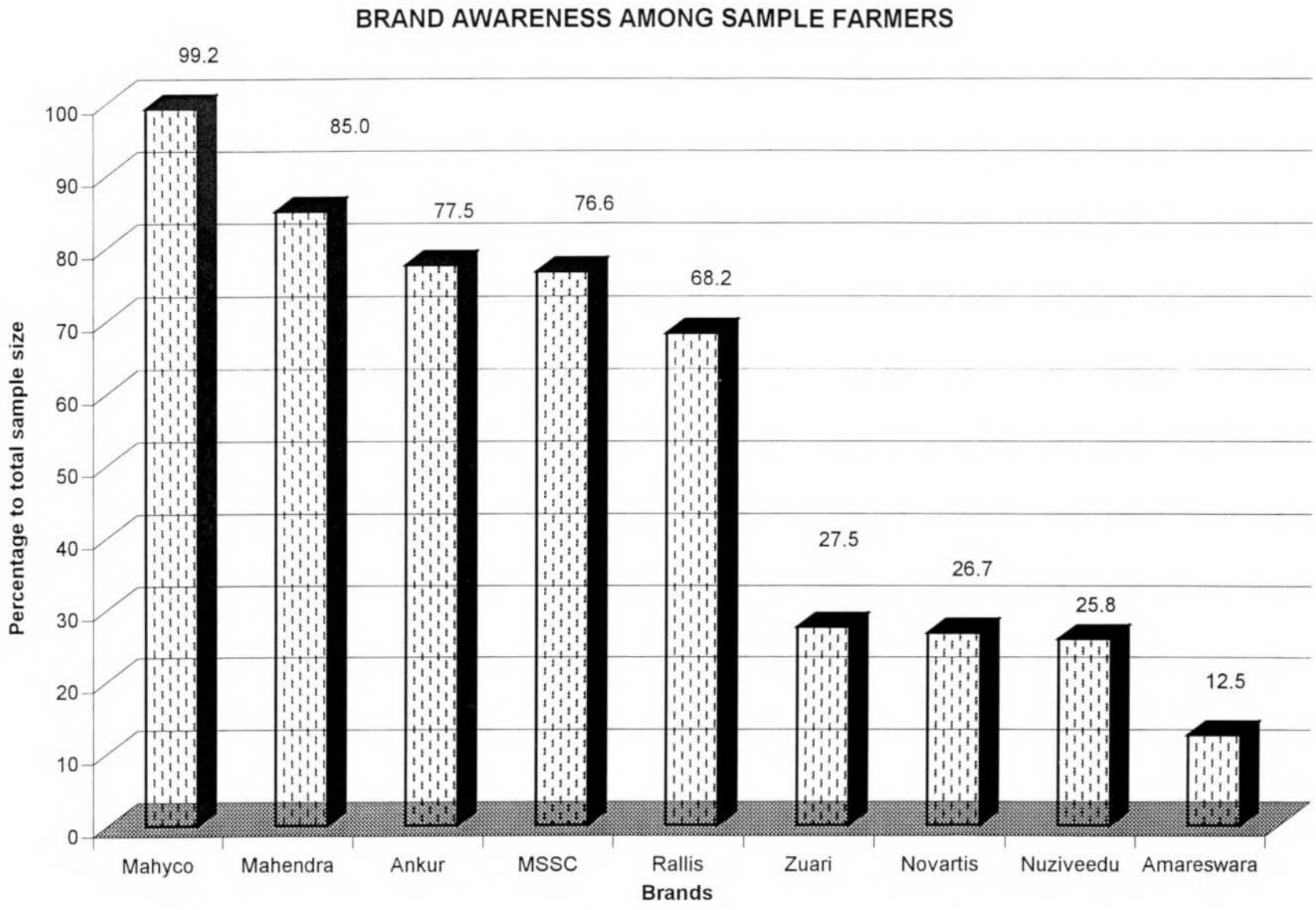
S. No.	Brand	No. of sample farmers aware	Percentage to total
1	Mahyco	119	99.2
2	Mahendra	102	85.0
3	Ankur	93	77.5
4	MSSC	92	76.6
5	Rallis	82	68.2
6	Zuari	33	27.5
7	Novartis	32	26.7
8	Nuziveedu	31	25.8
9	Amareshwara	15	12.5

E. Attribute Evaluation of Different Brands by Sample Farmers

i. Attribute Evaluation Test

Results of the attribute evaluation tests reveals that large number of farmers are favouring Mahyco and Mahendra based on the highest perceived value of more than 4 over a 5 point scale. Novartis ranked 4th in the perceived value, though it stood at position 7 in the market share as well as brand awareness. This indicates that there exists a scope for Novartis

FIG. XI


BRAND AWARENESS AMONG SAMPLE FARMERS
Percentage to total sample size
100
90
80
70
60
50
40
30
20
10
0
99.2
85.0
77.5
76.6
68.2
27.5
26.7
25.8
12.5
Mahyco
Mahendra
Ankur
MSSC
Rallis
Zuari
Novartis
Nuziveedu
Amareswara
Brands

gaining the market share. For the remaining brands, viz., Ankur, Rallis and Nuziveedu there is no much difference in the perceived value ranked 5, 6, 7 and 8 respectively. Amareshwara ranked last with a perceived value of only 3.53. The details are presented in Table XXII.

TABLE XXII

ESTIMATES OF ATTRIBUTE EVALUATION TEST

S.No.	Brand	Score	Rank
1	Mahyco	4.48	1
2	Mahendra	4.19	2
3	MSSC	4.02	3
4	Novartis	3.85	4
5	Ankur	3.8	5
6	Zuari	3.79	6
7	Rallis	3.77	7
8	Nuziveedu	3.76	8
9	Amareswara	3.68	9

ii. Weightages Given to Various Attributes

Average of weights given to each attribute by the sample farmers were estimated and presented in Table XXIII. It could be observed from the Table XXIII that, highest weightage of 56.90 was given to productivity. Though it has got more weightage, other attributes, viz., pest resistance, quality of seeds, drought tolerance and quality of cotton also contribute to higher

productivity. So, among these four factors pest resistance has got more weightage of 12.50. In Kurnool district, boll worm and whitefly are serious pests. So seed firms should concentrate more on developing pest resistant varieties. This is followed by quality of seeds which attained a weight of 11.7. So next important attribute in farmers view is, seeds should be bold and of uniform size. Next important attribute is drought tolerance with a weight of 8.90.

TABLE XXIII

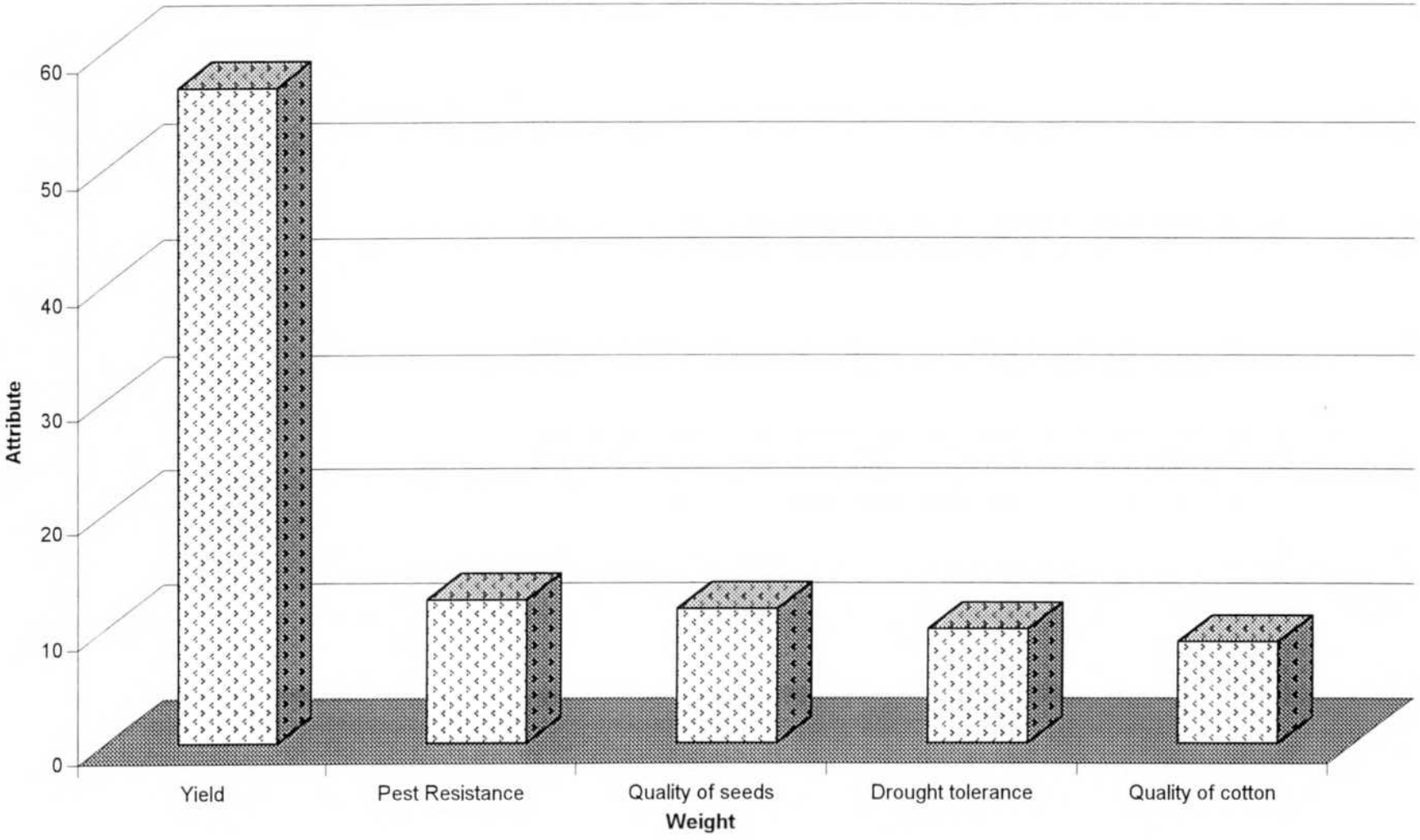
AVERAGE OF WEIGHTS GIVEN TO VARIOUS ATTRIBUTES

S.No.	Attribute	Weights
1	Productivity	56.90
2	Pest Resistance	12.50
3	Quality of seeds	11.70
4	Drought tolerance	10.00
5	Quality of cotton	8.90
	Total	**100.00**

District normal rainfall in a year is as low as 630 mm. So drought tolerance attribute in the seed also influences the brand preference by a farmer. Among the listed attributes, quality of cotton obtained least weightage. It indicates that farmers are not facing much problem in selling the cotton based on its quality. The details of different weights are presented in Fig.XII.

FIG. XII

WEIGHTAGE GIVEN TO EACH ATTRIBUTE OF QUALITY COTTON SEEDS



iii. Evaluation of Alternatives

A belief is a descriptive thought that the farmer held about the brand. Farmers were asked to rate the attribute of each brand through five point scale from 1 to 5, where 5 represents the highest level on that attribute. These beliefs may be based on knowledge, opinion or faith. Firms engaged in seed production are interested in knowing the beliefs farmers have about their product and act upon that. If some beliefs are wrong and inhibit purchase, the seed firm will have to launch a campaign to correct those beliefs.

From Table XXIV, it could be observed that, Mahyco dominated over other brands regarding, quality of seeds, quality of cotton and pest resistance in that order. Farmers have good faith over, "the bold and uniform sized seeds of Mahyco", as said by many farmers. Though the rating for pest resistance is a very low of 3.1, it is the highest among all the brands. It could also be observed from the Table that the highest rate of 3.1 for the attribute pest resistance is lower than the lowest rate given for any other attribute for any brand. From this, it could be inferred that this is the attribute of more significance on which, the seed firms should concentrate to increase their image.

Boll worm is a formidable enemy of cotton and among various management practices, host plant tolerance/resistance is rated as the top priority, not only in this region or Andhra Pradesh but the world over.

In this regard, Mahyco (in which Monsanto of USA is having 26 per cent equity), was permitted by the Government of India to undertake experiments on BT cotton in the country. From the limited results obtained in the fields, it has been observed that BT. cotton provides excellent control of

the key caterpillar pests in Indian cotton field, such as the American boll worm, the spotted boll worm and pink boll worm. From the field experiments conducted by Mahyco, it was found that there was an increase in the productivity ranging from 23-60% in 1998 experiments and 29-88% in 1999. It is hoped that with the introduction of the transgenic cotton in the near future in India, we would usher in a new era of productivity increase leading to a 'hybrid cotton revolution in India'[2].

TABLE XXIV

FARMER'S BRAND BELIEFS ABOUT VARIOUS BRANDS

Brand	Attribute				
	Pest Resistance	Quality of seeds	Drought tolerance	Quality of cotton	Productivity
Mahyco	3.1	4.9	4.2	4.8	4.3
Mahendra	3.0	4.6	4.8	4.3	4.4
MSSC	3.0	4.4	4.0	4.0	4.4
Novartis	3.0	3.8	3.8	4.0	4.2
Rallis	2.9	3.7	3.8	3.9	3.8
Zuari	3.0	3.8	3.2	4.0	4.2
Nuijveedu	2.9	3.8	3.2	4.0	4.1
Amareswara	2.8	3.6	3.3	3.7	4.0

Mahyco scored less than Mahendra over drought tolerance, while, in Productivity attribute, it was less than Mahendra and MSSC. In drought tolerance, Mahendra was rated number one, with a value of 4.8 over a 5 point

[2] P.K.Ghosh, " Indian Expriments on *Bt.* Cotton", **Agro India**, p.28-30, April 2000.

scale. Regarding Productivity, Mahendra and MSSC was given highest rating of 4.4.

So, Mahyco will be leading in overall brand image once it repositions its brand by improving the image on attribute like drought tolerance. On the other hand, Mahendra is having good image regarding the attributes, drought tolerance and productivity. Since there is no much difference regarding the image of pest resistance when compared with Mahyco, it would also be competing with Mahyco by repositioning it's brand, either by increasing the image on attributes like quality of seeds and cotton or by altering the weightage given to the attribute productivity, so that the overall score of brand image increases. In this way, several firms could apply several strategies to stimulate greater interest in their brand.

We can conclude from the above observations that pest resistant varieties is the demand of the farmers for growing cotton. By producing seeds of cotton hybrids of pest resistance the firms meet this need.

F. Factors influencing Brand Preference

In assessing what kinds of information are more effective to farmers for preferring Mahyco seeds, estimated probabilities indicated that farmers acquired more information about the brand mainly through peer groups followed by agricultural institutions. The estimated results are presented in Table XXV.

The influence of peer group and the preference of Mahyco brand by farmers was plausible as these groups have used the brand earlier and convinced with the performance of the brand in terms of productivity, quality etc. As these farmers have realised rich amount of experience in this brand

their utilisation of this brand and information passed to the neighbour farmers was highly convinced. Therefore peer group forms one of the strongest source of information for the other farmers for utilisation of the brand subsequently.

TABLE XXV
MAXIMUM LIKELIHOOD ESTIMATES OF BRAND PREFERENCE MODEL

Variable	β	SE_β	asymptotic t -Ratio	P (t)
Constant	-0.16236	0.914766E-01	–1.775	0.0759
Peer Group	0.34818***	0.72309E-01	4.815	0.0000
Packaging	-0.232388E-01	0.622369E-01	–0.373	0.7089
Education Level	0.49254***	0.679968E-01	7.244	0.0000
Dealers' Influence	0.22163E-01	0.8636E-01	–0.257	0.7975
Agricultural Institutions	0.21224***	0.73729E-01	2.879	0.0040

No. of Observations	120
Log likelihood function	-29.34582
Restricted Log likelihood	-83.11
Chi squared	107.53***
Degrees of freedom	5

*** P =< 0.01 (two tailed test)

TABLE XXVI

ESTIMATED PROBABILITIES OF EXPLANATORY VARIABLES OF BRAND PREFERENCE MODEL

Variable	Probability
Peer Group influence	0.0876***
Packaging	0.0058
Education Level	0.1239***
Dealer's influence	0.0056
Agricultural institutions	0.0534***

Education is a pre-requisite to acquire knowledge in different aspects and synthesize them for its effective utilization. As the education level of farmers increases, farmers are highly responding to the new sources of information to seek new information on brands of seeds. So education play a vital role in making decisions on preference towards particular brand.

Agricultural institutions (Research Institutions and Seed Certification Agencies) act as one of the sources of information in dissemination of information on new technology. This could be done either through testing the hybrids of the companies and certification of the same. This information will not only strengthen the reliability of quality of the seeds but also provide information about the varieties or hybrids to the farmers whenever they seek opinion.

From Table XXVI, it could be observed that variables peer group influence, education level and Agricultural institutions are significantly influencing the brand preference.

G. Sources of Information on Hybrid Cotton Seeds

The farmers would prefer a particular brand based on the information they obtained. By knowing the important source of information, seed firms can take appropriate marketing strategies to influence those sources to improve the marketing of their seeds. Farmers were asked to rank the different sources of information and the details are presented in Table XXVII.

TABLE XXVII

SOURCES OF INFORMATION ON HYBRID COTTON SEEDS

S.No.	Sources of information	Score	Rank
1	Friends / Neighbours (Peer Group)	69.82	1
2	Agricultural institutions	59.65	2
3	Radio	49.38	3
4	Television	47.19	4
5	Newspapers	40.73	5
6	Company representatives	24.0	6

Friends / Neighbours or Peer Group was ranked as the primary source of information, followed by agricultural institutions. It could be inferred that peer group acted as major source of dissemination of the needed information regarding hybrid cotton cultivation. Agricultural institutions, ranked second.

Hence it might be suggested from the results of the present study that the seed firms had to attract not only the farmers but also the agricultural institutions if they want to increase the sales volume of their seeds. Radio and Television ranked third and fourth respectively, but there is not much difference in the scores obtained. This was followed by Newspapers. Company representatives ranked last indicating that seed firms are not showing much importance in providing direct information to farmers.

H. Problems Faced by Farmers

Farmers were asked to rank the problems faced by them in hybrid cotton cultivation. The results are presented in Table XXVIII

Among several problems, Uncertainty in production due to agro-climatic changes ranked first. In the study area June-July are the months of sowing cotton. The harvesting season starts in October third week and lasts till March last week. Excessive rainfall during harvesting season coupled with low rainfall during sowing seasons results in very low productivity. This is coupled with pest / disease attack which is severe in the district. Humid climate during boll formation stage results in heavy infestation of cotton boll worms. Whitefly infestation is also heavy in the area. Non-availability of adequate labour ranked third, indicating that during harvest season, there will be huge demand for labour resulting a shortage of labour and they demand more wages resulting in increased cost of cultivation. Poor quality pesticides is another major constraint and ranked fourth. There are 93 pesticides companies in the state. Adulteration of pesticides is one of the common complaints made by the farmers.

TABLE XXVIII
PROBLEMS FACED BY FARMERS

S. No.	Problem faced	Score	Rank
1	Uncertainty in production due to agro-climatic changes	79.63	1
2	Pest / Disease problem	64.14	2
3	Non-availability of adequate labour	56.90	3
4	Poor quality pesticides	54.85	4
5	Lack of credit facilities	48.40	5
6	Lack of knowledge about appropriate pesticide	46.60	6
7	Inferior quality seeds	35.60	7
8	Seed availability	25.15	8

Lack of credit facilities is another problem faced by cotton farmers. Very few farmers were able to get loans from banks. Most of the farmers are taking loans from dealers at the rate of 3 percent to 5 percent per month. Another important problem is lack of knowledge about appropriate pesticide and their application which ranked sixth. While describing the general characteristics of the sample farmers, it was observed that illiterate constituted 25 per cent of the total sample size while farmers upto secondary education level were 40 percent. This may be the factor contributing to this problem and also the lack of dissemination about the use of different pesticides.

Inferior quality seeds and seed availability ranked 7th and 8th with least scores, indicating that they are not the major problems in hybrid cotton cultivation.

CHAPTER VI
SUMMARY AND CONCLUSION

In this chapter, a compendium of work undertaken, tools used and results obtained are presented and conclusions are drawn based on the results. The study was undertaken as a project work for M/s GANGA KAVERI SEEDS (PVT) LTD., with hybrid cotton seeds in Kurnool district of Andhra Pradesh. The study was undertaken with the following specific objectives:

i. to examine the use pattern and awareness of different brands of hybrid cotton seeds by the sample farmers in Kurnool District;
ii. to analyse the brand image of leading brands among farmers;
iii. to determine the factors influencing the brand preference of hybrid cotton seeds;
iv. to estimate the market share of major hybrid cotton seeds; and
v. to identify the major constraints in using hybrid cotton seeds by the farmers and suggesting appropriate measures to overcome them.

This study is an attempt to provide the information on brand preference by the farmers and other related aspects, in the district of Kurnool, to the case firm, M/s GANGA KAVERI SEEDS (PVT) LTD. In the Kurnool district, three mandals with cotton area exceeding the district average under cotton were selected, Viz., Mantralayam, Yemmiganur and Kowthalam. In each mandal 4 villages were selected randomly. Thus the sample consists of 120 farmers (10 from each village) chosen at random was post-stratified into small, semi-medium, medium and big farmers. 30 dealers

were selected at random based on concentration in each village (10 from each mandal). The data were collected by personal interview method using a pre-tested questionnaire.

Percentage analysis was employed to study the general characteristics of sample farmers and dealers and also for market share of various brands at farmers' level and dealers' level. Garett's ranking technique was used to rank the various sources of information on hybrid cotton seeds and also the problems encountered in hybrid cotton cultivation. Probit analysis was used to analyse the major factors influencing brand preference.

Results showed that more than 73 percent of the farmers were aged below 45 years; 75 percent of the sample farmers were literate and nearly 78 percent of the total sample farmers had farming experience of more than 10 years. Small, semi-medium and medium farmers constituted 95 percent, with holding size between 1 hectare and 10 hectares.

About 97 percent of the selected dealers were less than 45 years old; all are literate and also more than 86 percent of dealers having secondary and above secondary education level. Half of the dealers were having more than 10 years of selling experience.

Among the different brands of hybrid cotton seeds dealt by the dealers. Mahyco was sold by more than 96 percent of dealers, followed by Mahendra which was sold by 43 percent of dealers, MSSC (37 percent), Ankur (23 precent), Rallis (23 percent), Zuari (16.7 percent), Novartis (16.7 percent), Amareshwara (16.7 percent) and Nuziveedu (13.3 percent).

Market share at dealer level was found to be highest for Mahyco (about 58 percent), followed by Mahendra (18 percent), MSSC (11 percent), Rallis (4 percent), Ankur (3 percent), Amareshwara (2 percent), Zuari(2 percent), Nuziveedu (1 percent) and Novartis (1 percent).

Market share of Mahyco at farmers level was 52 percent followed by Mahendra (15 percent), Ankur (8 percent), MSSC (7 percent), Zuari (7 percent), Rallis (5 percent), Novartis (3 percent), Nuziveedu (2 percent) and Amareshwara (1 percent)

Almost all the sample farmers were aware about Mahyco (99 percent), followed by Mahendra (85 percent) This was confirmed through attribute evaluation test.

Yield was given highest weightage (57 percent) among the attributes followed by pest resistance (17 percent), quality of seeds, (12 percent) drought tolerance (10 percent) and quality of cotton (7 percent).

Farmers were having a good belief regarding the quality of seeds of Mahyco, followed by cotton quality. In attributes like drought tolerance and yield, farmers have a good belief on Mahendra.

Among the various factors, Peer group, Education level and Agricultural institutions were found to be significantly influencing the brand preference by farmers.

The major source of information on hybrid cotton seeds were peer group or friends / neighbours (69.82), agricultural institutions (59.65) and Radio and television (49.38) in that order. Among several problems faced, uncertainty in production due to agro-climatic changes ranked first, followed

by pest / disease problem and non-availability of adequate labour in that order during peak season.

Conclusions and Strategies recommended:

* More than 70 percent of the sample farmers are in the age group of less than 45 years. Since farmers are young, they can be encouraged to take up hybrid cotton cultivation intensively without much effort.
* 75 percent of the sample farmers are literate. So, they can be educated on advantages in hybrid cotton cultivation.
* Small, semi-medium and medium farmers constituted more than 95 percent. So, any strategy should take in to consideration these categories of farmers.
* Since almost all the dealers were literate they can become better source of information. Hence they can be utilised by creating awareness about several attributes of their brand.
* Mahyco brand is leading, with a market share of 52 percent. The company should go for intensive campaigning to augment their share in future.
* Since farmers are having good belief over quality seeds of Mahyco, the company should give more attention to this attribute in their seeds development and marketing. They should also create an awareness that their brand is more drought resistant than any other brand.
* Though yield is given more weightage, pest resistance is the attribute which contributes to more yield. Hence, they too can try to form a tie-up with Monsanto/Mahyco which are coming out with pest resistant cotton seeds.

* Peer group ranked first in providing information as well as in influencing brand preference. So farmers should be convinced about better attributes of their brand over other brands. Agricultural institutions may also be utilised in disseminating the information on better performance of their brand.
* Since peer group, education level and agricultural institutions are significantly influencing the brand preference the case firm should consider these three factors in development of their own brands. For influencing peer group, the case firm should carry out field demonstrations. Mass-media is the most cost-effective way of disseminating information to a larger population. Farmers should be educated about the importance of growing of hybrid cotton.
* Firms should strengthen the relation with agricultural institutions for field testing their varieties, so that they can act as a link between firm and farmers in convincing the farming community about the quality of the product of the firm.

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