ASSESSMENT OF MARKET POTENTIAL OF SAAF (Carbendazim 12% and Mancozeb 63% WP) FUNGICIDE ON TURMERIC IN MEDAK DISTRICT OF ANDHRA PRADESH

By

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PROJECT REPORT SUBMITTED TO THE
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Date: (P.Sudheer kumar)

CERTIFICATE

This is to certify that the project entitled **"Assessment of Market Potential of Saaf (Carbendazim 12% and Mancozeb 63% WP) Fungicide on Turmeric Crop in Medak District of Andhra Pradesh"**. Submitted in partial fulfillment of the requirement for the degree of Masters in Agribusiness Management of the Acharya N.G. Ranga Agricultural University, Hyderabad is record of the bonafide project work carried out by **Mr. P.SUDHEER KUMAR** under my guidance and supervision. The subject of the project report has been approved by the Students Advisory Committee.

No part of the project report has been submitted for any other degree or diploma or has been published. The published part has been fully acknowledged .All the assistance and help received during the course of investigations has been duly acknowledged by the author of the project report.

[Dr. P. RADHIKA]
Chairman of the Advisory Committee

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DECLARATION

I, P.SUDHEER KUMAR hereby declare that the project report entitled **"ASSESSMENT OF MARKET POTENTIAL OF SAAF (Carbendazim 12% and Mancozeb 63% WP) FUNGICIDE ON TURMERIC IN MEDAK DISTRICT OF ANDHRA PRADESH."** submitted to the School of Agribusiness Management, College of Agriculture, Acharya N.G. Ranga Agricultural University in partial fulfillment of the requirements for the degree of **MASTERS IN AGRIBUSINESS MANAGEMENT** (MABM) is the result of original work done by me.

Date: **(P.SUDHEER KUMAR)**

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Executive summary

Title of the project	**Assessment of market potential of Saaf** (Carbendazim 12% and Mancozeb 63% WP) **fungicide on turmeric in Medak district of Andhra Pradesh**.
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Year of Submission	**2010**

EXECUTIVE SUMMARY

The project study was carried out in the Medak district of Andhra Pradesh for United Phosphorus Limited (UPL).The title of the project is **"Assessment of market potential of Saaf** (Carbendazim 12% and Mancozeb 63% WP) **fungicide in Medak district of Andhra Pradesh".**

Objectives :

1. To study the composition of present market for fungicides on turmeric in Medak district of Andhra Pradesh.

2. To study the factors influencing dealers in promoting the fungicide and the factors influencing the farmers in choosing a fungicide for use on turmeric crop.

3. To estimate the market potential for Saaf fungicide for *kharif* 2010.

United Phosphorus Limited (UPL) incorporated in1969 is a leading global producer of crop protection products, intermediates, specialty chemicals and other industrial chemicals. UPL has its presence across value added agri inputs ranging from seeds to crop protection and post harvest activity. Being the largest manufacturer of agrochemicals in India, UPL offers a wide range of products that include insecticides, fungicides, herbicides, fumigants, PGR and rodenticides. They operate in every continent and have customer base in 86 countries, making it a global player of crop protection products in the world. The company ranks amongst the top 5 post- patent agro-chemical manufacturers in the world.

Turmeric (Curcuma longa) (Family: Zingiberaceae) is used as condiment, dye, drug and cosmetic in addition to its use in religious ceremonies. India is a leading producer and exporter of turmeric in the world. Andhra Pradesh, Tamil Nadu, Orissa, Karnataka, West Bengal, Gujarat, Meghalaya, Maharashtra, Assam are some of the important

states cultivates turmeric, of which, Andhra Pradesh alone occupies 35.0% of area and 47.0% of production.

Turmeric can be grown in diverse tropical conditions from sea level to 1500 m above sea level, at a temperature range of 20-35 degree C with an annual rainfall of 1500 mm or more, under rain fed or irrigated conditions. Though it can be grown on different types of soils, it thrives best in well-drained sandy or clay loam soil with a pH range of 4.5-7.5 with good organic status.

In Medak district, four mandals are selected from each mandal five villages are selected and from each village eight farmers were identified for the study and seven dealers from each mandal are selected randomly for the study. Thus making the total of 160 farmers and 28 dealers.

The Primary data is collected using scheduled questionnaires, through survey method. The questionnaires are prepared to elicit responses of respondents in line with the objectives of the study. The secondary data was gathered from the past records maintained by pesticides dealers, company dealers, magazines, and various sites in the internet. After completion of the survey, data was tabulated and analyzed by using different statistical techniques like percentages and averages.

The project study revealed that most of the dealers were middle aged, experienced in business and dealing not only with pesticides but also fertilizers and seeds. The dealers have good opinion on farmer loyalty and brand image towards UPL products.

Most of the dealers not satisfied with the Commission or margin, promotional activities and number of field staff.

The dealers appreciated the timely supply of products. The dealers also expressed that prices are high, non availability of different size packs of Saaf fungicide from distributors.

The project study suggested that the UPL should increase the number of field staff and promotional activities. The prices of the products should be competitive with other company products.

CHAPTER I

INTRODUCTION

India is 7th largest in geographical area and second most populous country in the world. It has a total area of 329 mha of which nearly 140 mha constitutes the cultivable area. Agriculture development in the 21 century faces some unprecedented challenges with a steady growth in the world population. The population in India is expected to reach 1329 millions in 2020. In order to meet the food grain requirements for the increasing population, there must be intensive agriculture with judicious use of inputs like fertilizers, pesticides, seeds, irrigation etc.

In India among different types of pesticides, the consumption of insecticides is nearly 61% of the total consumption of pesticides and the consumption of fungicides is nearly 18%. For many of the plant diseases prevalent in India, fungicides are currently the only practical means of control. Fungicides are a very diverse group of compounds differing widely in the physical form in which they are used and in their modes of killing fungi or suppressing fungal development. There are many small companies manufacturing fungicides who operate in small areas catering to the local needs of the farmers.

Increasing population exercise more pressure on the limited net cultivated area of 140 million hectares to produce the needed quantity of 240 to 250 million tones of food grains. This necessitates ensuring timely and increased availability of critical inputs

like credit, fertilizers, pesticides, machinery, hybrid seed and improved packages of practices to the farmers for the increased production of food grains and vegetables. The pesticide input, plays a vital role in ensuring protection from pests, diseases and weeds. In modern agriculture, plant protection is considered to be key to prospective and assured returns to investment.

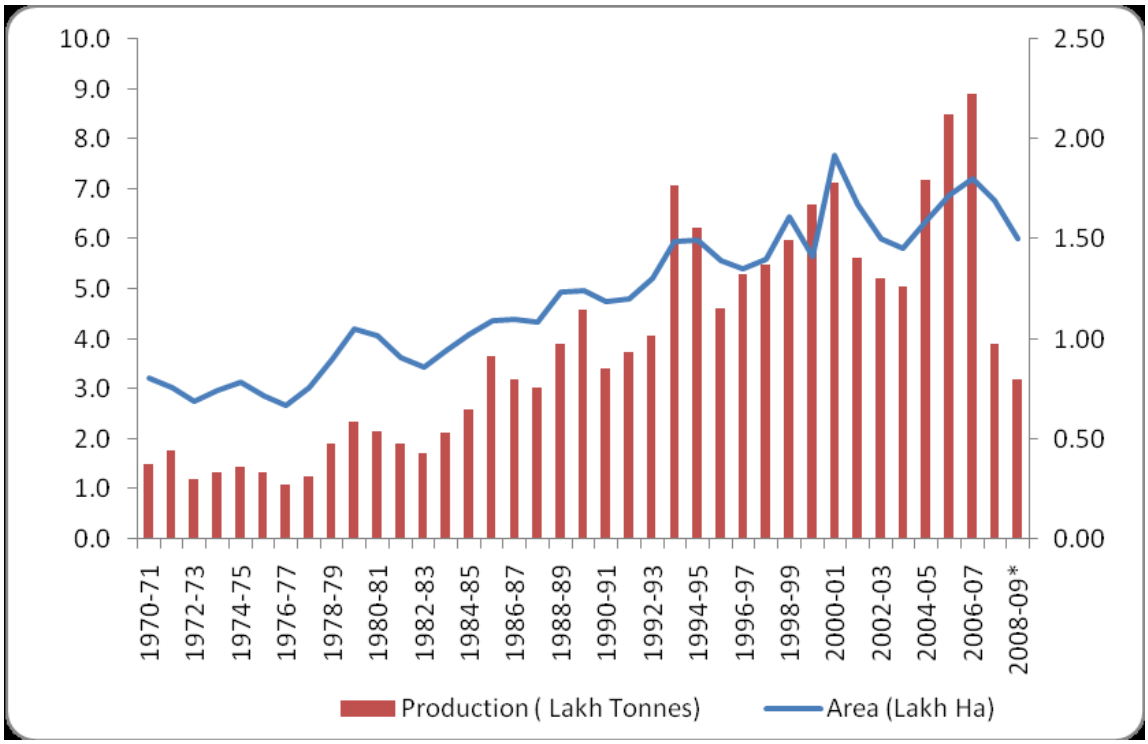
1.1 ABOUT TURMERIC:

Turmeric is a rhizomatous herbaceous perennial plant of the ginger family Zingiberaceae. India is the world's largest producer of turmeric producing 90% of the world's total production and also the largest consumer of turmeric consuming 80% of the total world's production. India is also largest exporter of turmeric contributing to nearly 90% of the world's exports. Andhra Pradesh is the major producer of turmeric in India producing nearly 40% of the total production in India. In Andhra Pradesh the area under turmeric crop is 62000ha with a production of 4.04 lakh tones. In Medak district of Andhra Pradesh turmeric is the most important spice crop that is cultivated and it occupied an area of 1770ha and the production was 7390 tonnes in the year 2008-09. Turmeric is usually affected by the leaf blotch, leaf spot and other foliar diseases which decrease the productivity of the crop. These diseases can be effectively controlled by fungicides.UPL product Saaf fungicide which is a combination of Carbendazim 12% and Mancozeb 63% WP is found to be effective in controlling leaf blotch, leaf spot and foliar diseases.

1.1.1.INDIAN SCENARIO WITH RESPECT TO TURMERIC CROP:

Production of turmeric has been increasing over a period of time, recording the highest levels in 2006-07 with an output of 8.9 lakh tonnes. However, in the last two years, output has declined as farmers shifted to other profitable crops like cotton. Turmeric prices remained below Rs 2,500 prior to 2007, while most of the commodities had rallied during that period. Farmers shifted to other commodities like chilli and cotton, especially in Andhra Pradesh, due to higher returns, thus affecting turmeric output in the last two years. Turmeric is mainly cultivated in Andhra Pradesh, Maharashtra, Tamil Nadu, Orissa, West Bengal, Karnataka, and Kerala.

Figure 1: India—Production and area underTurmeric cultivation

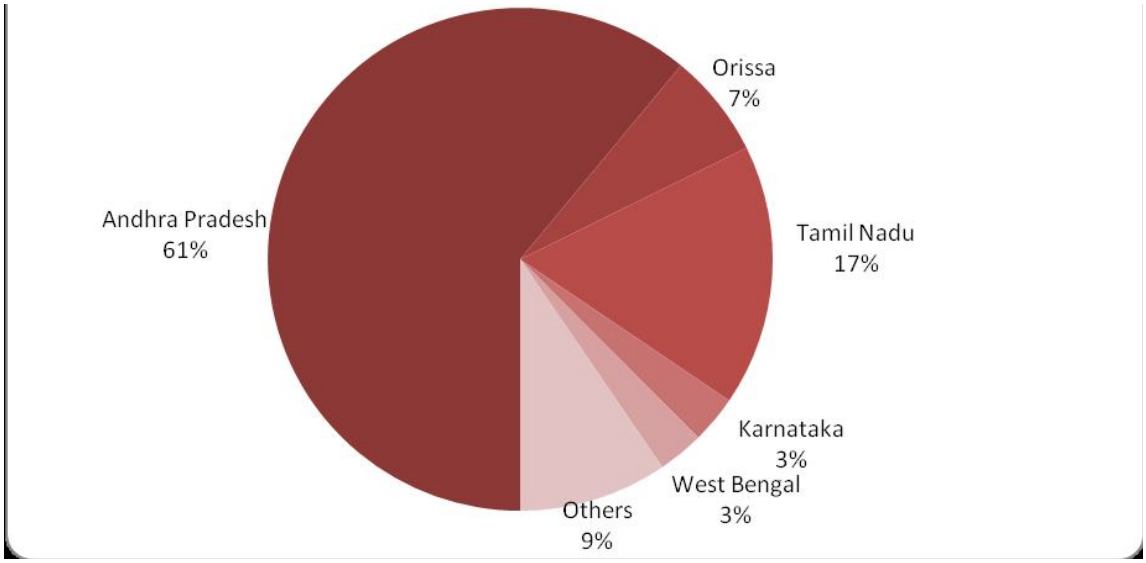


Source: Spices Board 2008-09.

Turmeric is grown in about 1.5-2.0 lakh hectares and it has gradually increased in the last three decades. Production has also improved during the period from 1.5 lakh tonnes in 1970-71 to a record output of 8.9 lakh tonnes in 2006-07. The average yield is about 3,800 kg per hectare. According to market sources, turmeric output is likely to fall to 3.2 lakh tonnes, or 18% down from last year. Andhra Pradesh is called the “turmeric bowl of India”. In 2005-06, it had highest share of 40% of India’s overall area and was highest

producer with share of 60% of total output. However, in recent years, it has lost to Tamil Nadu, which had a share of about 40% of the total output in the 2008-09 season, up from 17% in 2005-06. In Medak district of Andhra Pradesh turmeric is cultivated in an area of 1770ha in the year 2007-08 and the production was 7390 tonnes.

Figure 2: India—Turmeric production in 2008-09



Source: Spices Board.

ANNUAL LOSS IN INCOME THROUGH VARIOUS PARAMETERS FOR ALL CROPS:

Table 1.1: Loss of income by various parameters

LOSS THROUGH	**AMOUNT OF LOSS (Rs . Cr.)**	**PERCENT LOSS**
Weeds	1980	33
Diseases	1560	26
Insects	1200	20
Storage losses	420	7
Rats	360	6
Others	480	8
Total	6000	100

Source: www.indiastat.com (2010).

1.2 ABOUT PESTICIDE INDUSTRY:

India is the 13th largest exporter of pesticides and disinfectants in the world and in terms of volume is the 12th largest producer of chemicals with a value of US$ 0.6 billion. India produces 90,000 metric tones of pesticides a year. With over 400 million acres under cultivation and over 60% of the country's population dependent on agriculture, the country's economy depends on the agricultural sector to a substantial extent. India loses nearly 30% of its potential crop to insects, weeds and rodent attacks. The Agrochemicals industry plays a crucial role in protecting crops from damage by weeds, pests, insects and fungus, both before and after harvest. This helps to increase crop yields, which is important given the rate at which cultivable land is shrinking.

1.2.1 Consumption:

The per hectare consumption of pesticides in India is very low at 0.55 Kilograms when compared to developed countries, barely above that of Africa. Since the population in India is growing at a steady rate and the availability of cultivable land is limited, consumption in pesticides is expected to increase in the future, thus offering a

good potential for the players both domestic and overseas in coming year. India is currently the largest manufacturer of pesticides and the second largest producer of agrochemicals in Asia. Out of around 200 pesticides registered for use in India, 100 of technical grade are locally produced. Indian agrochemical companies account for only 35% of the total pesticides sales with Rallis share at 12%, while the remaining 65% is with MNCs. UPL enjoys a market share of 9.35% in the India pesticide market in the year 2009

The crop wise market share of pesticides indicate that cotton has the major consumption (45 %), followed by Rice (22%), vegetables (9%), plantation crops (7%), Wheat (4%), Pulses(4%), others (9%).

1.3 Threats to Agrochemical Industry:

Pesticide industry in India seems to be passing through a financial crisis. The focal causes for this are raising costs of inputs, governmental duties and taxes, and the cost of capital. There are also high rates of excise duty both on intermediates and finished products, and excise and sales taxes account for nearly 20 percent of the cost of pesticides. The industry is also constrained by regulatory norms.

1.4 Broad Categorization of pesticide industries:

The pesticide industry is classified into insecticides, fungicides and herbicides, the major products in each of the category are listed below in the table.

Table 1.2: Nature of products of the pesticide industry

S.NO	NATURE	MAJOR PRODUCTS	PURPOSE
1.	Insecticides	Monocrotophos, Phosphomidon, phorate.	To kill insect pest
2.	Fungicides	Copper oxychloride, Mancozeb, Hexaconazole	To eliminate fungus
3.	Herbicides	Aniliphos, Paraquat	To remove weeds
4.	Nematicide/Rodenticides/ Fumigants	Zinc phosphide	To kill pests in plant roots and to eliminate rodents

CONSUMPTION OF TECHNICAL GRADE AGROCHEMICALS IN INDIA:

Table 1.3: Trends in agrochemicals consumption in India

NAME	**1971-72(t)**	**1994-95 (t)**	**2008-09 (t)**
INSECTICIDES	22103	51755	66875
FUNGICIDES	2067	22895	42311
HERBICIDES	30	7620	10350
RODENTICIDES	195	1860	2555
OTHERS	74	900	1948
TOTAL	**24305**	**85030**	**124039**

Source: www.indiastat.com (2010).

1.5 COMPANY PROFILE

United Phosphorus Limited (UPL) incorporated in 1969 is a leading global producer of crop protection products, intermediates, specialty chemicals and other industrial chemicals. UPL has its presence across value added agri inputs ranging from

seeds to crop protection and post harvest activity. Being the largest manufacturer of agrochemicals in India, UPL offer a wide range of products that includes insecticides, fungicides, herbicides, fumigants, PGR and rodenticides. They operate in every continent and have customer base in 86 countries, making it a global player of crop protection products in the world. UPL ranks amongst the top 5 post- patent agro-chemical manufacturers in the world.

UPL is one of the fast growing multinational companies operating its activities in all over the world having customer base in 86 countries and 21 manufacturing sites including nine in India. Each one operates to the strict international quality standards. All company's units are certified under the ISO 9001 for quality assurance, 14001 for environmental pollution control norms and OHSAS18001 for health and safety, making company as global player of crop protection products in the world.

The company has R&D strategies is to continue to invest in innovative formulations that are environment and user friendly which express the company is wholly committed to sustainable agriculture. UPL has the commitment and capability to offer total support from start to finish in the agriculture sector.

UPL has established broad product line by introducing new products every year that cater to the crop protection needs of a plant during all stages of growth. UPL has developed more than 100 insecticides, fungicides, herbicides, fumigants and rodenticides for every stage of the crop growing cycle. UPL is also playing a pioneer role for using latest technology, the most recent being an integrated Caustic Chlorine plant using the latest membrane technology creating basic building blocks for agrochemicals and specialty chemicals.

UPL product Saaf which is a combination of Carbendazim 12% and Mancozeb 63%WP is found to be effective in controlling leaf blotch, leaf spot and foliar diseases on turmeric crop.

1.5.1 UNITED PHOSPHORUS LIMITED VISION:

The vision UPL is to be world class organization by:

- Enhancing values to our customers and other stakeholders.
- Caring for employee to work as a motivated team in an open and learning environment.
- Setting challenging new standards of performance.
- Focusing on total quality, innovation and responsible care towards the environment.

1.5.2 UNITED PHOSPHORUS LIMITED MISSION:

The UPL Mission focuses on:

- Manufacturing and Supplying Crop Protection and Speciality Chemicals Worldwide.
- Providing solutions to optimize farm productivity for the farmer through innovative and cost effective products to provide the customer better value for money.

1.5.3 PRODUCTS OF UNITED PHOSPHORUS LIMITED:

UPL has wide range of insecticides, fungicides and herbicides that have been designed keeping the Indian crops in perspective, with emphasis on rice, cotton and vegetables. Some of UPL popular products are fungicides such as Saaf, Unilax, Rampart, and Conquer and herbicides such as Uniquat, Jhatka, Total, Saathi, Sweep and insecticides such as Imidagold, Josh, Lancer, Renova, Viraat, Cyrux and Doom. Rodenticides like Ratol and plant Growth regulators such as Ashwarya granules are popular products.

1.5.4 FUNGICIDES OF UPL:

Fungicides prevent and cure fungal plant diseases, which affect crop yields and quality. Fungicides with state-of-the-art technology and a comprehensive product range provided UPL with market growth opportunities in this sector, particularly in fruits and vegetable production

Fungicides are crucial to protect crop yield by fighting against fungal diseases, especially in cereals, fruits, vegetables and vines. They are typically used in combination or series to provide effective control, while minimizing the emergence of fungal resistance.

The important UPL fungicides in India are Saaf, Unilax, Rampart, Conquer, Samar, Uthane M 45. The information of the fungicide brands of UPL is given in the table.

Table 1.4: Fungicides produced by United Phosphorus Limited.

Brand Name	Technical Name
Saaf	Carbendazim12%+Mancozeb 63% WP
Conquer	Hexaconazole 5 % EC
Rampart	Metalaxyl 35% WS
Samar	Tricyclazole 75 % WP
Unilax	Metalaxyl-8%+Mancozeb-64% WP
Uthane M 45	Mancozeb 75% WP

Source: www.unitedphosphoruslimited.com.

Features of United phosphorus Ltd:

1. High quality inputs (pesticides, herbicides and fertilizers).
2. Ideal products for all type of crops in both seasons.
3. Nationally UPL products are available at reasonable price.
4. Scientifically formulated with excellent performance of input.
5. Manufactured, packed and sealed in fully safety equipment.
6. Backed by well experienced technical staff.
7. Good distribution network.
8. Adherence to strict quality certification.
9. New developed products were tested successfully at number of farms.

CHAPTER II

METHODOLOGY

The present chapter deals with the description of the method, the different steps followed in the course of this project.

2.1 Objectives of the project

The project was undertaken with the following objectives:

- To study the composition of present market for fungicides on turmeric in Medak district of Andhra Pradesh.
- To study the factors influencing dealers in promoting the fungicide and the factors influencing the farmers in choosing a fungicide for use on turmeric crop.
- To estimate the market potential for Saaf fungicide for *kharif* 2010.

2.2 Scope of the study:

The survey undertaken under this project estimates the market potential of Saaf fungicide by knowing the composition of present market for fungicides on turmeric in Medak district. It also helps in identifying the fungicides brands selling in the region to enable UPL products to compete with them. The study probes to understand in broader sense the psyche of farmers in decisions related to purchase of fungicides. It also tries to know which factors have a influence on dealers in promoting a particular brand of

fungicide. Though findings of study are specific to surveyed area, they can be generalized to other regions.

2.2.1Area of the study:

The district selected for the survey in Medak district of Andhra Pradesh.

2.2.2 Period of study:

The study was conducted during the months of May and June 2010.

2.2.3 Area of survey:

The areas surveyed for collecting data from farmers and dealers are listed in the following table.

Table 2.1: List of mandals in medak district in which survey is conducted.

Sl.N	Dist.	Mandals	Villages
1.	Medak	1.Kohir	Budheer,Kankol, Kadaliru, Kondapaka, Chinapally.
		2.Zahirabad	Bubhnelly, Budidapadu, Gangavar, Ranjol, Baswantpur.

		3.Sadasivpet	Jeerapally,Devarampally,Thoramamidi,Ginhyapally, Khanapur.
		4.Sangaredy	Valdhi,Gudlervagu,Nanganur,Murpally, Kodurpet

2.2.4 Selection of Sample:

Sampling method of random sampling is used to select the sample for the study.

2.2.5 Sample size:

In Medak district, four mandals are selected. In each mandal five villages are selected and from each village eight farmers are selected randomly for the study. From each mandal seven dealers formed the sample. Thus making the total of 160 farmers and 28 dealers as the sample.

2.2.6Sources of data:

In view of the objectives of the study both primary and secondary data were collected from the below mentioned sources to make the report authentic and useful.

2.2.6.1 Primary data:

The Primary data will be collected using scheduled questionnaire, through survey method. The questionnaires are prepared to elicit responses of respondents in line

with the objectives of the study. These questionnaires were administered in person to the farmers and dealers.

2.2.6.2 Secondary data:

Secondary data isgathered from the past records maintained by pesticide dealers, Company dealers, magazines, journals and various sites in the internet.

2.7 Method of survey:

Separate questionnaire would be used to elicit responses from farmers and dealers. This questionnaire contains mostly closed ended questions and few open ended questions.

2.8 Method of analysis:

The data collected would be analyzed by using percentages, ratios, and other statistical tools in order to draw valid conclusions.

2.9 Limitations of the project:

Lack of conveyance facility to reach and interact with farmers and time constraint which did not make it possible to spend much time in interaction with the respondents are the major limitations of the study.

CHAPTER III

DESCRIPTION OF THE STUDY AREA

The physical and economic environments of any given region are the major determinations of production and marketing of any commodity. Information regarding agro climatic factors like rainfall ,land use pattern, area under different crops, sources of irrigation, soil colour etc., were collected to understand the characteristic features of the study area. The details are presented in this chapter.

3.1 ABOUT MEDAK DISTRICT

Medak District is located in the state of Andhra Pradesh, India. Sangareddy is the district headquarters of Medak. The district had a population of 2,670,097, of which 14.36% were urban as of 2001 census. Medak is located at 18.03° N 78.27° E. It has an average elevation of 442 meters (1450 feet).

The geographical area is 9699 Sq.kms spread over 923 villages in 45 mandals of which 866 are inhabitated villages and 57 villages are either un-inhabitated or submerged under irrigation projects/tank.

It is situated at a considerable distance from the Sea coast. Agriculture is the backbone of the district's economy and about 81% of the working population depend on agriculture. The main crops grown are paddy, sugarcane, maize, turmeric, cotton, groundnut, sunflower and pulses etc. Forest is one of the natural resources of this district.

3.1.1PROFILE OF THE MEDAK DISTRICT

Table 3.1: District Administration of Medak district

S.No	Particulars	Details
1	**Geographical Area**	**9699** Sq. Kms.
2	No. of Revenue Divisions	3
3	No. of Mandals	45
4	Total no. of Villages	923
5	Un-inhabited Villages	61
6	Total no. of Gram Panchayath	718
7	Municipal Corporation	Medak

Source: District Chief Planning Officer, Medak District.

3.2 Land use pattern

Majority of the cultivable land is under irrigation condition, which is above 60 percent, while 40 percent of the area is under irrigation.

The main crops grown are paddy, sugarcane, maize, turmeric, cotton, groundnut, sunflower and pulses etc. The land use pattern of Medak district is presented in the following table.

Table 3.2: Land utilization pattern agriculture in Medak district.

S.No.	Category	Area in Lakh hectares
1.	Forests	1.69
2.	Barren and uncultivable land	0.49
3.	Land put to non-agricultural uses	0.83
4.	Cultivable waste	0.17
5.	Permanent pastures and other grazing lands	0.26
6.	Land under miscellaneous trees and grooves	0.04
7.	Current fallows	1.77
8.	Other fallow lands	0.76
9.	Net area sown	2.05
10.	Total geographical area	8.06
11.	Net irrigated area	3.01

3.2.1 SOIL

The important soils prevailing in the district are black and chalka (Sandy loams) covering 55% and 45% respectively of the total area.

3.3.Demography

The total population of the Medak district is 26.62 lakhs, out of which 22.77 lakhs are residing in rural area and 3.84 lakhs in urban areas. The literacy rate of the district is 56.78 percent. The demographic details of the Medak district are given in the table

Table 3.3: The demographic features of Medak district.

S.No	Particulars	Details(in lakhs)
1	**Total Population**	26.62
2	**Male**	13.47
3	**Female**	13.15
4	**Population density per Sq. Km**	274
5	**Urban Population**	3.84
6	**Rural Population**	22.77
7	**Decadal Population Growth rate**	17.29
8	**District Average unto 2008:**	60.78%
9	**Male :**	65.52%
10	**Female:**	40.68%

Source: District Chief Planning Officer, Medak District.

3.4 IRRIGATION (Area in Hectares)

Table 3.4: Area under irrigation (source wise) in Medak district.

S. No.	Source of Irrigation	2007-08	2008-09 (Kharif Only)
1	**Canals**	12514	8693
2.	**Tanks**	10086	18553
3.	**Tube Wells & Filter points**	157640	120182
4.	**Other Wells**	5522	5370
5.	**Lift Irrigation**	3149	4172
6.	**Other Sources**	446	0
7.	**Net Area Irrigation**	124503	146295
8.	**Gross Area irrigated**	189358	156970
9.	**Area irrigated more than once**	64855	10675

Source: Joint director of agriculture – Medak District and District Chief Planning Officer, Medak District.

3.5 LAND HOLDING PATTERN:

Table 3.5 : Land holding pattern of Medak District

S.No	Particulars (Size)	No. of Holdings	Area (in ha.)
1	**Below 1 ha**	2,68,844 (66.40%)	1,19,597 (29.19%)
2	**1 to 2 ha**	91,003 (22.48%)	1,26,611 (30.89%)
3	**More than 2 ha**	45,058 (11.12%)	1,63,606 (39.92%)
4	**TOTAL**	**4,04,905 (100.0%)**	**4,09,814 (100.0%)**

Source: District Chief Planning Officer, Medak District.

From the table it is inferred that the number of holdings is more for below 1ha and the area for the land holding pattern is more than 2ha.

Table 3.6: Production and productivity of principal crops, during kharif 2008-09 in Medak district.

S.No	Name of the crop	Area covered during the *kharif*,2008-09 (in Ha)	Yield Per Ha(Kgs)	Production (in M.Ts.)
1	**Green gram**	15156	182	2758.392
2	**Black gram**	15914	198	3150.972
3	**Cotton (Lint)**	5074	513	2602.962
4	**Red gram**	3171	320	1014.72

5	**Turmeric**	1306	1139	1487.534tonnes
6	**Soya bean**	30280	1290	39061.2
7	**Maize**	53241	2641	140609.481

Source: Joint director of agriculture – Medak District

Table 3.7: Production and productivity of principal crops, during rabi 2008-09 in Medak

S.No	Name of the crop	Area covered during *rabi* 2008-09 (in Ha)	Yield Per Ha (Kgs)	Production (in M.Ts.)
1	**Paddy**	45914	5500	252527
2	**Jowar**	17813	1500	26719.5
3	**Bajra**	4770	1100	5247
4	**Maize**	8221	5500	45215.5
5	**Bengal gram**	27688	2000	55376
6	**Black gram**	1899	1000	1899
7	**Green gram**	1062	800	849.6
8	**Sunflower**	31593	1750	55287.75
9	**Turmeric**	1200	2000	3000 tonnes

Source: Joint director of agriculture – Medak District

The table shows during the *kharif* 2008-09 the production and productivity of paddy is highest followed by maize and during *rabi i*t is highest for paddy

Table 3.8 : different commodities showing present market rates in comparision to MSP (Rs / Quintal)

S.No	Commodity	Variety	MSP Price	Present market rates
1	Paddy	Grade-A	650	700
2	Paddy	--	620	700
3	Jowar	--	540	600
4	Maize	--	540	735
5	Bajra	--	540	--
6	Ragi	--	540	--
7	Red gram	--	1750	1900
8	Green gram	--	1750	2500
9	Black gram	--	1750	2700
10	Ground nut	--	1750	--
11	Soya bean Yellow	--	1020	1100
12	Soya bean Black	--	900	1100
13	Sesamum	--	1560	--
14	Niger seed	--	--	--
15	Sunflower	--	1500	1950
16	Turmeric	Alleppy	2200	3700

Source: Joint director of agriculture – Medak District

Data from the table shows that the turmeric possess high MSP when compared to the other commodities hence it is regarded as one of the major commericial crop.

3.6 TOTAL AREA UNDER DIFFERENT CROPS IN MEDAK DIST. (2008-09)

Table 3.9: Area under different crops in Medak district Kharif as well as in Rabi (2008-09).

S.No.	Category	Crop	Area in hectares Kharif	Area in hectares Rabi
1.	**Cereals and millets**	Paddy	**104466**	49959
		Bajra	**-**	6790
		Maize	**53241**	8221
		Jowar	**1306**	17813
		Total area	**175520**	**82783**

2.	**Pulses**	Green gram	15196	10620
		Black gram	15914	1899
		Red gram	3171	1064
		Total area	**34281**	**13583**
3.	**Oil seeds**	Groundnut	158	2474
		Sunflower	2500	3139
		Soya bean	3043	--
		Total area	**6880**	**8113**
5.	**Vegetables**	Total area	310	2511

Source: Joint director of agriculture – Medak District

CHAPTER IV

RESULTS AND DISCUSSION

The results of the study are presented and interpreted in two sections.section-1 deals with the responses gathered from the farmers whereas section-2 is concerned with the analysis of the dealer's responses about fungicides.

SECTION-A

The information presented in this section of the chapter is in pertinence to the farmers in the study or surveyed area. The findings of the study are presented and discussed in this chapter under the following sections.

4.1. General characteristics of the sample respondents:

The general characteristics of the sample units are prerequisites for better understanding of the circumstances under which the farmers make their decision in purchasing as well as using fungicides and following other plant protection measures. Hence general characteristics of the sample like educational level, land holding, major crops grown by farmers, amount spend on chemicals of pest and diseases per acre per season were discussed.

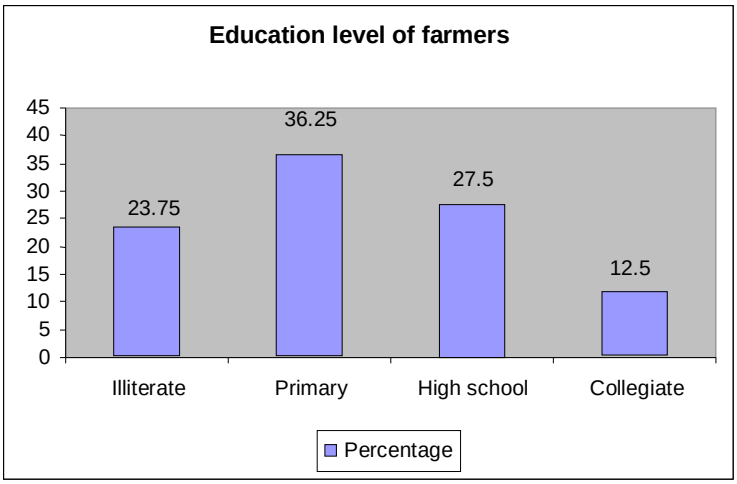
4.1.1 Education status of farmers:

As knowledge plays an important role in decision making regarding every situation, data regarding the educational levels of respondents was collected. Designing of farmer interaction methods and publicity patterns should be based on the knowledge levels of the target consumers. The data regarding educational levels of respondents in Medak district is presented in the following table.

Table 4.1: Educational Levels of the farmers in Medak District.

Educational level	**Medak District**	
	No. of Respondents	Percentage
Illiterate	38	23.75
Primary	58	36.25
High school	44	27.50
Collegiate	20	12.5
Total	160	100

Figure 4.1 : Educational Levels of the farmers in Medak District



It is evident from the table that majority i.e. 36.25 percent of farmers in Medak have completed primary education. Where as 27.50 percent are high school educated and 12.5 percent of the farmers have higher (Collegiate) education and the remaining 23.75 percent are illiterates.

The promotional campaigns and other awareness programms regarding pesticides should be designed in keeping in view the educated farmers. These groups of farmers are the early adaptors and constant monitoring should be employed for the sake of illiterate farmers.

4.1.2 Land holding:

Data regarding land holding of the farmers will be helpful in categorization of farmers into small, marginal and large farmers based on acreage. This way of categorization will be helpful in proper market segmentation and in formulation of appropriate marketing strategies for the target groups.

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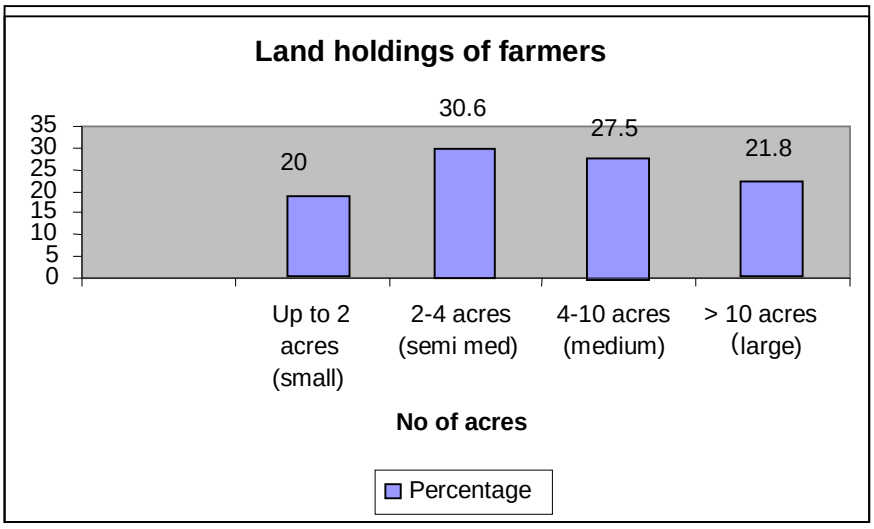
Table 4.2: Land Holding of farmers in Medak district

Acreage	Medak District	
	Frequency	**Percentage**
Up to 2 acres (small)	32	20
2-4 acres (semi med)	49	30.625
4-10 acres (medium)	44	27.5
> 10 acres (large)	35	21.875
Total	160	100

Information gathered regarding land holding reveals that, in Medak district about 20 percent of farmers are having land below 2 acres and they come under small size farmers. About 30.6 percent of farmers falls in the semi-medium category and 27.5 percent of the farmers are having land 4-10 acres and they come under medium category where as 21.8 percent of farmers are having land more than 10 acres i.e. large size category.

To sell any product and to gain market share, medium and large farmers have to be targeted first as they have economic ability to initiate and also small farmers usually get influenced by the practices followed by the medium and large farmers.

Figure 4.2: Land Holding sizes of Farmers in the Study Area.



4.1.3Frequency of fungicides application by farmers:

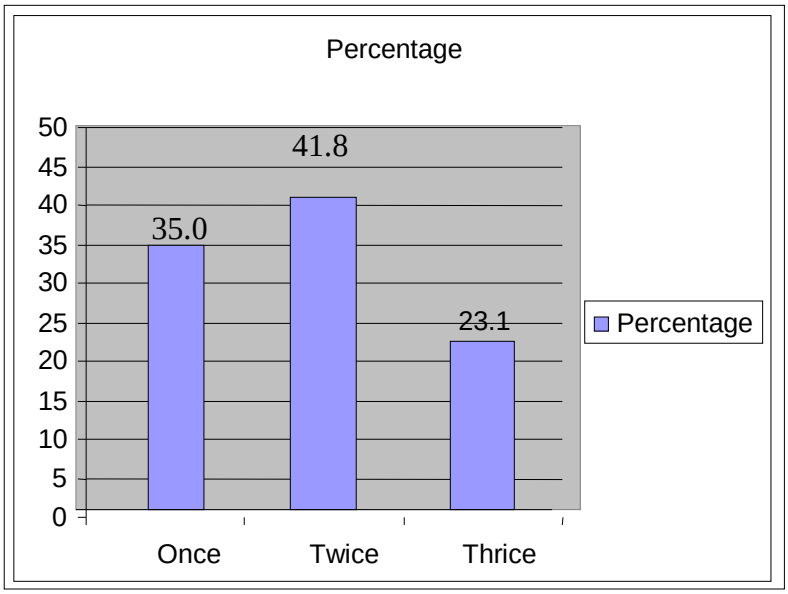
This question was posed to the farmers to assess their No. of Resp. of fungicide spray in a crop season. This is one of the important factors which help in identifying the market potential of fungicides in the surveyed area.

Table 4.3: Number of applications followed in case of fungicides.

Number of Applications	Frequency	Percentage
Once	56	35.0
Twice	67	41.875
Thrice	37	23.125
Total	160	100

It has been inferred from the study that 35 percent of the farmers go for Fungicide spray only once. About 42 percent of farmers go for twice spray. Where as 23 percent of the farmers go for fungicide spray thrice.

Figure 4.3 : Frequency of Fungicide applications



4.1.4 Aware of Saaf fungicide:

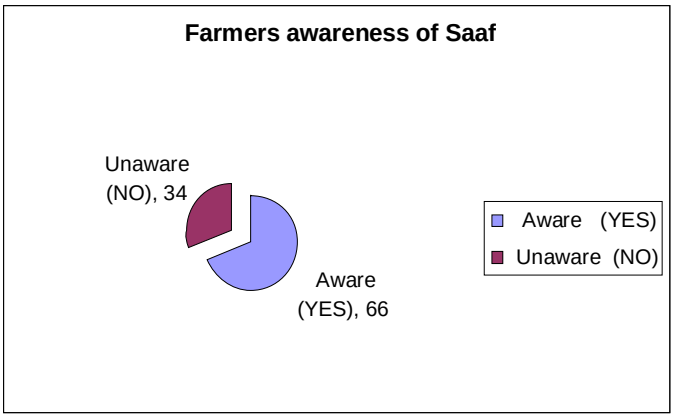
The question was posed to the farmers to know the extent of awareness about (Saaf fungicide) among the farmers in Medak district. Designing of awareness programs and publicity patterns should be based on awareness level among the farmers. The data regarding awareness level is shown in the following table.

Table 4.4 : Awareness of Saaf among the farmers.

Farmers opinion	No. of Respondents	Percentage
Aware(Yes)	106	66.25
Unaware(No)	54	33.75
Total	160	100

It is evident from the table that most of the farmers i.e. 66 percent farmers are aware about the Saaf, where as only 34 percent farmers are unaware about the Saaf product.

Figure 4.4: **Farmers awareness of Saaf.**



4.2 Spraying Of Saaf:

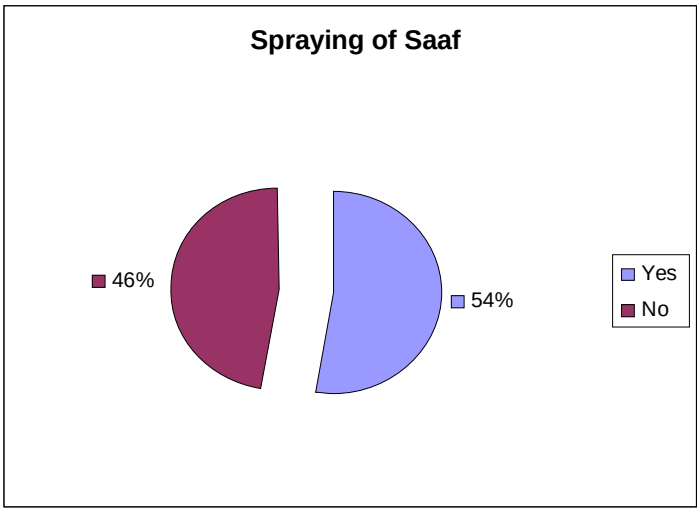
This question was posed to farmers to know existing users of Saaf fungicides on field crops, which will be helpful to know market potential for Saaf fungicide in Medak district and also useful to analyze difference between aware farmers about product and actual users of product.

Table 4.5: Response of aware farmers towards usage of Saaf

Farmers opinion	No. of Respondents	Percentage
Yes	87	54.375
No	73	45.625
Total	160	100

From the above table the data can be revealed that about 54 percent of farmers are actually carried spraying of Saaf fungicide, where as 46 percent of farmers are not using Saaf fungicide.

Figure 4.5 : Spraying of Saaf Fungicide by the sample Respondents.



4.3 Importance of fungicides:

The importance attached to the usage of fungicides by the farmers are tabulated in the below table.

Table 4.6: Farmers opinion about fungicides usage in control of diseases.

Farmers opinion	Frequency	Percentage
Unavoidable (must)	122	76.25
Avoidable(alternative)	29	18.125
Can't say	9	5.625
Total	160	100

From the table it can be interpreted that about 76 percent of the farmers in Medak district said that the use of Fungicides for various crops is must (unavoidable) for the control of diseases. Whereas 18 percent feel that the usage of fungicides can be avoidable.

Figure 4.6: **Importance attached to the fungicides usage in diseases control.**

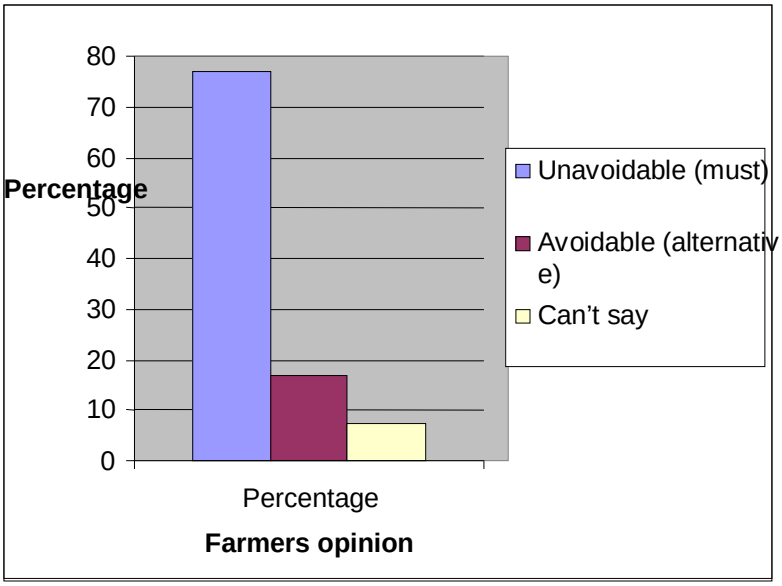


Table 4.7: Amount spends by the farmers for pest and diseases control:

Sl.NO	Amount (Rs)	Frequency	Percentage
1.	500-1000	53	33.125
2.	1000-1500	32	20.0
3.	1500-2000	41	25.625
4.	>2000	34	21.25
5.	Total	160	100

From the table it can be interpreted that 33 percent of farmers can able to spend amount ranging from 500-1000 Rs. Whereas 20 percent farmers were allocated amount ranging from 1000-1500 Rs, 26 percent of farmers were spend amount ranging from 1500-2000 Rs, and 21 percent of farmers allocated amount was above 2000 Rs.

Figure 4.7: Amount spend by the farmers for pest and disease control.

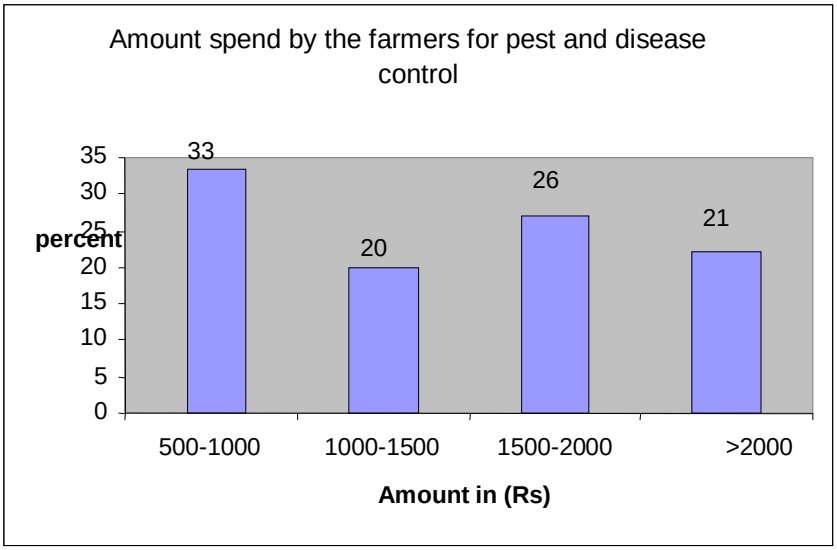


Table 4.8: Farmers consider various factors during the buying fungicides.

Factors	Extreme Influence	High Influence	Moderate Influence	No Influence
Excellent control	70	30	-	-
Credit	65	20	10	5
Brand image	30	50	20	-
Price	60	30	10	-
Dealers confidence	65	30	5	10
Availability	55	35	10	-
Promotional campaign	50	35	15	-
Good packaging	40	55	5	-
Quality of the produce	65	25	10	-
Quick knock down effect	35	50	15	-
Rapport with the sales force	25	30	55	-

From the above table it is evident that excellent control is major factor which have Extreme influence on the farmer during the buying the fungicides followed by the quality of the produce ,credit dealers confidence and promotional campaigns conducted by the company.

Table 4.9: Composition of present market for fungicides on turmeric in Medak district and rating the Saaf among various fungicides

S.NO	Antrocol				Saaf				Z-78				Tilt				Bavistin			
Attribute	H	M	E	NO	H	M	E	NO	H	M	E	NO	H	M	E	NO	H	M	E	NO
Price	50	15	-	35	20	65	10	5	45	5	-	50	15	5	-	80	10	10	-	80
Performance	55	10	-	35	80	15	-	5	50	-	-	50	20	-	-	80	20	-	-	80
Farmers acceptability	60	5	-	35	70	25	-	5	50	-	-	50	20	-	-	80	20	-	-	80
Promotion activities	60	5	-	35	40	55	-	5	50	-	-	50	15	5	-	80	20	-	-	80
Credit terms	65	-	-	35	65	30	-	5	50	-	-	50	20	-	-	80	20	-	-	80
Timely availability	50	15	-	35	85	10	-	5	45	5	-	50	20	-	-	80	20	-	-	80
Total product	55	10	-	35	70	25	-	5	50	-	-	50	15	5	-	80	20	-	-	80

H-High influence M-Medium influence E-Extreme influence NO-No influence

From the table it is inferred that the Saaf fungicide has medium influence related to price factor and has high influence in the terms of performance but it shows no influence when related to promotional attribute.

CHAPTER V

CONCLUSIONS AND SUGGESTIONS

The summary of the project work carried out and the conclusions arrived at are presented in this chapter. The study was undertaken to study on the Market Potential for Saaf in Medak district of Andhra Pradesh with following specific objectives:

1. To study the composition of present market for fungicides on turmeric in Medak district of Andhra Pradesh. .

2. To study the factors influencing dealers in promoting the fungicide and the factors influencing the farmers in choosing a fungicide for use on turmeric crop

3. To estimate the market potential for Saaf fungicide for kharif 2010.

To accomplish the work, a sample of 160 farmers and 28 dealers of Medak district of Andhra Pradesh selected for the study. The data has been collected by personal interview with the farmers and dealers using questionnaires. The questionnaire consists of both open ended and closed ended questions. The gathered data was analyzed using statistical tools and MS excel.

General characteristics of the farmers:

Educational level of the farmers in the study area was 76 percent. With regards to land holding majority of the farmers were semi-medium and medium size land ranges between 2-4 acres and 4-10 acres respectively.

Majority of the farmers are allocating the amount for pest and diseases control is ranges between 500-1000 Rs. Most of the farmers are considering excellent control, quality of the produce, availability of the credit and dealers confidence about product at the time of buying fungicides. During kharif season farmers are using more fungicides.

Regarding usage of fungicides majority of the farmers in Medak district opine that usage of fungicides for disease control for various crops is must (unavoidable).

Regarding aware of Saaf fungicide 69 percent of farmers were aware. Whereas only 52 percent of the farmers were actually carried spraying of Saaf fungicide on field. Most of the farmers are showing interest in spraying Saaf fungicide for the control of diseases on paddy, vegetables and spice crops.

Majority of the farmers are going for two sprayings in one season. When their satisfaction levels are assessed most of the farmers said they are satisfied. Farmers were giving low rating scale regarding price and promotional activities for Saaf fungicide.

General characteristics of the dealers:

On an average 45 percent sample dealers in the study area have 1-5 years experience in the pesticide business. Whereas 15 percent have experience range between 5-10 years and 40 percent of dealers have more than 10 years business experience.

Among the sample dealers 55 percent dealers selling all the products like pesticides, fertilizers and seeds ,where as 30 percent of the dealers are maintaining pesticides, fertilizers, about 10 percent of the dealers keeping pesticides and seeds, and five percent are selling only pesticides.

During the last year major fungicides sold by the dealers was Antrocol it can be contributes 91 percent fallowed by Saaf 74 percent,Z-78 (Indofil) 42 percent in kharif and earned average turnover Rs. 32850, Rs. 24460 and Rs 14525 respectively.

In rabi season Antrocol contribute 77 percent (Rs.27990), Saaf 56 percent (Rs. 22520) and Z-78 50 percent (Rs.27412).

Total fungicide sales during the last year was 247kgs in kharif season and 224kgs in rabi season, and earned average sales turnover value of Rs.92305 and Rs.82152.00 in kharif and rabi seasons respectively.

Performance of the product extremely influences the stocking of fungicides. If the product performs good then dealers are ready to stock that product.

Then price of the product also influence extremely for stocking of products because many of farmers are price conscious. Therefore if there is rise in price farmer may shift from that product. If company supporting for promotional programmes and trade credit then also dealers are ready to stock that product.

Regarding right time for stocking fungicides about 70 percent of the dealers stock fungicides 15 days before season starts. Whereas 30 percent of dealers stock before one month season starts.

Most of the dealers expect average sales of fungicides in coming seasons are only 5 percent compare to the last year sales.

Regarding aware of Saaf fungicide among sample of the dealers about 95 percent dealers were aware of Saaf product and only 5 percent are unaware of Saaf product. Among these aware dealers 75 percent of dealers are recommending Saaf for control of blast and leaf spot.

Average Saaf sold by all the sample dealers during the last two seasons was 130kgs for both kharif and rabi, with average turnover value of Rs.52000. In kharif average total quantity sold was 74kgs (Rs.24600) and in rabi 56kgs (Rs.22400).

SUGGESTIONS:

To the best of my knowledge and observations, the following suggestions based on promotional mix and some specific suggestions are suggested which may considerably contribute to increase the market potential of any pesticide products.

PRODUCT STRATEGIES:

New product:

Any product shows reduced effectiveness in control of weeds, pests and diseases after a period of 3-4 years. Thus a new product should be launched with improved qualities. The product launch should be done with massive advertising campaign to give the programme a boost.

Focus on farmers:

Product development or formulation should be done, taking the farmers need into consideration i.e. it is not the product but consumer needs should be focused. Farmers should be given encouragement, training and incentives to influence their purchase decision regarding fungicides.

Packaging:

Attractive packaging with catchy logo and caption always create value to the product. Hence it is known as **'silent salesman'.**

Develop a strong brand image through:

(a) Product quality – formulation to be available in liquid form.

(b) Customer relationship management - (CRM) through

- Village adoption programmes.

- Technical services through field staff on all aspects.

-Encouraging farmers for using products (early adopters) by awarding cash or kind in public meetings. (Kisan melas, crop seminars).

Product demonstration:

Company can arrange result and method demonstrations to describe the unique features of the product, which should not be less than 15 minutes and to make difference from competitor's product.

Plan today for tomorrow:

In the present scenario of WTO, few players remain in the market because of merges and acquisitions leading to face-to-face competition in actual. 'Cost and Quality' become crucial in the market to survive and excel. Hence, plan today to face the challenges tomorrow.

PRICING STRATEGIES:

- Price is a sensitive issue in the market.
- Farmers prefer medium to low cost when compared to actual value of the chemical.

- Lower prices of local brands leads to ‘brand switching’.
- Price related with quality ‘high price means high quality’ as farmers are ready to spend more if they believe that the product performance is worth and efficient.

Credit terms:

It plays an important role in pushing a brand at the dealer level.

Provide credit:

Credit provision will help in increasing the sales volume.

Also follow the increased interest rates after the prescribed credit period to increase the pressure on dealers and farmers for repayment.

Cash discounts:

Cash discounts should be allowed when huge turnover is occurring with a particular dealer and when large amounts of stock are blocked. Whereas in case of farmers rebate should be provided in early periods of product promotion to make them habituated for its usage.

DISTRIBUTION STARTEGIES:

Timely availability:

Timely availability of fungicide products is good at the required dealer’s level. Thus, make provision for the direct dealership in good markets for the product.

Strengthening of the distributors:

Selection of loyal distributors is a very important process because they are more close to the farmers. The selection should prove the distributor be loyal to the company and should be true philosopher, guide and friend to the farmer.

Finding new sources of supply and guidance like progressive farmers and panchayat presidents at the village level to supply the products and clarify the doubts regarding product usage whenever needed. This is the best way to 'Tap the Rural Market'.

ANNEXURE

FARMER QUESTIONNAIRE

This questionnaire is administered to know the perception of dealers with regard to fungicides and Saaf. The researcher requests you to answer the questions according to the guidelines provided. The Information obtained will be used for academic purpose only.

(Please mark the importance attached to each factor by using the following scale:

1-**Extreme influence**,
2-High**Influence,**
3-**Moderate influence**,
4-**Not influence**)

QUESTIONNAIRE FOR FARMERS:

1. Name of the farmer:

2. Village: Mandal:

3. Educational qualification:

S.No	Educational level	Tick
1.	Illiterate	
2.	Primary education	
3.	Secondary education	
4.	Collegiate	

4. Land holding/Acreage:

S.No	Acreage	Tick
1.	Up to 2 acres(small)	
2.	2-4 acres(semi-medium)	
3.	4-10 acres(medium)	
4.	>10 acres(large)	

5. Major crops grown: 1.
2.
3.

6. How much amount you spend on chemicals of pest and diseases per acre per season (In Rs)?

7. What factors you consider while buying various fungicides: rate according to the **importance** you attach to each factor.

S.NO	Factors	1	2	3	4
1	Excellent control				
2	Credit				
3	Brand image				
4	Price				
5	Dealers confidence				
6	Availability				
7	Promotional campaign				
8	Impact of progressive farmers				
9	Safety of spraying person				
10	Packaging				
11	Quality of the produce				
12	Quick knock down effect				
13	Rapport with the sales force				

8. In which season there will be maximum use of fungicides

a. Kharif

b. Rabi

9. Do you think usage of fungicides is must?

S.NO	Farmers opinion	Tick
1.	Unavoidable(must)	
2.	Avoidable(alternative)	
3.	Can't say	

10. Are you aware of Saaf product: YES/NO

11. Do you spray Saaf? YES/NO

12. On which crops you have sprayed Saaf for control of diseases?

S.NO	Crops	YES	NO
1	Paddy		
2	Vegetables		
3	Fruits		
4	Turmeric		
5	Ground nut		

13. How many sprays of Saaf were done in the last season?

a.1 b.2 c.3 d.4

14. Does Saaf work efficiently? Yes/No
Why?

15. Are you satisfied with the use of fungicides?

S.NO	Level of satisfaction	Tick
1.	Highly satisfied	
2.	Satisfied	
3.	Dis- satisfied	

16. How do you rate the Saaf among the various fungicides? (Rate scale 1 to 4)

SNO	Product	Price	Perfor mance	Farmers acceptab ility	Promotion activities	Credit terms	Timely availability
1							
2							
3							
4							

17. What are the advantages/benefits you got by using Saaf?

18. What suggestions you would give to further improve the performance of Saaf, as Well as the market for Saaf.

Thank you

DEALER QUESTIONNAIRE

This questionnaire is administered to know the perception of dealers with regard to fungicides and Saaf. The researcher requests you to answer the questions according to the guidelines provided. The Information obtained will be used for academic purpose only.

(Please mark the importance attached to each factor by using the following scale:
1-Extreme influence,
2-High**Influence,**
3-Moderate influence,
4-Not influence)

QUESTIONNAIRE FOR THE DEALERS

1. Name of the dealer: Village:

   Mandal: How many villages you cover:

2. Since how many years you are being in the pesticide business?

S.No.	Dealer's experience	Tick
1.	1 year	
2.	1-5 years	
3.	5-10 years	
4.	>10years	

3. What are the product lines you are dealing in?

   (a) Pesticides (b) Fertilizers (c) Seeds (d) Any other specify

4. Which brands of fungicides you have sold during the last year 2007-08?

S.NO	Company	Brands	Kharif	Rabi	Turn over in the last year
1.	UPL				
2.	Syngenta				
3.	Dow agro				
4.	Bayer				
5.	Indofil				
6.	others				

5. What are the total fungicides sales in the last year?

S.NO	Attribute	Kharif	Rabi
1.	Quantity		
2.	Value(sales in Rs)		

6. On the following crops how many times/rounds fungicides a farmer can spray?

S.NO	Crops	YES	NO
1	Paddy		
2	Vegetables		
3	Fruits		
4	Turmeric		
5	Ground nut		

7. Kindly mention the share of each fungicide in your total sales?

SNO	Company	Brand Name	Percentage share in the total sales of fungicides
1	UPL		
2	Syngenta		
3	Dow agro		
4	Bayer		
5	others		

8. A. Which factors do you think would influence the Purchase behavior of farmer with regard to Purchase of fungicides?

S.NO	Factors	1	2	3	4
a	Performance of the technical				
b	Price of product				
c	Field staff advice				
d	Fellow farmer advice				
e	Dealer's advice				
f	Demonstration by company				
g	Good packaging				
h	Credit period				
i	Rapport of sales force with farmers				

B. What do you thing is the average amount spent by the farmers on fungicides per Season, per acre?

(a) 500 (b) 1000 (c) 1500 (d) 2000

C. What percentage does the above mentioned amount is in the total cost of cultivation ?

D. What factors influence you in stocking various fungicides?

SNo	Factors	1	2	3	4
a	Past record of company				
b	Price				
c	Product performance				
d	Sales officer influence				
e	Trade credit				
f	Promotion support by the company				
g	Gift packages				

9. In which season, their will be maximum sales of fungicides

(a) Kharif (b) Rabi

10.How much sales you expect in coming season

S.no	Attribute	1	2	3	4
a	Quantity				
b	Value				

11. What is the right time for stocking of fungicides at the dealer?

(a) 15 days before the season starts
(b) 30 days before the season starts
(c) 40 days before the season starts
(d) Any others

12. Are you aware of Saaf product? YES/NO

13. How much Saaf you are sold in the last two season.

S.NO	Kharif	Rabi	Total
Quantity			
Value			

14. What is Saaf recommended for?

S.NO	Disease	YES	NO
a	Blast		
b	Leaf spot		
c	Rust		

15. How do you rate the **Saaf** among the various fungicides? (Kindly use 5 point rating scale)

SNO	Product	Price	Perfor-mance	Farmers acceptability	Promotion activities	Credit terms	Timely-availability
a	Saaf						
b							
c							
d							

16. What crops it is recommended for?

S.No	Crops	YES	NO
1	Paddy		
2	Vegetables		
3	Fruits		
4	Turmeric		
5	Ground nut		

17. What suggestions you would give to further improve the performance of Saaf, as Well as the market for Saaf.

18. If company considers your suggestions how much Saaf you can sell?

Thank you