MARKET POTENTIAL AND MARKET EFFICIENCY OF 'PAURAM' IN LAKHISARAI DISTRICT

BY

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POST GRADUATE INSTITUTE OF AGRICULTURAL BUSINESS MANAGEMENT
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JUNAGADH-362 001

JUNE-2013
Registration No. J4 - 00742- 2010
MARKET POTENTIAL AND MARKET EFFICIENCY OF 'PAUSHAK' IN LAKHISARAI DISTRICT

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IN

AGRI-BUSINESS

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Abstract
MARKET POTENTIAL AND MARKET EFFICIENCY OF 'PAUSHAK' IN LAKHISARAI DISTRICT OF BIHAR

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ABSTRACT

The Indian pesticides industry was the largest in Asia and twelfth largest in world. With India's 60 per cent population depending on agriculture, the pesticides industry of India plays an important role in India's economy. The report focuses on the industry structure, major players in the Indian pesticides industry, their market shares and types of pesticides used in India. The report also anticipates the future trends in the pesticides industry.

The production of the Indian pesticide industry has remained stable at 85,000 MT in FY07-08. In value terms, the size of the Indian pesticide industry was estimated at Rs.98 bn. for 2008, including exports of Rs.48 bn. The Indian pesticides industry is dominated by insecticides globally where herbicides and fungicides are the key segments. India ranks 10th in the world in pesticide consumption as its total consumption amounts to about 500 million tonnes. India is presently the largest manufacturer of basic pesticides among the South Asian and African countries, with the exception of Japan.

The product of Paushak is a old product innovation from the company in Lakhisarai district of Bihar. Since it is an old product in the market of the region, this study certainly helped the company to analyze the market efficiency and potentiality of the product to trigger its marketing strategy. The Paushak is a systemic growth used to control weed among cotton, groundnut, green gram and sesame crops. Hand/manual weeding incurred more labour charges because the availability labour in this region is decreasing severely. Therefore the chemical weeding is mostly preferred by farmers and recently its market potential has been becoming strong enough for the company to penetrate into it.
The project will be beneficial farmer as well as company also. Before implementation of the project row information are needed which will provides basic strength to future business. Based on the requirement of project following objectives of study are formulated. (1) To find out the market potentiality of Paushak in Lakhisarai district, (2) To measure the promotional activity by Krishi Rasayan Exports Private Limited (3) To study the competitiveness of Paushak with other products, (4) To find out farmers and dealers expectation from company. As per objectives of the study multi stage sampling technique was adopted. Three levels of multi stage sampling at district level, taluka level and village level was taken. On basis of agricultural activity and cropping pattern, samples were taken in Lakhisarai district. In district level, distributors was selected for sampling at the first stage. In the next stage of sampling five dealers were selected at taluka level. At the village level two farmers each under every dealer was selected at the last stage of sampling.

Among different crops, Paushak holded the first place in the market share with 33 per cent of it which was obtained by mass media exposure and increased contact of field staff with the farmers which accounted for 85 per cent of the total promotional activities. The input facilities like credits which accounted for 41 per cent of the total facilities given to farmer made them produce their crops in time and increase the total sales over a period of time by the company. The company had adopted skimming price policy to sell its wide range of PGR products in the market among which Paushak having a price of Rs. 450/-, but very competitive as far as quality was concerned. Turnover of Paushak was 18.58 lakh which was the highest among other competitor companies. According to the study, the farmers’ expectation from the company was to provide the good quality product and expert visit in farm. The local farmers were the main source of suggestion for farmers to use Paushak for the crops well growth.
Mrs. Nisha Thaker  
Assistant Professor  
PG Institute of Agri-Business Management  
Junagadh Agricultural University  
Junagadh (Gujarat)-362001

CERTIFICATE

This is to certify that the project work report entitled “MARKET POTENTIAL AND MARKETING EFFICIENCY OF 'PAUSHAK' IN LAKHISARAI DISTRICT” submitted by SATYA PRAKASH in the partial fulfillment of the requirements for the award of the degree of MBA (AB) at Junagadh Agricultural University, is a record of bonafide research work carried out by him under my guidance and supervision and the final project work has not previously formed the basis for the award of any degree, diploma or other similar title.

Place: Junagadh  
Date: 29/06/2012  

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Date: 25-06-2012

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Date: 23/6/2012

This is to certify that the project work report "MARKET POTENTIAL AND MARKET EFFICIENCY OF 'PAUSHAK' IN LAKHISARAI DISTRICT" submitted by Mr. SATYA PRAKASH to Junagadh Agricultural University, Junagadh in the partial fulfillment of the requirements for the degree of MBA IN AGRI-BUSINESS in the subject of AGRIBUSINESS MANAGEMENT after recommendation by the external examiner was defended by the candidate before the following members of examinations committee. The performance of the candidate in the oral examination was satisfactory; we therefore, recommended that project work is approved.

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Date: 25-6-2012

This is to certify that MR. SATYA PRAKASH student of MBA IN AGRI-
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POTENTIAL AND MARKET EFFICIENCY OF 'PAUSHAK' IN LAKHISARAI
DISTRICT” as suggested by the external examiner and the advisory committee in the
oral examination held on 23-6-2012. The final copies of the project work report duly
bound and corrected have been submitted on 25-6-2012.

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CERTIFICATE

This is to certify that Mr. Satya Prakash studying in MBA in Agri-business (4th Semester) at Post Graduate Institute of Agri-Business Management, J.A.U., Junagadh successfully completed the project work in Krishi Rasayan Exports Private Limited during the period 16th January, 12 to 11th March, 12.

Manish Kumar Verma
DGM

Patna, 12th March, 12
ACKNOWLEDGEMENT

An individual cannot do project of this scale. I take this opportunity to express my acknowledgement and deep sense of gratitude to the individuals for rendering valuable assistance and gratitude to me. Their inputs have played a vital role in success of this project.

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Most humble, I owe to my beloved parents for their blessing and inspiration made me competent enough to fight the battle of life and to achieve the goal.

Place: Junagadh

Date: 29/03/2012

(Saty Prakash)
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Introduction
CHAPTER – I
INTRODUCTION

1.1 Pesticides industry in India:
1.1.1 Introduction

The Indian pesticides industry is the largest in Asia and twelfth largest in world. With India's 60 per cent population depending on agriculture, the pesticides industry of India plays an important role in India's economy. The report focuses on the industry structure, major players in the Indian pesticides industry, their market shares and types of pesticides used in India. The report also anticipates the future trends in the pesticides industry.

Table: 1.1 Total productions of agrochemicals

<table>
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<th>Year</th>
<th>Production (tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-03</td>
<td>69,565</td>
</tr>
<tr>
<td>2003-04</td>
<td>85,118</td>
</tr>
<tr>
<td>2004-05</td>
<td>93,966</td>
</tr>
<tr>
<td>2005-06</td>
<td>82,240</td>
</tr>
</tbody>
</table>

Source: Monitoring and Enforcement (M & E) Division

Per hectare consumption of pesticide is low in India at 381 grams when compared to the world average of 500 grams. Low consumption can be attributed to fragmented land holdings, lower level of irrigation, dependence on monsoons, low awareness among farmers about the benefits of usage of pesticides etc. India, being a tropical country, the consumption pattern is also more skewed towards insecticides which accounted for 62 per cent of the total pesticide consumption in FY08. Rice is the highest pesticides consuming crop of the total pesticides consumption, 25.9 per cent is consumed by rice. Andhra Pradesh is the highest pesticides consuming state followed by Punjab and Maharashtra.

India due to its inherent strength of low cost manufacturing and qualified low cost manpower is a net exporter of pesticides to countries such as USA and some European and African countries. Exports formed 49.5 per cent of total industry turnover in FY08 and have grown at a Compounded Annual Growth Rate (CAGR) of 29.05 per cent from FY04 to FY08. With the advent of the Integrated Pest Management (IPM) technique, the use of bio pesticides and Genetically Modified (GM) seeds has increased. Globally, GM seeds are used mainly for commercial crops like Cotton, Maize, Soya bean and Canola. In India, Bt cotton is widely used and the
acreage stood at 7.61 mn ha for 2008, a growth of 23 per cent over the previous year. Use of GM seeds may diminish the use of insecticides but the use of herbicides may improve.

**Table: 1.2 Total demands of agrochemicals**

<table>
<thead>
<tr>
<th>Year</th>
<th>Demand (tonnes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-03</td>
<td>49,220</td>
</tr>
<tr>
<td>2003-04</td>
<td>48,736</td>
</tr>
<tr>
<td>2004-05</td>
<td>45,412</td>
</tr>
<tr>
<td>2005-06</td>
<td>44,324</td>
</tr>
<tr>
<td>2006-07</td>
<td>42,764</td>
</tr>
<tr>
<td>2007-08</td>
<td>42,181</td>
</tr>
<tr>
<td>2009-10</td>
<td>41,254</td>
</tr>
<tr>
<td>2010-11</td>
<td>40,654</td>
</tr>
</tbody>
</table>

Source: Monitoring and Enforcement (M & E) Division

The demand for pesticides can be augmented only through sustainable growth in agriculture. With the government’s focus on development of the agriculture sector, the industry may see a better future. The Indian pesticide industry is also likely to move towards the global product mix, with an increase in the use of herbicides and fungicides. Exports will continue to remain the growth driver.

It is expected that the strong fundamentals of the Indian agrochemical industry, such as cheap availability of raw materials, process expertise, low operating costs and R & D strengths, will attract many foreign companies. This in turn should boost investment in research, and thus there would seem to be a bright future for agrochemical companies in India. However to boost the industry, the government will need to come up with more incentives. To start with, it should ease out the procedures for registration and export licensing. India is currently the largest manufacturer of agrochemicals and the second largest producer of agrochemicals in Asia. Out of 145 agrochemicals registered in India, 85 of a technical grade are locally produced. Rs. 38,000 million Indian agrochemical markets have 80 players in the organized sector and more than 500 players in the unorganized sector. The agrochemical demand is close to 90,000 tonnes per annum. Insecticides (76%) dominate the market, followed by herbicides (14%) and fungicides (10%). Although it is expected that use of herbicide will grow faster in the future, insecticides will continue to dominate the
market. Cotton, rice and wheat growers account for almost 70 per cent of agrochemical consumption, and the states consuming more are Andhra Pradesh, Punjab, Karnataka and Gujarat.

1.1.2 History of pesticide use

Throughout history we have seen the evolution of pest control products from non-selective, naturally occurring compounds to highly specific synthetic and biological materials that control only specific pests. They were non-selective in nature, persistent and toxic to many forms of life. Insecticides included arsenic, lead and fluoride. Herbicides included ashes, salts, and smelter sludges. Fungicides included chalk, wood ash and sulphur.

During 1800 century Insecticides included botanicals, nicotine, rotenone and pyrethrums. These products were more specific in terms of control, but not very stable for use in agriculture given rapid breakdown in the environment. It was the century where disease control using sulfur and copper compounds became common on fruits, vegetables and ornamental plants.

The modern era of synthetic organic pesticides began in the 1930’s. The research behind medical (including antibiotics) and military uses funded research that led to the discovery of many pesticide families that are still in use today. A real breakthrough in weed control occurred with the introduction of 2,4-D in the 1940’s for broad spectrum broadleaf weed control in corn and cereal crops. The early twentieth century brought the introduction of organo mercurials for disease control and organo chlorines, such as DDT for insect control. These products were very persistent and efficacious with good properties for agriculture and for public health, but not desirable after control was achieved. The introduction of organophosphates brought a new class of insecticides with reduced persistence and lower risks to both users and the environment.

Likewise fungicides were introduced that featured both upward and downward systemic activity to control diseases like apple scab in apples. This period also saw the refinement of natural products in terms of use patterns with the introduction of newer and more user friendly and environmentally safe formulations.
Table: 1.3 Pesticide restricted for use in India

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of pesticide</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Aluminum phosphate</td>
</tr>
<tr>
<td>2</td>
<td>DDT</td>
</tr>
<tr>
<td>3</td>
<td>Lindane</td>
</tr>
<tr>
<td>4</td>
<td>Methyl Bromide</td>
</tr>
<tr>
<td>5</td>
<td>Methyl parathion</td>
</tr>
<tr>
<td>6</td>
<td>Sodium Cyanide</td>
</tr>
<tr>
<td>7</td>
<td>Methoxy Ethyl Mercuric Chloride</td>
</tr>
<tr>
<td>8</td>
<td>Monocrotophos</td>
</tr>
<tr>
<td>9</td>
<td>Endosulfan(Banned in the state of Kerala)</td>
</tr>
<tr>
<td>10</td>
<td>Fenitrothion</td>
</tr>
</tbody>
</table>

Source: http://cibrc.nic.in/list_pest_bann.htm

1.1.3 Industry structure

In India, there are about 125 technical grade manufacturers (10 multinationals), 800 formulators, over 1,45,000 distributors, 60 technical grade pesticides are being manufactured indigenously. Technical grade manufacturers sell high purity chemicals in bulk (generally in drums of 200-250 Kg) to formulators. Formulators, in turn, prepare formulations by adding inert carriers, solvents, surface active agents, deodorants etc. These formulations are packed for retail sale and bought by the farmers. The Indian agrochemicals market is characterized by low capacity utilization. The total installed capacity in FY09 was 1,46,000 tons and total production was 85,000 tons leading to a low capacity utilization of 58 per cent. The industry suffers from high inventory and long credit periods to farmers, thus making operations ‘working capital’ intensive.
Fig: - 1.1 State wise shares in production of major chemicals (2005-06)

1.1.4 Key Segments

- **Insecticides**: Insecticides are used toward off or kill insects. Consumption of insecticides for cotton has come down to 50 per cent from 63 per cent of total volume after introduction of BT cotton.

- **Fungicides**: Fungicides are used to control disease attacks on crops. The growing horticulture market in India owing to the government support has given a boost to fungicide usage. The market share of fungicides has increased from 16 per cent in 2004 to 20 per cent in 2009.

- **Herbicides**: Herbicides are the fastest growing segment of agrochemicals. Their main competition is cheap labor which is employed to manually pull out weeds. Sales are seasonal, owing to the fact that weeds flourish in damp, warm weather and die in cold spells.

- **Bio-pesticides**: Bio-pesticides are pesticides derived from natural substances like animals, plants, bacteria and certain minerals. Currently a small segment, bio-pesticides market is expected to grow in the future owing to government support and increasing awareness about use of non-toxic, environment friendly pesticides.

- **Others**: Plant growth regulators, Nematocides, Rodenticides, Fumigants etc. are the stars of this segment.
1.1.5 Key trends

Market trends:

➤ Focus on developing environmentally safe pesticides by the industry as well as the Government. The Department of Chemicals has initiated a nationwide programme for “Development and production of neem products as Environment Friendly Pesticides” with financial assistance from United Nations Development Programme (UNDP).

➤ Focus by larger companies on brand building by conducting awareness camps for farmers and providing complete solutions.

➤ Increase in strategic alliances among large players for greater market reach and acquisitions of smaller companies globally to diversify product portfolio. For example: Rallis has a marketing alliance for key products with FMC, Dupont, Syngenta, Makhteshim, Krishi Rasayn, Bayer and Nihon Nohayaku. In addition, UPL has had a series of small acquisitions globally to enter new geographies and gain product expertise.

Technology trends:

➤ Increased R & D expected for development of new molecules and low dosage, high potency molecules

➤ Focus on R & D in bio-pesticides segment with increasing preference for environmentally safe products in the market

1.1.6 Key challenges

➤ High R & D costs: R & D to develop a new agrochemical molecule takes an average of 9 years and USD 180 Mn. Indian companies typically have not focused on developing newer molecules and will face challenges in building these capabilities, while continuing to remain cost competitive.

➤ Threat from Genetically Modified (GM) seeds: Genetically modified seeds possess self immunity towards natural adversaries which have the potential to negatively impact the business of agrochemicals.

➤ Need for efficient distribution systems: Since, the number of end users is large and widespread, effective distribution via retailers is essential to ensure product availability. Lately, companies have been directly dealing with retailers by cutting the distributor from the value chain thereby reducing distribution costs, educating retailers on product usage and offering competitive prices to farmers.
Counterfeit Products: The spurious pesticides market size in India is estimated to be USD 233 Mn. in 2009. This negatively impacts the revenues of the organized sector.

1.1.7 Key opportunities

Scope for increase in usage: With 35-40 per cent of the total farmland under crop protection, there is a significant unserved market to tap into. By educating farmers and conducting special training programmes regarding the need to use agrochemicals, Indian companies can hope to increase pesticide consumption.

Huge export potential: The excess production capacity is a perfect opportunity to increase exports by utilizing India’s low cost producer status.

Patent expiry: Between 2009 and 2014 many molecules are likely to go off patent throwing the market open for generic players. The total viable opportunity through patent expiry is estimated at over USD 3 Bn.

Product portfolio expansion: Threats like genetically modified seeds, Integrated Pest Management, organic farming etc. can be turned into opportunities if the industry re-orient itself to better address the needs of its consumers and broadens its product offering to include a range of agri inputs instead of only agrochemicals.

1.2 About Krishi Rasayan Export Private Limited

1.2.1 Introduction

Krishi Rasayan Export Private Limited offers the largest variety of proven branded off-patent crop protection products available in the global market place. They are proud to have highly effective products that meet the stringent environmental standards in all major crop growing areas of the world. Krishi Rasayan Export Private Limited is the world’s leading manufacturer and distributor of branded off-patent crop and non-crop protection products. With over 45 years of field proven experience and an impeccable reputation for quality, value and attentive service, Krishi Rasayan Export Private Limited ranks among a handful of the world’s largest makers of crop protection products. Krishi Rasayan Group was established in the year 1966. Now it has 5 manufacturing plants located in different parts of the country. It is a 45 years old group which strives continuously for the Prosperity of Mankind and fulfilling farmer needs. With vast experience, we have products geared up not only for the country’s needs but also to meet the global challenges. The motto of the group is “Farmer’s Prosperity is our priority”. It has become a major Agro Chemical Company having
separate dedicated manufacturing units for Technical and Formulated Insecticides, Herbicides, Fungicides and Plant Growth regulators for agricultural use.

K R group is involved in Agrochemicals, Biotechnology, IT Infrastructure, Solid Waste Management, Inland Transport, Poultry Feed, Pest Control & Real Estate, R & D, Contract Research and Data Generation. It has 16 Marketing Offices in the country and 2 international Offices in Hong Kong and Shanghai for International trading.

**Fig: - 1.2 Sales by product by KR group in 2011**

Krishi Rasayan Export Private Limited is unrivalled for its diverse offering of advanced, environment friendly products having established itself as the industry’s most reliable one stop vendor of comprehensive, crop specific off patent products for all major crops.);

In 2006, Company set up a under KRISHI RASAYAN EXPORTS PVT. LTD. In the name of Agrolife Science Corporation Pvt. Ltd. It has manufacturing units in Ahmedabad and Gujarat. It has also acquired land in Jammu to set up another formulation unit. Currently, it has a separate marketing team and is selling its products in various parts of the country. It is also offering a Toll Free service to manufacturers in India.

In 2009, the Group entered into an agreement with Truly Nolen International with an aim to provide best quality Pest Management Services in household, commercial and industrial sectors in the name of Truly Pest Solution Pvt. Ltd.
In 2010, the company started its own R&D Laboratory under the name of Krishi Biotech Research Pvt. Ltd. It hopes to be a OECD laboratory within this year, offering both Product Chemistry and Toxicology studies for Agrochemical, Pharmaceuticals, Food and Allied Sectors.

1.2.2 Krishi Rasayan Export Private Limited: At a glance
Milestones

- Inception in 1966 with a formulation unit at Ranital, Dist - Balasore (Orissa).

- Second plant set up in 1973 at Muzaffarpur (Bihar) with a capacity of 30 TPD dusting powder formulations. In 1978, liquid formulation capacity of 15 KL per day was also added.

- Third plant for manufacturing of 2-4-D technical was set up near its existing formulation unit in Orissa in 1994.

- Fourth plant set up in Baddi, Himachal Pradesh in 1995 for W.D.P. & Granules with the following capacity. WDP: 10 TPD, Granules: 22 TPD

- Waste management project was set up in Puri, Orissa in 2000 for conversion of 100 TPD city garbage into Organic Manure.

- A state of art liquid formulation plant was set up in Baddi, Himachal Pradesh in 2000.

- In 2005 the company started its 4th formulation plant in Jammu. It is a state of the art plant having facilities for EC, WP and granules. It has also set up formulation facilities for S.C.Formulation. It is the first such plant in Northern India. It has also set up facilities for WDG formulation.

Since its inception, Krishi Rasayan was involved in doing job work formulation for many multinationals including 7 Indian companies viz. ICI, Alkali's & Chemicals Corporation of India, Burma Shell, NOCIL, Rallis India Ltd. & Chambal Fertilizers.
Apart from job work, Krishi Rasayan was deeply involved in supplies to various State Governments on rate contract basis till 1988.

Krishi Rasayan came into direct marketing/retailing from 1990 with the following three new molecules, which were then marketed by one or two multinationals.

- Gibberallic Acid
- Metalaxyl 35% WS
- Metalaxyl 8% + Mancozeb 64%

Krishi Rasayan has got a good market share for all the above three products on an all India Basis.

1.2.3 Signing of tie-ups agreement with different Group

Krishi Rasayan is having the following tie-ups for supply of various technical grade pesticides.

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<td>Sundat Pte Ltd., Singapore.</td>
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<td>B</td>
<td>Sea-Weed</td>
<td>Azadion Sea Weed, Canada</td>
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<td>C</td>
<td>Methyl Parathion Tech.</td>
<td>CNCC, Jiangsu, China</td>
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<td>D</td>
<td>Gibberallic Acid</td>
<td>Exclusive tie up for India with Hunan Biological,</td>
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<td>Thiophanate Methyl</td>
<td>National Chemical Construction Co. (CNCC) Jiangsu Co., China</td>
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1.2.4 Vision

- Become a leading field oriented and knowledge intensive Agrochemical company.
- Growing beyond just another Agro-Chemical company and providing products as well as farm land and farm gate knowledge that would enable the growers to maximize their farm produce - qualitatively and quantitatively.
- Undertaking in house R & D initiatives in the context of upcoming challenges and changes in agriculture nationally and internationally; sharing our knowledge for development of national agriculture.
- Building a vast pool of global resources for networking and information dissemination to provide up to date inputs to our customers on wide variety of usage.
- Ensuring effective Solid Waste Management
- To develop and integrate an effective two way communication network for interaction with all responsible associates and partners in global agricultural development.

Think global, Act local:

As the world’s foremost provider of branded off patent agrochemical products, Krishi Rasayan Export Private Limited has incorporated this credo into every facet of its extensive operation. Their global success depends on their ability to meet the specific needs of each and every region they serve. From feeding the world to producing greener alternative fuels, they are helping farmers to grow crops abundantly and responsibly in every locale.

Local leadership, Global footprint:

Today’s agricultural field is blooming, with new opportunities for crop diversity and innovation sprouting up in every corner of the globe. And when it comes to crop protection, Krishi Rasayan Export Private Limited continues to lead the field confidently forward, producing the largest yield of effective off patent agrochemical products in the global marketplace. Guided by the principle that better collaboration translates into better yield in the field, of their many subsidiaries in every region where they maintain operations. It reflects a market centric approach and they are relentlessly pursuing of promoting local empowerment in order to maintain global leadership. It is a strong platform that will enable the company to benefit from the expertise and experience of their team members. The potential for collective and
collaborative professional mindshare on issues such as product bundling and pricing, distribution, logistics and beyond is truly invaluable. Working together, they look forward to establishing an even leaner and more flexible global organization than which is currently maintained. Through their efforts in great leadership, they can focus on cost reduction and enhanced profitability for the group as a whole while empowering their regional managers with the freedom to maintain a local perspective and act accordingly.

Local expertise, Global integration:

Planning ahead in the crop protection industry is never an exact science; this year’s bumper crop can easily turn into next year’s drought. Volatile weather changes can shorten or lengthen the agricultural season. Fluctuating prices of oil and raw materials can impact profitability in both directions. Succeeding on the global stage in a highly competitive market, therefore, requires preparation for varying possible outcomes. Recognizing this, they made bold strides this year at Krishi Rasayan Export Private Limited to prepare for the often unpredictable by implementing a comprehensive and enterprise wide change and efficiency plan. They revamped their corporate infrastructure, consolidated and streamlined their leadership by eliminating duplicate posts and formed a talent management department that will employ state of the art tools to benchmark the performance of their key executives in order to insure full, cross enterprise accountability, to come and serve as a vital building block for better seasonal planning. By processing many of their procurement requests through a single channel, they increase their bargaining power, tighten their supply chain and reduce costs with greater efficacy.

Capitalizing on attractive growth opportunities:

If agriculture is one of the oldest and most basic survival skills known to mankind, protecting crop integrity from the ravages of nature has been the constant challenge faced by farmers throughout the millennia. At Krishi Rasayan Export Private Limited they are proud to take part in the time honored tradition of enabling crops to reach fruition. As the foremost manufacturer and distributor of crop protection products in the global generic space, they are always ready to take advantage of shifting trends in the market place and leverage new opportunities.

The many dynamic opportunities shaping today’s market place include the population growth in central Asia and other parts of the world, coupled with a steady, positive rise in the standard of living and food consumption; the increasing demand
for bio fuel natural alternative energy harvested from sugarcane, corn, rapeseed and other crops with a high yield of sugar or oil; the continuing emergence of genetically modified, improved output crops and the growing demand for crop protection products in non-crop environments such as forests and railroads. With over 70 per cent of the crop protection market already in the off-patent phase, there is ample headroom for the continued growth of generic providers and Krishi Rasayan Export Private Limited is best positioned to benefit from this trend due to its undisputed lead in the field.

**Building a broad and diversified platform:**

In an era typified by the widespread proliferation of generic crop protection products, well planned portfolio enhancement is essential for succeeding in the global agro chemistry field. At Krishi Rasayan Export Private Limited Group, they continuously cultivates and expands its diverse offering, implementing a “whole is greater than the sum of its parts” approach. It’s all about knowing how to enable the right synergy and delivery of products in a given geographic region. Having all the necessary products on hand to address the entire spectrum of needs for every crop grown in a certain locale means that they can become a one stop address for farmers looking for a comprehensive solution. They have amassed a significant portfolio of over ninety internationally registered active ingredients. Spanning through Australia, Bangladesh, Columbia, Cyprus, Ecuador, Egypt, Greece, Iran, Jordan, Malaysia, Mexico, Oman, Pakistan, Saudi Arabia, South Korea, Spain, Taiwan, Thailand, UAE, Ukraine & Vietnam and most major markets beyond, Krishi Rasayan Export Private Limited is poised to cultivate its dominant role as the world’s leading end to end generic provider.

**Driving operational excellence and managing risks:**

In the generic crop protection arena, one of the primary keys to protecting established successes and generating new wins is in streamlining the business model: keep your operation lean and flexible; invest in portfolio breadth through the registration of products and through building access to key markets; and focus on a holistic approach to supply, from consolidated purchasing, through modern manufacturing facilities and coproduction partnerships, to effective worldwide logistics management. No one is more adept at maintaining this approach than Krishi Rasayan Export Private Limited Group. As the largest generic player in a competitive global market place with close to USD 120 M. in sales, they consistently benefit from
high operating margins in comparison with their peers. This performance is achieved through an uncompromising approach to managing operating and capital costs responsibly; an ongoing commitment to industry leading environmental standards; and an advanced risk management approach addressing issues such as currency and credit.

1.2.5 Plant growth regulator of Krishi Rasayan Export Private Limited India Pvt. Ltd.

- **Paushak**

  Paushak is a plant growth regulator. It is used for the control regular growth of crop. Paushak is used for improvement of stem size and renew their stopped growth, it can be used to all crop during growth phase of crop or before flowering time.

  Paushak can be used to any crop which helps to improve regular growth as well as more production and more number of stem formations. It also helps to increase flowering of plant for a long period. If Paushka is used at earlier stage of crop growth it helps to botanical growth with the increase in roots of crops helps to better nutrient up-take by the crop. It is safe to beneficial insects and mammals and is environmentally friendly.

1.2.6 Ethical business practice

1.2.6.1 Proper dealings with authorities

In order to conduct its business the Company requires different licenses and permits from various authorities in each and every country. The Company is committed to carrying out the required contact with the authorities with high ethical and professional standards while observing the relevant Laws’ provisions. The Company forbids its employees to use illegitimate or improper means as a means of promoting commercial interests of the Company.

The Company will cooperate with all applications and requests of official authorities and, subject to its lawful rights, will supply authentic and accurate information, as far as required to do so. If it is not clear whether the Company must answer the request and also if there is doubt as to how the request should be answered an employee should consult with the immediate superior and the legal department.

1.2.6.2 Proper dealings with customers

Krishi Rasayan Export Private Limited is committed to producing and marketing products that are of high quality and safe to use. The Company has
international quality standards and upholds working methods in order to ensure the quality of its products. Employees are required to work with due diligence in order to locate and prevent processes which may harm the quality of the products. The Company maintains open and continuous relationships with its customers and the users of its products in order to ensure customers’ satisfaction with the products and maintenance of the quality standards, and assists in promoting the safe and efficient use of its products.

1.2.6.3 Proper dealings with suppliers

Krishi Rasayan Export Private Limited recognizes that the quality of its products is influenced, amongst other factors, by the quality of its relations with its various suppliers. Accordingly, the Company conducts efficient, honest and legal commercial relations with its suppliers, based on clear and organized procedures. The Company insists in carrying out tendering procedures between its various suppliers in order to achieve optimal conditions and prices, and to give potential suppliers a competitive opportunity to win a share of the Company’s scope of acquisition. This procedure helps ensure that suppliers will be committed to supply a quality service at competitive prices. The Company attaches importance to having business relations with suppliers who are strict, within the frame of their business, about fulfilling the Law’s provisions regarding rights of employees, health and safety, protecting the environment, etc.

1.2.6.4 Proper dealings with competitors

Krishi Rasayan Export Private Limited recognizes that information related to its competitors’ business is of great value, and it shall act to obtain such information solely in lawful ways. The Company and its employees will not take any action which may include soliciting employees, or other parties connected to its competitors, to give the information related to its competitors’ business. The company and its employees will conduct its activity according to all relevant competition Laws and in any case will not be a party to agreements or understandings, whether written or oral, with actual, or potential, competitors which do not comply with the law.

1.3 Practical utility of the project work

The production of the Indian pesticide industry has remained stable at 85,000 MT in FY07-08. In value terms, the size of the Indian pesticide industry was estimated at Rs.98 bn. for 2008, including exports of Rs.48 bn. The Indian pesticides
industry is dominated by insecticides globally where herbicides and fungicides are the key segments. India ranks 10th in the world in use of pesticide consumption as its total consumption amounts to about 500 million tonnes. India is presently the largest manufacturer of basic pesticides among the South Asian and African countries, with the exception of Japan. The Indian pesticides market is the twelfth largest in the world with a value of USD 0.6 bn, which is 1.6 per cent of the global market. India is one of the most dynamic generic pesticide industries in the world, having a total installed capacity of technical grade pesticides consisting of large and medium scale and 400 pesticide formulators (of all sectors) spread all over the country for use in agriculture, public health, household and plant protection. Overall, it can be said that there is a bright future for agro chemical companies in India in the post patent era.

The product Pushak is a great product innovation from the company in Lakhisarai region. Since it is a new product in the market of the region, this study certainly helped the company to analyze the market demand and potentiality of the product to trigger its marketing strategy.

The Paushak is a growth nutrient used to increase size of plant stem fruit and flowers well growth. It can be used on any crops which will increase production of crops and enhance the longitivity of production. Therefore the Paushak is mostly preferred by farmers and recently its market potential has been becoming strong enough for the company to penetrate into it.

1.3 Objectives of study
1. To find out the market potentiality of Paushak in Lakhisarai region.
2. To Access the promotional activity of Krishi Rasayan Export Private Limited India in Lakhisarai region.
3. To study the competitiveness of Paushak with other products.
4. To find out farmers and dealers expectations from company.
CHAPTER – II

REVIEW OF LITERATURE

Sandhu (1992) observed that in Punjab, pesticides market was controlled by
the private traders as about 80 per cent of the total pesticides were handled by it,
which indicated oligopolistic nature of the market. The cooperatives and the
government handled only about 20 per cent of the total pesticides consumed. The
private distribution channel was found to be more efficient than the others.

Whitaker (1993) found that increase of pesticides forecast for small holder
farmer in the tropic and pressure for the wider adoption if IPM will make greater
demands. Without implementing education and training programs to support
appropriate safe and effective use of pesticides and standards in pesticides use will not
improve. Simple multi media education techniques should be integrated with direct
and indirect training schemes. Pesticides company labels on pack leaflets, posters and
training activities have an important contribution to make.

Chand and Brithal (1997) found that in the absence of green revolution
technology, pesticide use would have increased at a higher rate and there for the green
revolution technology cannot be blamed for indiscriminate use and increase in
pesticide consumption. A comparison of pesticide used in agriculture in various
countries revealed that its use in India is neither excessive nor discriminate.

Sabur and Akter (1997) reported that various types of spurious pesticide are
flooded into the market. Special law should be enacted so that the companies or
traders distributing spurious pesticides are to be punished strictly. The farmers in the
study area even today do not have sufficient knowledge about safe handling and use
of pesticides. For that reason, farmers should be taught about the safe and judicious
use of pesticides. The study also revealed that the medium and large farmers are using
excessive amount of pesticides. Therefore, farmers should be informed through block
supervisor about the recommended doses of each pesticide.

Gupta (1999) in her market research concluded that brand preferences among
the consumers may be related to different factors like personal attributes, age,
educational qualifications, occupational status, monthly income etc.

Luch, Devid and Ronald (1999) defined market potential as the maximum
demand response possible for a given product or service over a specified period of
time under well defined competitive and environmental conditions.
Sankaranarayanan and Padmanaban (1999) examined that the market structure of pesticides at retail level, which was identified as oligopoly. There was weak association between number of dealers and number of farm holdings. Based on brand name, symbol, colour of the packing material offered by the firms, the farmers were able to discriminate the pesticides. The competition between the existing retailers in remaining the market share and high initial investment acted as barriers to entry.

Kotler (2000) described that positioning means creating a space in the customer’s mind. Marketing is a continuous process of value creation, value communication, value delivery and brand positioning. Brand positioning helps marketer in building the marketing mix for each segment.

Chourkova and Mihovski (2001) studied on experimental field of the Institute of Upland Stockbreeding and Agriculture, Troyan, Bulgaria, from 1996 to 1998. Mechanical and chemical methods for weed control were tested in the establishment of a monoculture birdsfoot trefoil (Lotus corniculatus) ley. The herbicides tested were Agil (propaquizafop) at 150 ml/da, The best herbicide was Pivot 100 EK applied at the 2nd to 4th leaf growth stage of birdsfoot trefoil, which resulted in 6-35 g weeds/m2 and 7-42 g weeds/m2 at the lower and higher application rates, respectively. Application of Bazagran, alone or in combination with Agil, proved inefficient (with 104 to 500 g weeds/m2).

Palczynski and Dobrzanski (2003) conducted a field trial in 2001 at Skierniewice, Poland to evaluate the response of barnyardgrass (Echinochloa crus-galli), broadleaved weeds (such as Chenopodium album, Capsella bursa-pastoris, Thlaspi arvense, Galinsoga parviflora and Lamium amplexicaule) and drilled onion to tank mixtures of graminicides, i.e. propaquizafop (Agil 100 EC; 80 g/ha), with oxyfluorfen (Goal 240 EC; 60 g/ha). They reported that excellent barnyardgrass and good broadleaved weed control were obtained with the application of the tank mixture. Phytotoxicity effects on onion plants did not increase with the use of tank mixtures, but injury symptoms typical of oxyfluorfen treatment were observed. Onion yield was high in all treatments compared with the control, with no significant differences between the treatments.
Poienaru et al., (2005) observed that Soyabean cultures, especially those from the Danube Meadow, Baneasa, Romania, are very strongly infested with Johnson grass (Sorghum halepense), which causes large damages, by reducing production by 40-85 per cent, depending on degree of infestation. Before the synthesis of special herbicides for Johnson grass control, this species was controlled by practicing deep tillage, repeated operations with the disk, and, after the sprouting of soya plants, by mechanical and manual hoeings. In the Danube Waterside, the lack of labour force for the manual hoeing is very sharp. For this reason, there was an enlarged usage of herbicides for annual weed control (monocotyledonous and dicotyledonous), including Johnson grass. For the control of Johnson grass species, in the conditions of the Danube Meadow, the best results were obtained with the herbicides Fusilade Super (fluazifop-P), Targa Super (quizalofop-P), Agil (propaquizafop) and Select (clethodim), and for the control of annual dicotyledonous species, with the herbicide Pivot 100LC (imazapyr).

Banumathy and Hemameena (2006) in their market research concluded that brand preferences among the consumers may be related to different factors like personal attributes age, educational qualifications, occupational status, monthly income etc.

Grover and Luhach (2006) observed that in Hisar district of Haryana state revealed that private pesticide dealers were the major sources of purchase of pesticides by farmers. A pesticide price control structure keeping in view the interests of the companies, dealers and the farmers may be formulated. Suitable measures may be taken to check and control the sale of spurious and substandard pesticides.

Singh and Sidhu (2006) reported that the farmers obtained about 34 per cent of the cotton seed from the authorised seed dealers, about 24 per cent from the village shopkeepers and about 14 per cent from the commission agents. Seed Replacement Rates in case of certified seed were 24.65 per cent. The large farmers had the highest SRR (42.10 per cent) followed by small farmers (14.17 per cent). The medium farmers had 10.05 per cent SRR for this crop. The major problem faced by the farmers in Punjab is the large scale availability of spurious seed cotton. The farmers are also advised to purchase the cotton seed with proper bills and from public agencies and approved seed dealers only.
Soovali, et al., (2006) found that septoria leaf blotch complex (*Septoria tritici* and *Septoria nodorum*) and powdery mildew (*Erysiphe graminis*) are common foliar diseases of spring wheat in Estonia. This paper reported results of multisite field experiments performed on spring wheat varieties Tjalve and Munk during 2003-04 in Estonia. Fungicides Falcon (propaquzafop) 460 EC and Opera were used in full and reduced doses of one or split applications. The aim of the current study was to obtain efficient disease control and to identify the impact of fungicide application on yield at the time of fungicide application. The biological efficiency of fungicides was assessed based on disease scorings made until growing stages 75-77 days. The trial results show that biologically and economically effective control of wheat diseases could be achieved with timely use of lowered fungicide doses. Spraying at growing stages 41-55 days will often be enough to achieve good control of serious attacks by Septoria.

Narula and Upadhyay (2008) reported that the pesticide industry in general has large domestic market, but a wide export market also exists. Insecticides are the largest product sector contributing to 59 per cent of the total market. Around 144 insecticides are approved for use on crops. The key crop outlets for insecticides are cotton and rice, which account for about 45 and 23 per cent respectively of the total value of insecticide sales.

George and Lahiri (2009) concluded that the agrochemical companies are adopting uniform policy for appointing dealers in terms of accepting blank cheques, security deposit, providing credit and charging interest on the unpaid stock. Probably the policies and strategies structured for appointing dealers varies to a great extent because of the rigid competition among the companies.

Chahal and Hundal (2010) studied that the farmers were not having a very strong brand loyalty as far as pesticides are concerned, though their loyalty did increase as their association with the brand grew old. Also, the rural market was very price sensitive and this was one very important factor causing brand switching. Good promotional schemes attracted new customers to some extent. This has also made the brands being liked more by the farmers. Farmers, purchase decisions were also found to be greatly influenced by others recommendations like friends and fellow farmers.
Materials & Methods
CHAPTER – III
MATERIALS AND METHODS

The methodology adopted for evaluation of the objectives of the present study is described under following heading.

1. Location
2. Sampling technique
3. Sample size
4. Type of data
5. Statistical analysis

3.1 Location

The Lakhisarai district was selected purposively. The reason for selection of these districts was the significant shares in selling of Paushak in Bihar state and possibility of selling for Paushak in selected districts.

3.2 Sampling Technique

Multi stage sampling technique was adopted as per the objectives of the study. Three levels of multi stage sampling at district level, taluka level and village level was taken. On basis of agricultural activity and cropping pattern, samples were taken in Lakhisarai district. In each district level, one distributor was selected for sampling at the first stage. In the next stage of sampling two dealers were selected at taluka level. At the village level four farmers each under every dealer was selected at the last stage of sampling.

3.3 Sample size

Farmers: 174
Dealers: 32

3.4 Type of data

There are two types of data available for the research purpose viz., the primary data and secondary data.

The primary data was collected by survey method through personal interview of dealers and farmers using well structured questionnaires. The information regarding agricultural activities, cropping pattern, utilization of insecticide and expectation of farmers from company were collected.

The secondary data and other relevant information for the study was gathered from the reference book, bulletins journals and periodicals of the subject published by authors, organizations, institutions and agencies.
3.5 Statistical analysis

To find out market potentiality of Paushak in Lakhisarai region, the information regarding other competitor product, area, cropping pattern, price etc. were analyzed.

To access the promotional activity of company like mass media, free sampling, demonstration, wall painting/poster/banner is computed in tabular and graphical form.

The competitiveness of Paushak was found out by studying the factor relevant to selling of other product.

The farmers and dealers expectation regarding to product information, credit facilities, after sales services and guarantee etc. were present in tabular form.

All the respondents were selected and transferred to the master sheet. The following statistical tools were used for interpreting the data.

3.5.1 Mean score

Mean score was calculated for assigning the ranks. The mean score was obtained by the total score if an item divided by the total number of respondents.

3.5.2 Mean and Standard Deviation (S.D.)

Arithmetic mean and standard deviation were calculated for classification of the respondent in different categories.

Standard deviation was calculated from the total score obtained by each respondent as per the following formula:

\[
\bar{X} = \frac{\sum X_i}{n}
\]

\[
S.D = \sqrt{\frac{\sum (X_i - \bar{X})^2}{n-1}}
\]

Where,

\(X_i\) = Individual score

\(\bar{X}\) = Mean score

\(n\) = Total number of respondents

The maximum and minimum score limits were obtained by the following formula:

\(X_i = Mean \pm S.D.\)
Results & Discussion
CHAPTER IV
RESULT AND DISCUSSION

Formal Media

It includes Press and print, TV, Cinema, Radio, and Point of purchase and Outdoor advertisement. Reach of formal media is low in rural households (Print: 22%, TV: 25%, Outdoor advertisement: 20%, and Radio: 33%) and therefore the marketer has to consider the following points

1. Newspapers and magazines

English newspapers and magazines have negligible circulation in rural areas. However local language newspapers and magazines are becoming popular among educated facilities in rural areas. i.e. Dainik Jagran, Hindustan, Pravat khabar etc. Company should publish advertisement in this paper about Paushak in Lakhisarai region by local news paper.

2. Television

It has made a great impact and large audience has been exposed to this medium. Some channel is great influence to attract the audience i.e. ETV Bihar, Sahara Bihar, Doordarshan etc. Company should give advertisement of Tissue culture plant.

Outdoor Advertisements:

This form of media includes signboards, wall painting, banner, hoarding, tree boards, bus boards, dealer boards, product display boards etc, is cost effective in rural areas. Symbols, pictures and colours should be used in rural markets so that they can easily identify the products. Generally rural people prefer bright colours and the marketer should utilize such cues.

Informal Media

These media is effectively reach and personalized communication with the people and will help in realizing the promotional objectives. Companies to suit the specific requirements of rural communication are using a variety of such media effectively and some of the more important media and methods are given below.

1. Farm-to-Farm/Door-to-Door visit:

Rural people prefer face-to-face communication and farm visits facilitate two-way communication. The advantage is that the sales person can understand the needs and wants of the rural customer by directly discussing with him and answer his queries on products and services. Potential customers in the village are identified and
the company’s/distributor’s representative makes farm-to-farm visits and highlight the benefits of the products. The person carries with him literature in local language and also samples of products. The person does not sell the product but only promotes the use of the product.

2. Group meeting:

Group meetings of rural customers as well as prospects are an important part of interpersonal media. Company is able to pass on the message regarding benefits of the products to a large number of customers through such meetings.

Group meeting of key customers are conducted by company in Lakhisarai district. Company should visit and identified the village; makes village people in a common place and explain the various schemes to the villagers. Such meetings could be organized in prosperous villages for promoting consumer durables and two wheelers also.

3. Field demonstration

This is based on the extension principle “seeing believes” and is one of the most effective methods to show the superiority of the company’s products to the customers. A progressive farmer who is an opinion leader is selected and the demonstration is conducted in his field in the presence of a group of farmers in the village. The farmers observe the results in the field and the local dealer calls on them in their farms and persuades them to buy the particular brand of pesticide.

Marketing Strategies

Through the agriculture markets offer big attractions to the marketers, one of the most important questions frequently asked is how do we reach to the large farmer’s population which are scattered and resides in remote area through different media and methods?

Choosing Media Vehicles

The choice of different media vehicles for any market is based on an analysis of the standard features like: reach, frequency, cost & availability. Depending on the factor of reach & frequency, the different media can be classified into the following categories. This categorization can help the marketer to make a decision about which type of media would be more suitable to the product & the organization.
(a) **High Reach High Frequency**
- Jeep based advertising
- Wall painting
- Bus stand & bus panels
- Postal branding

(b) **Low Reach High Frequency**
- Shop front painting
- Tin plating - house
- Dealer boards
- Village boards
- Calendars/labels

(c) **High Reach Low Frequency**
- Van based advertising
- Melas
- Direct to home
- Exhibitions/created events

(d) **Low Reach Low Frequency**
- Tin painting - tree/shops
- Leaflets
- Posters & banners
- Streamers

### 4.1 To find out the market potentiality of PAUSHAK in Lakhisarai district.

The fig 4.1 shows the distribution of different agricultural crops which has been growing in Lakhisarai region. The crops include Wheat, Oil seed, Vegetables & fruit, Maize & other crops. Wheat covers major portion of agricultural crops which accounts for 40 per cent of the total cropped area. Oil seed accounts for 32 per cent in area wise distribution, which was followed by Vegetables & Fruits 20 per cent, Maize 5 per cent, and Other 3 per cent. Wheat was more preferred by farmers than any other in order to make high profit.
Fig 4.1: Distribution of different crops in selected area

Figure 4.2 shows regarding the potentiality of our specific product, i.e., Paushak, could be easily visualized from the above data which indicate the use in terms of litres/volume of PGR that was used in the field of the study area. If marketing of Paushak be increased in an effective manner the market share of other products could be easily overtook by it in short time.

The fig 4.2 indicates the market share of different products by different companies including that of Krishi Rasayan Export Pvt. Ltd. Paushak was holding the first place with 33 per cent of market share. Bioenergy accounts for 26 per cent of the total market, which is followed by Dhansrigold with 21 per cent and Plant vita with 13 per cent followed by Ralligold 8 per cent.

Fig: 4.2 Market shares of Different PGR in Lakhisarai
4.2 To measure the promotional activity by Krishi Rasayan Export Pvt Limited. in Lakhisarai district of Bihar.

- **Mass media exposure:**

The mass media exposure helps people to gain general awareness as well as provides scientific and technical information and plays an important role to develop their performance in the occupations or economic activity in which they get involved which ultimately improves their socio-economic standards. The information regarding mass media exposure was collected by the frequency of respondents' involvement in different mass media. The respondents were classified into three categories as shown in Table 4.3.

**Table 4.1: Best promotional activity according to farmers for the company**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Level of mass media exposure</th>
<th>Frequency</th>
<th>Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low (less than 5.40 score)</td>
<td>39</td>
<td>22.41</td>
</tr>
<tr>
<td>2</td>
<td>Medium (in between 5.40 to 11.60 score)</td>
<td>84</td>
<td>48.27</td>
</tr>
<tr>
<td>3</td>
<td>High (more than 11.60 score)</td>
<td>51</td>
<td>29.31</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>174</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Mean = 8.50  
S. D. = 3.10

Thus, from the above discussion it can be seen that a great majority (49.27%) of the farmers possessed medium to high exposure to media and demonstration.

Promotional activity is one of important part of the marketing. Today in the market, there was very tough competition among the pesticide companies. Every company was using promotional activities for marketing of the products and for penetration of new products in the market promotional activities were very important. Even farmers also want promotional activities from the company. Through the promotional activity farmers can directly come into the contact with the company so they can discuss the problems and get the solution.

The Fig 4.3 shows the kind of facilities providing by a company for selling of product. There were mainly two facilities provided by company to dealers. There were estimated to be 84 per cent of facilities provided by the field staff to increase the
contact with farmers and 16 per cent of facilities were provided by point scheme for promotional activities of their products among the customers.

![Pie chart showing 84% for field staff and 16% for point scheme]

**Fig: 4.3 Kind of facilities providing by a company for selling of Product**

The fig 4.4 depicts that the dealers were providing different support services to customers which include information, credit facilities, after sales services, and guarantee. Among the various facilities the dealers were providing to the farmers included mostly credit facilities which accounted for 41 per cent. The main reason behind the higher portion of credit facilities was due to the reasons such as it provide farmer enough time to repay their credit when crop would be harvested, as well as, to the dealer it gave an opportunity to increase their total sale over a period of time by indirectly helping the farmers. The provision of information at right time accounts for 31 per cent which is more essential to farmers. The timely information about weather, timely application of Pgr, and crop specific chemicals helped the farmers very much. The guarantee and after sales service provided by the company accounted for 16 per cent and 12 per cent respectively and they were also important as far as for gaining the trust and satisfaction of customers.
4.3 Competitiveness of Paushak with other product

Krishi Rasayan Export Pvt. Ltd offers a array of Plant growth regulator which is the largest growing segment of crop care products. With the labour costs increasing every day, the cost for manual distribution of organic manure are increasing and the role of PGR is increasing every day. Company have a range of different products to cater for the different requirements of the market. It has Paushak very popular and established brands in the market.

Day by day competition is increasing in every industry it also include the pesticide industries. Every year so many company enters in the pesticide business these all have the new strategy and formulations so it increase the competition.

Figure 4.3: Price, dosage and turnover comparison of different PGR

The fig 4.5 shows the price comparison of Paushak with other competitive product namely, Biovita, Bioenergy and Ralligold. Ralligold is a product of Tata Rallis and having highest price of 600 among all four products taken into account in the present study. Paushak is a product of Krishi Rasayan Export Pvt Ltd having a price of Rs 450 which ranks second highest in cost. Bio energy, a product from Nath agro and Biovita, a product of Shalimar Biotech Industries has prices of Rs 300 and Rs 310 respectively. Companies have adopted skimming price policy for their
products. Paushak is having little high price but comes with better competition as far as quality contents are concerned.

![Graph: Price comparison of Paushak with other competitive product]

**Fig 4.5: Price comparison of Paushak with other competitive product**

The fig 4.6 shows the comparison of dosage of Paushak with other products namely Biovita, Bioenergy and Ralligold. Biovita and Ralligold were applied with same dosage per acre which is 250 ml per acre. The dosage of Paushak and Bioenergy were 150 ml and 200 ml respectively per acre. Paushak is more effective with low dosage as compare to Biovita and Ralligold.

![Graph: Dosage comparison of Paushak with other products]

**Fig 4.6: Dosage comparison of Paushak with other products**
The fig 4.7 shows that the turnover of Paushak, Biovita, Bioenergy and Ralligold in lakh rupees. Turnover of Paushak was 18 lakh which was the highest among other competitor companies. The turnover of Biovita, Bioenergy and Ralligold were Rs 11.9 lakh, Rs 8.25 lakh and Rs 5.45 lakh respectively. The turnover of Paushak shows that there was a high demand for the product in selected district.

![Diagram showing turnover of Paushak, Biovita, Bioenergy, and Ralligold in lakh rupees.]

**Fig 4.7: Turnover of Paushak in comparison of different competitive products**

### 4.4 Farmers and dealers expectation from company

The farmers’ expectations are changing, aspirations of dealers and retailers in the farming sector are changing, the channel of distribution is becoming crucial and there is a clear differentiation of market experience in different pockets of India. The farmers are getting an opportunity to use and experience new products.

The fig 4.8 depicts the relative responses of dealers regarding their expectations from company in improving the market of pesticides. Majority of dealers (28%) were insisting that they should be improved promotional activities to improve the marketing of pesticides among farmers. Another portion of them (25%) had required to increase credit facilities by the company. Other section of dealers (22%) required that the company has to improve field staff for availing materials to them and thereby improving the sales of pesticides. About 16 per cent of dealers were of the opinion that the company have to keep limited dealers in order to reduce the unwanted competition in the market. Last section of dealers was promoting the idea that there
should be regular contact with customers in order to increase the market of pesticides among farmers.

![Pie Chart]

**Fig 4.8: Expectation of dealers from company**

Today the farmers are giving more attention towards his farming and want to earn more profit from their farm by adopting well developed farming practices and by using improve good quality of agriculture inputs. Now farmers also believe in quality so its expectations from company are also increased.

The fig 4.9 shows farmers expectations from company, it indicate that the 25 per cent of farmers expect company should give more field demonstration it shows that the majority of farmers are become adopt the product as the result. 17 per cent farmers also want company increase the promotional activity. 15 per cent farmers demand that company provide the product easily available so farmers can buy the product timely. 16 per cent farmers wanted the company product at reasonable price because in India most of the farmers are small and marginal so their income is also limited. Farmers expect from the company provide the good quality product and expert visit in farm respectively 14 per cent and 13 per cent.
Fig 4.9: Expectations of farmers from company

Indian population is increasing day by day and land holding of farmers is decreasing due to division of families which effects on land holding of farmers. So most of the farmers are classified in to marginal, small and big farmers category.

The fig 4.10 indicates that out of total farmers there were 18 per cent big farmers, 37 per cent medium farmers, and 45 per cent small farmers.

Fig 4.10: Status of farmers in Lakhisarai District

Uses of PGR in India most of the farmers opinion about PGR are that production of crop because it’s fully depend on soil. But day by day farmers are now aware of various brands of PGR. The farmers reported that most of the PGR are costly and we lack of skill in their application. Company have to come forward to educate.
the farmers about the type of PGR, recommended doses, time of application and methods of application.

The fig 4.11 shows that 77 per cent farmers were aware about use of Paushak. They think that more use of it gave more growth and greeny leaf and 23 per cent farmers were not aware because these farmers did not use of the Paushak and so they don’t know about their results.

**Fig 4.11: Awareness of farmers about Paushak**

The fig 4.12 indicates the various brand products of PGR used by the farmers of the study area. Among the different products Paushak has the maximum portion of market among the farmers with 34 per cent of total PGR used by the farmers. The second PGR behind Paushak was Biovita which accounts for about 22 per cent of the total PGR. The Bioenergy accounts for about 17 per cent and stood at the third position. The PGR Ralligold had only 11per cent of the total PGR used by the farmers.

**Fig 4.12: PGR used by farmers**
Fig 4.13: Source of information’s to farmers to use PGR

The figure 4.13 suggests the sources of advices to farmers to use of PGR. The local farmers were the main source of suggestion for farmers to use PGR for the overall growth of plant by contributing 37 per cent of the total sources of information to use them effectively on the field crops. The dealers were the second source of information and it contributes for about 34 per cent of total sources and they were effectively influence the farmers while they buy different products from them. The contribution of company’s employee as a source of information to use of PGR was accountable to 25 per cent. The contribution of agricultural officers for giving information to farmers was relatively very less and only has a 4 per cent of total source of information.
Summary & Conclusion
CHAPTER V

SUMMARY AND CONCLUSION

The Indian pesticides industry was the largest in Asia and twelfth largest in the world. With India’s 60 per cent population depending on agriculture, the pesticides industry of India plays an important role in India’s economy. The report focuses on the industry structure, major players in the Indian pesticides industry, their market shares and types of pesticides used in India. The report also anticipates the future trends in the pesticides industry.

The distribution of different agricultural crops includes wheat, oilseed, maize, vegetables, fruit and many others. Wheat covers a major portion of agricultural crops which accounts for 40 per cent of the total cropped area. Wheat was more preferred by farmers than any other crop in order to make high profit. In the study area, Paushak was holding the first place with 33 per cent of market share. Bioenergy accounts for 26 per cent of the total market, which was followed by Dhansrigold with 21 per cent. Bio vita accounts for 13 per cent and Ralligold with 8 per cent.

The mass media exposure helps people to gain general awareness as well as provides scientific and technical information and plays an important role to develop their performance in the occupations or economic activity in which they get involved which ultimately improves their socio-economic standards. There were estimated to be 86 per cent of facilities provided by the field staff to increase the contact with farmers and 14 per cent of facilities were provided by point scheme for promotional activities of their products among the customers. Among the various facilities the dealers were providing to the farmers included mostly credit facilities which accounted for 41 per cent. The main reason behind the higher portion of credit facilities was due to the reasons such as it provide farmer enough time to repay their credit when crop would be harvested, as well as, to the dealer it gave an opportunity to increase their total sale over a period of time by indirectly helping the farmers. The provision of information at right time accounts for 31 per cent which was more essential to farmers.

Company had a range of plant growth nutrient products to cater for the different requirements of the market. This includes for all type of crop. It has Paushak very popular and established brands in the market. Paushak is a product of Krishi Rasayn Export Pvt Ltd having a price of Rs 450 which ranks second highest in cost. Ralligold is a product of Tata Rallis and having highest price of 600 among all four
products taken into account in the present. Bio energy, a product from Nath agro and Biovita, a product of Shalimar Biotech Industries has prices of Rs 300 and Rs 310 respectively. Paushak is having little high price but comes with better competition as far as quality contents are concerned.

Companies have adopted skimming price policy for their products. Agil is having high price but comes with better competition as far as quality contents were concerned. Turnover of Paushak was 18 lakh which was the highest among other competitor companies. The turnover of Biovita, Bioenergy and Ralligold were Rs 11.9 lakh, Rs 8.25 lakh and Rs 5.45 lakh respectively. The turnover of Paushak shows that there was a high demand for the product in selected district.

The farmers’ expectations were changing, aspirations of dealers and retailers in the farming sector were changing, the channel of distribution was becoming crucial and there was a clear differentiation of market experience in different pockets of India. The farmers were getting an opportunity to use and experience new products. By studying the farmers expectations from company, it indicate that the 25 per cent of farmers expect company should give more field demonstration it shows that the majority of farmers were become adopt the product as the result. 17 per cent farmers also want company increase the promotional activity. 15 per cent farmers demand from company provides the product easily available so farmers can buy the product timely. 16 per cent farmers wanted the company product at reasonable price because in India most of the farmers were small and marginal so their income was also limited. Farmers expect from the company provide the good quality product and expert visit in farm respectively 14 per cent and 13 per cent.

Out of total farmers there were 18 per cent big farmers, 37 per cent medium farmers, and 45 per cent small farmers. The local farmers were the main source of suggestion for farmers to use plant growth nutrient for the growth of crops by contributing 37 per cent of the total sources of information to use them effectively on the field crops. The dealers were the second source of information and it contributes for about 34 per cent of total sources and they were effectively influence the farmers while they buy different products from them. The contribution of company’s employee as a source of information to use plant growth regulator was accountable to 25 per cent. The contribution of agricultural officers for giving information to farmers was relatively very less and only has a 4 per cent of total source of information.
Conclusion:

Among different crops, wheat was the major crop in the study area which generates high profit. Paushak holded the first place in the market share with 45 per cent which was obtained by mass media exposure and increased contact of field staff with the farmers which accounted for 85 per cent of the total promotional activities. The input facilities like credits which accounted for 41 per cent of the total facilities given to farmer made them produce their crops in time and increase the total sales over a period of time by the company. The company had adopted skimming price policy to sell its wide range of their products in the market among which Paushak having a price of Rs. 450/-, but very competitive as far as quality was concerned. Turnover of Paushak was 18.58 lakh which was the highest among other competitor companies. According to the study, the farmers’ expectation from the company was to provide the good quality product and expert visit in farm. The local farmers were the main source of suggestion for farmers to use plant growth regulator for the growth of crop. Company should maintain number of distributors in particular area.

Suggestions:

- The company should keep in touch with farmers continuously.
- The company should provide its materials in time and in sufficient quantity.
- The company should keep only one distributor or two dealers at a taluka place to reduce the competition among the dealers.
- The company should fix the affordable price of plant growth regulator products.
- The company should provide quality materials to grow its business.
References
REFERENCES


## APPENDIX

### QUESTIONNAIRES FOR FARMER

1. Personal details
   - Name
   - Mob.
   - Address
   - Age

2. Land Particulars

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Land</th>
<th>Irrigated (Acer.)</th>
<th>Rainfed (Acer.)</th>
<th>Total (Acer.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Owned</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Leased</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Major crops?

<table>
<thead>
<tr>
<th></th>
<th>Irrigated Area (Acer.)</th>
<th>Rainfed area (Acer.)</th>
<th>Tot. Area (Acer.)</th>
<th>Profitability/Acer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Purpose of crop production?
   - Self-consumption
   - Sale to market
   - Profit per Acer

5. Which company’s Pesticides/product you mostly used for plant protection?

<table>
<thead>
<tr>
<th></th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Company</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insect / disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantity ml./Acer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6. Which are the promotional activities has been adopted by Krishi Rasayan Export Private limited in your area?

<table>
<thead>
<tr>
<th>Reasons</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Expert’s visit</td>
<td></td>
</tr>
</tbody>
</table>
Appendix

2. Field Work
3. Demonstration
4. Free samples
5. Farmer meeting
6. Low Price of Product
7. Others

7. Which pesticides company you mostly like and why?

8. You are purchasing pesticides from which retail enterprises?
   - .................................................................
   - .................................................................

9. Why are you purchasing pesticides from above retail shops?

<table>
<thead>
<tr>
<th>Name of firm</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of product is good</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reasonable price of product</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verity of product is availability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit facility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal relationship</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavior of dealers is good</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. Does Krishi Rasayan company is provides any technical knowledge/ guideline for farming.
   - Yes
   - No
   - If yes then which activity is going on

11. How do you get information for Horticulture production/plant protection?
    - Neighborhood farmers
    - Company staff
    - Dealer
    - Media

12. Your opinion about Krishi Rasayan products and services.

13. Suggestions if any.
DEALER QUESTIONNAIRE

The questionnaire used for Market Survey of “Krishi Rasayan Export Pvt Ltd in Lakhisarai district.

(1) Name: .............................................................................

Address: .............................................................................

Contact: .............................................................................

(2) Status: Distributor/ Dealer/ Retailer

Territory for which place: .................................................

(3) How many companies dealerships do you have? Name of the company?

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of company</th>
<th>Type of product</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(4) Name of the Product selling:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Product</th>
<th>Company</th>
<th>Dose/ Acre</th>
<th>Price</th>
<th>Turn Over</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
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<tr>
<td>3</td>
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<tr>
<td>4</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

(5) Which Product of krishi rasayan export pvt ltd do you recommend to farmer?

<p>| |</p>
<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

Why.................................................................

(6) What kind of facilities providing by a company for selling of Product?

1. Field staff
2. Type of scheme
3. Others (please specify)
Appendix

(7) What kind of support/services do you provide your customers (information, credit facilities, and others)?
........................................................................................................................................................
........................................................................................................................................................

(8) Which Promotional activity dealer using to sell its product?
- Door to door publicity
- Media (newspapers, radio, television)
- Demonstration
- Free sampling
- Wall painting/Posters/Banner
- Other (Kindly suggest another method)

(9) During which time or season providing Literature, Poster for product?
........................................................................................................................................................

(10) Do you recommend Krishi Rasayan Export Private Ltd companies Product?

Yes: ...... No: ........

(11) According to your view which is the best company?

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Company</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(12) Generally, which types of complain do you receive about companies product from farmers?
........................................................................................................................................................
........................................................................................................................................................

(13) For Strengthen of Krishi Rasayan Export Pvt. Ltd - Give your valuable suggestions?
........................................................................................................................................................
........................................................................................................................................................