1.1.1. **Introduction**

The research on “A Study on Attitudes & Perception of the Consumers & Marketers towards Green Marketing with Special Reference to Fertilizer Industry” focuses in understanding the attitudes and perception of the consumers towards Green Marketing with reference to fertilizer industry. In the present competitive scenario, most of the companies are shifting their focus from producing traditional products to green products. Since agriculture is one of the backbone of the Indian economy, the agricultural output also depends upon the type of fertilizers used.

The research tries to investigate the extent to which the farmers are aware of using the fertilizers which are eco-friendly. The study purports to throw light on the various dimensions of the marketing mix i.e., Product, Price, Place, Promotion and Packaging in developing green marketing strategies for the fertilizers used by the farmers. In addition to these, the research also has focused in seeking the opinions from the executives of both Public and Private fertilizer limited companies to create a roadmap in developing marketing strategies for green fertilizers.

### 1.1.2. Utility of the study

The utility of the study is explained in the following dimensions:

- **A)** This study throws light in understanding the attitudes & perceptions of the farmers towards ‘Green Marketing’, by eliciting their opinion on chemical fertilizers Vs eco-friendly green fertilizers.

- **B)** It focuses specifically on the factors influencing the ‘Green Marketing’.

- **C)** Through this study, it has made inroads into developing the variables of the ‘Green’ Marketing mix for fertilizer industry in terms of Product, Price, Place, Packaging and Promotion and their impact on purchase decision.

- **D)** The awareness level of the farmers in terms of green products(fertilizers) can be measured. It also helps to know the extent of the waste stream associated with the product in the manufacturing and distribution stages.

- **E)** It highlights the improvements that can be made into the existing manufacturing system and technology which can help to produce green products.

- **F)** The performance of the existing channels of distribution and their service effectiveness in terms of availability, accuracy, accessibility, convenience, location and transportation can be evaluated to initiate a new framework for designing distribution network for the green products.
✓ G) It also helps in modulating the best promotional methods that enhance the knowledge of the farmers in procuring and consuming the green products.

✓ H) Through evaluating the consumer attitudes and perceptions of the farmers regarding eco-friendly or green products, it creates a roadmap for suggesting the green marketing strategies in terms of Product, Price, Place, Packaging and Promotion.

1.1.3. Problem Statement

Fertilizers are one of the leading business in India. The business is growing, year by year. It is, in fact, one of the fastest growing businesses in the country. Fertilizer industry is highly capital intensive. It requires huge production facilities to be set up. India is yet to master the process and it is importing the process from the outside countries. Fertilizers are produced at certain cost. Farmers are not able to bear the cost. Farmers have to use the fertilizers for increasing the productivity of the crops. In this sector, it requires higher productivity to meet the needs of the farmers.

The current burden on chemical fertilizers is over Rs.68,000 crores which is the highest subsidy given to any sector. There is a gap between supply and demand of the chemical fertilizers. Fertilizer subsidy is a major burden to the Indian economy. To meet this, why not look at other options. Among the available options are green fertilizers the least cost option. We can look forward to produce the green fertilizers at an easily understandable and producible way which is safe for the individual concern and also safe for the environment. It has been accepted that, use of Chemical Fertilizers have its long term adverse impact on the fertility of the soil as compared to favorable impact on the fertility of the soil and healthy environment through the use of Organic fertilizers. This is the reason the current topic on green fertilizers is selected to explore the effectiveness of Inorganic fertilizers over Organic fertilizers.

1.1.4. Review of Literature

The literature has been reviewed from the reputed National & International Journals pertaining to Green Marketing and its related issues. In addition to journals, the literature has also been reviewed from Reference Books, Magazines and Websites.
1.1.5. Objectives of the Study
The present study has been conducted with the following objectives:

1) To understand the attitudes & perceptions of the farmers towards ‘Green Marketing’, by eliciting their opinion on Chemical (Inorganic) fertilizers Vs Green (Organic) fertilizers.
2) To know the awareness level of the farmers towards Green fertilizers.
3) To find out the existing practices in promoting the green fertilizers from the executives of both Public Limited Fertilizer & Private Limited Fertilizer companies.
4) To assess the factors influencing the ‘Green Marketing’.
5) To develop the marketing mix for Green fertilizers in terms of Product, Price, Place, Packaging and Promotion and their impact on purchase decision.
6) To analyse the variables of marketing mix for designing the marketing strategy for Green Fertilizers.

1.1.6. Hypotheses
The following alternative hypotheses have been tested in relation to the research variables:

H1 : There is an internal consistency and reliability among the variables selected in the study for conducting factor analysis.
H2 : There is a strong association among various demographic factors like Age, Income & Education level with the Awareness Level of the farmers towards green fertilizers.
H3 : Appearance of the Packaging conveys the eco-friendliness of the green fertilizers.
H4 : Pricing is highly significant in the usage of green fertilizers.
H5 : There is a strong correlation between Soil Type & Price.

1.1.7. Methodology of the Study
It consists of Sources of data, Research design, Sampling Plan, Research Area & Statistical tools.

1.1.8. Sources of Data
The sources of data involves both Primary & Secondary Data

1.1.9. Primary data – Survey & Schedule using structured questionnaire to farmers and executives
1.1.10. **Secondary Data** – Literature from Text Books, articles published in both National & International Journals, Magazines and Websites

1.1.11. **Research Design**

**Descriptive Cross-sectional design:**

The research aims to quantify the attitudes and perceptions of the farmers towards green fertilizers. It is descriptive in nature because it measures the impact of product, Price, place and promotion and its influence on the purchase decision. The data has been collected from the farmers and their responses have been analysed by using appropriate statistical tools. Thus the research design adopted for the study is Quantitative Descriptive Cross-sectional design to cover the various facets of the study.

1.1.12. **Sampling method:** It refers how sampling units are selected.

- **Types of sampling** – Probability Sampling and Non Probability Sampling.
  
  **Method of Probability Sampling**
  
  - **Simple Random Sampling** – This method is highly suitable for selecting the executives from fertilizer industry as the sample elements are clearly identified without any difficulty.
  
  **Method of Non Probability Sampling**
  
  - **Convenience Sampling** – This method attempts to obtain a sample of convenient farmers who are ready to give information. The sampling elements or farmers are identified as follows:
    
    ✓ Firstly, through the known sources, the blocks or villages possessing the irrigated land and who were cultivating through Chemical fertilisers and Green fertilisers or Organic fertilisers are identified.
    
    ✓ Secondly, based on the convenience and accessibility, the information has been collected from the farmers.

This method provided an opportunity to identify and interact with the farmers having the right knowledge of both chemical fertilizers and green fertilizers.

1.1.13. **Sample Size:**

The Sample Size is 300 farmers.

The samples are also drawn from the executives belonging to both Private & Public Limited Fertilizer Companies.

1.1.14. **Research Area**

In the state of Maharashtra across Thane district – Kulgaon, Diwa, Shelu, Vaangni, Shahpur, Badlapur, Ambernath

1.1.16. Tests of Hypothesis
The hypothesis is tested by using the following statistical tools:

Non Parametric tests
- Chi – Square test
- Kolmogorov Smirnov D test

In addition to the above hypothetical tests, the statistical tools like Simple Percentage Method, Pearson Correlation, Factor Analysis and Cluster Analysis have been used for analyzing the data.

1.1.17. Data Analysis & Interpretation
The collected data has been tabulated in both the forms like Simple Tabulation with one variable and Cross Tabulation having two variables.

The tabulated data has been analysed by using SPSS 17.0 consisting of the following statistical techniques:

- Univariate Analysis – It has involved only one variable for analysis and the methods related to this analysis include Simple Percentage Method, Chi-Square test.
- Bivariate Analysis – It has involved only two variables and the methods related to this analysis include Pearson Correlation and Chi-Square test of two variables.
- Multivariate Analysis – It has involved more than two variables at a time. It has explained the associations among more than two variables simultaneously. The methods include both Factor Analysis and Cluster analysis.

1.1.18. Summary of Findings & Conclusions
Findings
- It has been found from the study that the majority of the farmers are of the age group of 51 & above. It clearly reveals that age is one of the decisive factor in influencing the farmers towards using organic/green fertilisers.
- The study reveals that majority of the farmers constitute the medium income level which is vital in determining the purchasing power of the farmers.
- The study clearly determines that the level of education of the farmers is very low and it has become the major determinant in understanding the literacy rate of the farmers.
- The extent of usage of the irrigated land is an indicator in the consumption of the organic fertilisers.
The study shows that the quantity of fertilisers consumed by the farmers depend upon on the type of the crops, soil, climatic conditions and other factors.

The utilisation of the fertilizers indicates the level of the consumption ranging from medium to heavy.

The study reveals that majority of the farmers have been using more Organic Fertilizers/Green Fertilizers comparing to Chemical/Inorganic fertilizers.

Majority of the farmers agree that organic fertilisers are environment friendly. It shows that the farmers are aware of the green fertilisers and it reveals the interest and intention of the farmers towards green fertilizers.

From the opinions of the farmers, it shows that the extent of productivity is a benchmark for measuring the performance of the green fertilizers.

Majority of the farmers felt that type of the crop and high crop yield are very crucial factors in influencing the usage of fertilisers. Some of the farmers are also of the opinion that company & brand, availability & supply, nutrient content and convenience have been some of the general factors that influence the farmers in using the fertilizers.

The most suitable methods considered by the farmers for pricing the green fertilizers are Seasonal Pricing, Subsidized pricing and Competitive pricing.

It is observed that the value of Alpha (α) = 0.801, shows that the variables are having an internal consistency and reliability and henceforth it is suitable for conducting factor analysis. From the Factor analysis it states that Yield & Promotional, Brand & Availability and Packaging factors are highly influential in designing the Green Fertilizers.

From the hypothetical observations, it clearly indicates that age influences the awareness level of the farmers, income doesn’t influences the awareness level of the farmers and education influences the Awareness level of the farmers.

Through the hypothetical observation, appearance of the packaging conveys the eco-friendliness of the green fertilizers.

The hypothetical observation also reveals that price is highly significant in the usage of the fertilizers.

The study inferred that there is a strong correlation between soil type and the price.

Conclusions

It can be concluded that Age and Education are the most significant demographic factors in influencing the farmers in the usage of the green fertilizers.
The possession of the quantum of the irrigated land is vital for cultivation and the usage of green fertilizers.

The Productivity is a key factor in determining the usage of the green fertilizers.

The study reveals the suitability of the green fertilizers for the various crops in both the seasons – kharif and Rabi.

The study shows that the awareness level of the farmers towards the green fertilizers is high but it lacks the support from the stakeholders like Government, companies and research agencies. It also reveals the lack of necessary infrastructure required for production and storage of green fertilizers.

Majority of the farmers agree organic or green fertilizers are environment friendly.

It can be understood from the study, Seasonal pricing is the most important pricing method for green fertilizers.

The study reveals that Outdoor and Television Publicity are the best promotional methods for increasing the awareness level among the farmers in using the green fertilizers.

The study also concluded that Availability, Supply and Location are the key factors in the distribution of green fertilizers.

We can arrive at a conclusion from the study that majority of the farmers prefer organic fertilizers comparing to inorganic fertilizers if they are motivated through the various stakeholders who are concerned with the environment.

It can be been concluded that all the variables included in the study are proved valid and consistent through the reliability analysis for conducting the factor analysis.

1.1.19. Summary of Suggestions & Recommendations

Suggestions

It is suggested that the other age groups of the farmers like 21-30, 31-40 and 41-50 may also be motivated towards the usage of green fertilizers.

It is suggested that irrespective of the income, the farmers should be convinced in using the green fertilizers.

The farmers should be educated through krishi melas, soil testing programmes, audio and visual programmes, demonstrations in the field site; regarding the information about the seasonal variations and the suitability for various types of crops.

The farmers should be encouraged by way of rewards for using the more cultivated land by utilizing green fertilizers for higher productivity.
The information related to seasonal variations and the suitability of the crops in both kharif and Rabi should be communicated to farmers in order to persuade the farmers in using the green fertilizers.

Productivity is an yardstick for measuring the performance of the green fertilizers and hence it should be proved by the research agencies through proper demonstrations for various types of crops.

It is suggested that by proving green fertilizers to be suitable for all types of crops with higher yield, the usage rate of the green fertilizers can be increased.

It is suggested that appearance of the packaging is highly significant in using the green fertilizers through water resistant package with color as a distinct feature.

The organizations which are manufacturing green fertilizers can attract more number of farmers to purchase green fertilizers at a higher price by convincing them that these are suitable for all soils.

**Recommendations**

- It is recommended that the farmers in the age group of 41 – 50 should be focused for marketing the green fertilizers since they form the major target market.
- The farmers belong to the low and medium income category should be contacted to find out their economic stability and affordability in using the green fertilizers. This will help the company manufacturers to decide on the pricing strategy to be adopted in producing green fertilizers.
- The farmers should be persuaded through the active involvement of the various stakeholders like government, agricultural universities, company manufacturers, commercial banks and NGO’s to use the green fertilizers for the fertility of the soil and the livelihood of the environment.
- The companies producing green fertilizers should design the advertising campaign by highlighting the farmers’ opinion on the green fertilizers as environment friendly and it is useful in convincing the other farmers in the remote areas who are not aware of the green fertilizers.
- The high awareness level of the farmers can be treated as a psychological determinant to understand the behavior of the farmers towards the green fertilizers.
- The brand image of the companies producing green fertilizers should be created by highlighting the utility of the green fertilizers in terms of its suitability to various types of crops, yield, nutrient, availability and convenience.
Seasonal Pricing is the most suitable method for pricing the green fertilizers as most of the farmers use for different types of crops based on seasons.

The effectiveness of the green fertilizers in terms of its supply and distribution shall be improved by having more number of purchasing centers at the district, regional and village levels accessible to the farmers from the remote locations.

The strong and positive correlation between the soil type and price facilitate the mutual benefits to both farmers & company manufacturers in terms of productivity & profitability.

1.1.20. Recommendations (from the Opinions of Executives)

From the opinion of the executives, the vision statement for green marketing can be summarized as follows:

- “Being Mature, Adopt the Nature”
- “Go Green, Stay Green”

The company’s policy on a broader perspective towards Green Marketing can be summarized as follows:

- “Effective through Green”
- “Producing and Promoting Green/Organic Fertilizers”
- “Motivating the distributors to stock Green/Organic Fertilizers”

The executives indicated that the following aspects/actions that the company has to undertake with reference to Green Fertilizers:

- Crop Oriented Green Fertilizers – High Shelf Life, High Crop Yield, Nutrient Content
- Availability of Distribution centers in all remote locations

From the opinions of executives, the distribution strategies should be as follows:

- Direct distribution from company to farmers
- Regional warehouses located at all convenient locations
- Minimizing the role of middlemen

1.1.21. Scope for further studies

The present research on ‘A Study on Attitudes & Perceptions of the Consumers & Marketers towards Green Marketing with Special Reference to Fertilizer Industry’ has further scope to explore and it can provide deep insights into the following areas:

- A solid foundation is necessary by the way of legislation, policy framing at different levels to popularize the usage of green fertilizers and replacement or reduction in the usage of chemical fertilizers.
It is observed that the farmers are having traditional approach right now. It will be an uphill task in motivating the farmers due to lack of knowledge & internal resistance, lack of skilled professionals and producing crop specific green fertilizers. If the marketers train their professionals in terms of creating awareness, providing information about product benefits related to crop specific fertilizers, availability & supply factors etc then it will help the company in promoting the green fertilizers.

Non availability of scientific & authentic data on the usage and the benefits of the green fertilizers have limited the scope of the study. A serious effort has to be made to capture the available data at the local, state and national level to enhance the scope of such study. Due to this there is tremendous scope to do research in green fertilizers in both scientific and marketing dimensions.

The awareness level has to be created at different levels some of which could be as follows:

- Campaigning by the agricultural research centers/universities at the grass root level
- Introduction of variety of crops to enhance production and productivity by use of green fertilizers
- Subsidy incentive schemes to farmers using green fertilizers
- Implementation of time bound policy at the grass root level
- A strong political will to practice green fertilizers as a mission in agricultural operations
1.2. INTRODUCTION TO GREEN MARKETING

1.2.1. Meaning & Concept of Green Marketing

The colour green is an offshoot of the English verb ‘growan’ which means ‘to grow’. Green has traditionally been associated with hope and growth and it also represents nature. Over a period of time, the colour has virtually become a synonym for environment. As resources are limited and human wants are unlimited, it is important for the marketers to utilize the resources efficiently without waste as well as to achieve the organization's objective. So green marketing is inevitable.

Green marketing was given prominence in the late 1980s and 1990s after the proceedings of the first workshop on Ecological marketing held in Austin, Texas (US), in 1975. Several books on green marketing began to be published thereafter. According to the Joel makeover (a writer, speaker and strategist on clean technology and green marketing), green marketing faces a lot of challenges because of lack of standards and public consensus to what constitutes "Green". The green marketing has evolved over a period of time. According to Peattie (2001), the evolution of green marketing has three phases. First phase was termed as "Ecological" green marketing, and during this period all marketing activities were concerned to help environment problems and provide remedies for environmental problems. Second phase was "Environmental" green marketing and the focus shifted on clean technology that involved designing of innovative new products, which take care of pollution and waste issues. Third phase was "Sustainable" Green Marketing. It came into prominence in the late 1990s and early 2000.

With the continuing rise in environmental awareness and concern, companies recognize that it pays to be green. If the companies are acting in an environmentally responsible way, it is important for companies to communicate their green credentials.

1.2.2. Need & Significance of Green Marketing
As resources are limited and human wants are unlimited, it is important for the marketers to utilize the resources efficiently without waste as well as to achieve the organization's objective. So green marketing is inevitable.

There is a growing interest among the consumers all over the world regarding the protection of environment. Worldwide evidence indicates people are concerned about the environment and are changing their behavior. As a result of this, green marketing has emerged which speaks for growing market for sustainable and socially responsible products and services.

Thus the growing awareness among the consumers all over the world regarding protection of the environment in which they live. People do want to bequeath a clean earth to their offspring. Various studies by environmentalists indicate that people are concerned about the environment and are changing their behavior pattern so as to be less hostile towards it. Now we see that most of the consumers, both individual and industrial, are becoming more concerned about environment-friendly products. Most of them feel that environment-friendly products are safe to use. As a result, green marketing has emerged, which aims at marketing sustainable and socially-responsible products and services. Now is the era of recyclable, non-toxic and environment-friendly goods. This has become the new mantra for marketers to satisfy the needs of consumers and earn better profits.

Green marketing is the process of developing products and services and promoting them to satisfy the customers who prefer products of good quality, performance and convenience at affordable cost, which at the same time do not have a detrimental impact on the environment. It includes a broad range of activities like product modification, changing the production process, modified advertising, change in packaging, etc., aimed at reducing the detrimental impact of products and their consumption and disposal on the environment. Companies all over the world are striving to reduce the impact of products and services on the climate and other environmental parameters. Marketers are taking the cue and are going green.

1.2.3. Determinants of ‘Green Marketing’

- Setting Green Objectives
- Demonstrate Social Responsibility
- Comply with the legislation
- Respond to competitive initiatives
- Provide accurate environmental information
- Identify products with green characteristics
- Focus product development on sustainability
• Set realistic prices
• Eliminate unnecessary packaging
• Practice greener distribution
• Promote green credentials efficiently
• Make it easy for customers to be green

Corporate Green Objectives
• They believe green marketing is an opportunity that can be used to meet their corporate objectives.
• They believe they have a moral obligation to be more socially responsible.
• Government regulations are forcing them to become more environmentally responsible.
• Competitors’ environmental activities are pressuring them to change their marketing activities.
• Cost factors associated with waste disposal, or reductions in material usage are forcing them to modify their behavior.

Demonstrate Social Responsibility
Many companies realize that they are part of the wider community and must behave in an environmentally responsible way. They set themselves environmental objectives as well as corporate and profit objectives. In some cases, concern for environmental issues has become integrated into the company’s culture—a fact which is recognized by customers and other influencers. Companies who manufacture products can make a further contribution to environmental improvements by encouraging their suppliers to behave in a more environmentally-responsible way.

Comply with Legislation
Apart from proactively embracing green marketing, it is also essential to comply with environmental legislation. Governments try to protect consumers and society by minimizing the impact of business on the environment. For example, they try to reduce production of harmful goods, modify consumer and industry’s use of harmful goods, and ensure that businesses provide accurate information on the environmental aspects of their activities.

Respond to Competitive Initiatives
In some market sectors, companies who have undertaken green initiatives have increased market share as a result. Competitors, recognizing the value of the “green factor,” may introduce their own versions. A good example is the cosmetics industry in which
organizations like The Body Shop successfully pioneered an ethical approach that was later followed by the majority of their competitors. In cases like this, the actions of one company have caused an entire industry to modify its environmental behavior.

**Provide Accurate Environmental Information**

We intend to practice green marketing, it is essential that our activities and our communications do not mislead consumers or industry, and do not breach any of the regulations or laws dealing with environmental marketing. Any green marketing claims should:

- clearly state environmental benefits;
- explain environmental characteristics;
- explain how benefits are achieved;
- justify any environmental claims;
- use meaningful terms and pictures.

**Identify Products with Green Characteristics**

There are wide varieties of products that support sustainable development and demonstrate commitment to green marketing, including:

- products made from recycled goods;
- products that can be recycled or reused;
- energy-efficient products that save water, energy, or fuel and reduce environmental impact;
- products with environmentally responsible packaging;
- organic products;
- services that rent or loan products-such as car sharing;
- products that meet or exceed environmentally responsible criteria.

Whatever the product or service, it is vital to ensure that products meet or exceed the quality expectations of customers and are thoroughly tested.

**Focus Product Development on Sustainability**

Any new product development program should take into account environmental issues. The objective should be to develop products that can be produced, distributed, used, and recycled with minimal environmental impact. Product development should focus on these issues:

- How will the product be produced? You need to consider the materials, energy, and labor used to produce the product to assess whether the production process has any detrimental social or environmental impact.
• How will the product be used? You need to consider whether the product can be used for any unethical purpose. You also need to consider the resources the product will consume during its lifetime, balancing performance requirements against sustainability.

• How long will the product last? Here you need to balance your need for future product sales or upgrades against concerns about built-in obsolescence. You also need to consider how customers can dispose of the product at the end of its life.

**Set Realistic Prices**

Pricing is as critical in green marketing as in conventional marketing. Concerns about the overpricing of organic foods, for example, has made consumers skeptical about certain green claims. Most customers will only be prepared to pay a premium if they perceive additional value such as improved performance, function, design, visual appeal, or taste. Environmental benefits alone may not be a justification for higher prices. However, there is a case for communicating the potential hidden savings in green products. Environmentally responsible products may be comparatively less expensive when whole life costs are taken into consideration. Examples include fuel-efficient vehicles, water-efficient printing and no hazardous products.

**Eliminate Unnecessary Packaging**

Packaging has become an environmental issue for marketing for a number of reasons:

• Packaging is a major component of domestic waste and therefore an important contribution to landfill.
• Discarded packaging is very visible as litter.
• Packaging reduction initiatives can reduce the environmental impact of a product while also saving companies money.

Retailers also play a role in reducing packaging waste by encouraging suppliers to minimize excess packaging or offering customers “shopping bags for life” to reduce the volume of plastic bags.

**Practice Greener Distribution**

Distribution is a key issue in attracting the right customers for green products and behaving in an environmentally responsible way. Experience indicates that customers will not go out of their way to buy green products just for the sake of it; where possible, products should be distributed through mainstream outlets so that they are not just available to a small niche market of green consumers. If you market your products across geographical boundaries,
distribution becomes an environmentally sensitive issue. Look carefully at the physical distribution of your products to find where you could minimize the impact on the environment of your logistics operations. This might mean reducing the number of miles driven by keeping more regional inventory or by using fuel-efficient vehicles for distribution.

**Promote Green Credentials Efficiently**

The key to successful green marketing communications is credibility. Never overstate environmental claims or establish unrealistic expectations, and communicate simply through sources that people trust. Larger corporations may run major advertising and public relations campaigns to promote their commitment to environmental improvement, but promotion on this scale is not essential. Green marketers reinforce their environmental credibility by using sustainable marketing and communications tools and practices. Examples include:

- providing electronic statements or billing by e-mail;
- using e-marketing rather than paper-based direct mail;
- offering downloadable publications to reduce print quantities and paper usage;
- printing on recycled materials using processes such as waterless printing;
- eliminating unnecessary packaging;
- offering Webcasting as an alternative to live events to reduce representatives’ travel.

**Make It Easy for Customers to Be Green**

Experience indicates that consumers and business customers are increasingly concerned about the environment and are changing their purchasing behavior. That means there is a growing market for sustainable and socially responsible products and services. The challenge for green marketing is to make it easy for customers to become green themselves. Commentators believe that when other factors such as quality, price, performance, and availability are equal, environmental considerations may tip the balance in favor of a green product.

The extensive use of pollutants in factories, farms, and power plants is an indication of how the planet works. They are primitive inventions that have been designed by people who didn’t fully grasp the consequences of their actions. But as comprehension has grown, a market has emerged for more sensible alternatives. As global warming becomes a real threat, it is time to upgrade technology to tackle the issue in various streams of Agriculture, Automobiles, Batteries, Electricity, FMCG goods, Electronics etc. Among all these streams one such field is the agriculture where it is highly essential to focus in increasing the productivity by safeguarding the environment. As a result, green marketing has emerged, which aims at marketing sustainable and socially-responsible products and services. Now is the era of
recyclable, non-toxic and environment-friendly goods. This has become the new mantra for marketers to satisfy the needs of consumers and earn better profits.

1.2.3. Problem Statement

India is predominantly one of the countries in the world contributing to the field of agriculture. Food security has been a major concern in India, with memories of
serious famines and with a rapidly increasing population. There was an enormous increase in
the production of the food grains due to the Green Revolution in the world after 1960’s. In
1970, the production of the food grains gained momentum due to the several factors like
irrigation facilities, distribution of better quality seeds, chemical fertilizers, scientific
management practices, pesticides etc., Green revolution had a positive impact on the food
grain production and on the other side, the expanded use of chemical fertilizers and
pesticides resulted in the environmental problems. The “green” movement is a answer for
business to produce more environmentally safe products. To minimize the impact of the
chemical fertilizers and pesticides, there exists an Organic/Green fertilizers which improves
the biological position of the soil, strengthens the root system and also the development of the
plants. The development of Green fertilizers and the related technology for the same can be
made available to the farmers for reducing the land pollution and improved fertility of the
soil.

Companies that develop “green programs” can face two main problems: consumers may
believe that product is of inferior quality of being green and consumers feel the product is not
really that green to begin with. The task now is to shift the farmers mindset from the
traditional chemical(inorganic) to organic(green) fertilizers keeping in mind on the
environmental issues. The transformation from the Chemical fertilizers to Organic
fertilizers/Green fertilizers is facing stiff challenges due to various issues pertaining to
farmers attitudes and perception, cost effects, yield, shelf life and marketing communication.
The profitability is the most important factor in determining the demand for Green fertilizers
by the farmers. Farmers can adopt and increase their use of Green fertilizers only when they
perceive that it is in their interest to do so. To produce green fertilizers at the level of
economies of scales and of adequate quantity with the appropriate technologies with balance
utilization is a challenge to all concerned. It depends on the involvement of the various
stakeholders like Government, Agricultural universities, Fertilizer manufacturing companies,
Dealers and NGO’s to translate into action plan through creating awareness. among the
farmers on a sustainable basis.

Fertilizers are one of the leading business in India. The business is growing, year by year. It
is, in fact, one of the fastest growing businesses in the country. The striking emergence of the
fertilizer business as one of the largest, most dominant and most businesses in India is
directly traceable to the crucial role played by fertilizer in the food production efforts of the
country. As the nation consciously and uninhibitedly adopted fertilizer use as the surest
means for achieving a quick and substantial break through in farm production, the fertilizer
marketing task in the country started growing in stature, size and importance. It also underwent a great deal of change as the years rolled by; its character and content changed; its role functions changed; its style and structure changed.

In view of the close and inseparable relationship between fertilizers and agriculture, an overview of Indian agriculture would be very essential for a proper understanding of the problems involved in the marketing of fertilizers in the country. The importance of agriculture in the overall economic structure of a country like India can never be over emphasized. Agriculture forms the backbone of the Indian economy. On the strength of agriculture, depends the ability of the nation to feed its large and growing population. In addition, it is the agriculture that provides the base for the growth of the other sectors of the economy.

Agriculture contributes 40% of the net national product of India. It is the largest single sector of the country’s economy. And it is likely to remain so for several years to come. Three fourths of the total population of the country depends on agriculture for their livelihood. Agriculture also supplies the raw materials to a large section of India’s industry. Industries in cotton, sugar etc as well as the food processing industry are totally agriculturally based, and there are several other industries which are partially based on agriculture. Further, agricultural commodities like tea, coffee, tobacco, jute, spices etc., are major foreign exchange earnings for India which contributes 35% of the country’s exports.

Fertilizer industry is highly capital intensive. It requires huge production facilities to be set up. India is yet to master the process and it is importing the process from the outside countries. Fertilizers are produced at certain cost. Farmers are not able to bear the cost. Farmers have to use the fertilizers for increasing the productivity of the crops. In this sector, it requires higher productivity to meet the needs of the farmers.

There is a huge gap between acceptability and the cost of the production. The government has to bear the cost burden of the fertilizers manufacturing in the form of subsidy. The current burden on chemical fertilizers is over Rs.68,000 crores which is highest subsidy given to any sector. There is a huge gap between supply and demand of the chemical fertilizers. The supply from the government or company side is less and demand from the farmers’ side is more. Our country never matches between the resources and expenditure.

Fertilizer subsidy is a major burden to the Indian economy. To meet this, why not look at other options. Among the available options are green fertilizers, the least cost option. We can look forward to produce the green or organic fertilizers at an easily understandable and producible way which is safe for individual concern and also safe for environment. It has
been accepted that use of Chemical Fertilizers has its long term adverse impact on the fertility of the soil as compared to favorable impact on the fertility of the soil and healthy environment through the use of Organic fertilizers. This is the reason the current topic on green fertilizers is selected to explore the effectiveness of Inorganic fertilizers over Organic fertilizers.

1.2.4. Rationale of the Research

The research on “A Study on Attitudes & Perception of the Consumers & Marketers towards Green Marketing with special reference to Fertilizer Industry” focuses in understanding the attitudes and perception of the consumers towards Green Marketing with reference to fertilizer industry. In the present competitive scenario, most of the companies were shifting their focus from producing traditional products to green products. Since agriculture is one of the backbone of the Indian economy, the agricultural output also
depends on the type of fertilizers used. The fertilizers manufactured by the company should be eco-friendly when they were used by the farmers, it should not affect the crop production. By developing environmentally safe or eco-friendly products/green fertilizers, it benefits the Indian agriculture system as a whole. Farmers are the major idea of generating sources in using fertilizers, that is why their attitudes and perceptions towards using green products forms the basis to reap the rich benefits for the Indian economy. The concept of ‘Green Marketing’ is still in a conceptual stage which needs to be marketed for sustainable advantage to both company and farmers.

The research tries to investigate the extent to which the farmers are aware of using the fertilizers which are eco-friendly. The study purports to throw light on the various dimensions of the marketing mix i.e., Product, Price, Place, Promotion and Packaging for developing green marketing strategies to the fertilizers used by the farmers. In addition to these, the research also has focused in seeking the opinions from the executives of both Public and Private fertilizer limited companies for developing marketing strategies to green fertilizers.

1.2.5. Utility of the study

In the present competitive marketing environment, survival depends on the innovation of their business processes. Many innovations are taking place in the various dimensions of marketing, but very few innovations are available in ‘Green Marketing’. The concept of ‘Green Marketing’ is yet to take shape in the Indian scenario. It is the time for the Indian Marketer to produce products which are environmentally safe or eco-friendly called as green products. If the marketers focus in producing green products, there will be a sustainable competitive advantage, as our Indian consumers are becoming global with the entry of multinationals. The generation of eco-friendly or green products will be mutually beneficial to both company and the consumer. This study specifically focused on the fertilizer industry which is the backbone of the Indian agriculture system.

1.2.6. The utility of the study is explained in the following dimensions:

✓ A) This study throws light in understanding the attitudes & perceptions of the farmers towards ‘Green Marketing’, by eliciting their opinion on chemical fertilizers Vs eco-friendly green fertilizers.

✓ B) It focuses specifically on the factors influencing the ‘Green Marketing’.

✓ C) Through this study, it has made inroads into developing the variables of the ‘Green’ Marketing mix for fertilizer industry in terms of Product, Price, Place, Packaging and Promotion and their impact on purchase decision.
D) The awareness level of the farmers in terms of green products (fertilizers) can be measured and it also helps to know the extent of the waste stream associated with the product in the manufacturing and distribution stages.

E) It highlights the improvements that can be made into the existing manufacturing system and technology which can help produce green products.

F) The performance of the existing channels of distribution and their service effectiveness in terms of availability, accuracy, accessibility, convenience, location, and transportation can be evaluated which initiates a new framework for designing distribution network for the green products.

G) It helps in modulating the best promotional methods that enhance the knowledge of the farmers in procuring and consuming the green products.

H) Through evaluating the consumer attitudes and perceptions of the farmers regarding eco-friendly or green products, it creates a roadmap for suggesting the green Marketing strategies in terms of Product, Price, Place, Packaging and Promotion.

By developing environmentally safe or eco-friendly products/green fertilizers, it benefits the Indian agriculture system as a whole because it is one of the components of food security. Farmers are the major idea generating sources in using fertilizers, that is why their attitudes and perceptions towards using green products forms the basis to reap the rich benefits for the Indian economy. The concept of ‘Green Marketing’ is still in a conceptual stage which needs to be marketed for sustainable advantage to both company and farmers.

1.3. PROFILE OF FERTILIZER INDUSTRY

1.3.1. Introduction

The striking emergence of the fertilizer business as one of the largest, most dominant and most vital businesses of India is directly traceable to the crucial role played by fertilizer in the food production efforts of the country. As the nation consciously and uninhibitedly adopted fertilizer use as the surest means for achieving a quick and substantial breakthrough in farm production, the fertilizer marketing task in the country started growing in stature, size and importance. It also experienced a great deal of change as the years rolled by; its character and content changed; its role and functions changed; its style and structure changed.
The phenomenal expansion in the business incidentally forced the national economy to face a bunch of new problems – problems of great complexity, problems of vital significance, and problems of large dimensions. Even though these problems have been basically an offshoot of the country’s overall developmental process, they are too significant, too big and too complex to be disposed off as mere adjuncts of the overall development process. They have to be studied and analysed in depth. Strangely, this has not been done so far, by any agency in the country – not in any case, in the integrated and unified manner in which they need to be studied.

India is the fourth largest consumer of chemical fertilizers in the world. The consumption of fertilizers in India in 1984 – 85 was more than 18.5 million tonnes in terms of fertilizer products, valued at more than Rs.4000 crore excluding subsidies and sales taxes. In fertilizer production too, India is well advanced. India’s fertilizer is very large by international standards. In fact, it is now the fourth largest in the world. The industry has an installed production capacity of 5.58 million tonnes of Nitrogen and 1.72 million tonnes of Phosphate. The industry is also continuously expanded. A number of new units are under construction at any given point of time.

In view of the close and inseparable relationship between fertilizers and agriculture, an overview of Indian agriculture would be very essential for a proper understanding of the problems involved in the marketing of fertilizers in the country. The importance of agriculture in the overall economic structure of a country like India can never be over emphasized. Agriculture forms the backbone of Indian economy. On the strength of agriculture, depends the ability of the nation to feed its large and growing population. In addition, it is agriculture that provides the base for growth of the other sectors of the economy. Agriculture contributes 40% of the GDP of India. And it is the largest single sector of the country’s economy. And it is likely to remain so for several years to come. Three fourth of the total population of the country depend on agriculture for their livelihood. Agriculture also supplies the raw materials to a large section of India’s industry. Industries in cotton, sugar etc., as well as the food processing industry are totally agriculture based on agriculture. Further, agricultural commodities like tea, coffee, tobacco, jute, spices etc., are major foreign exchange earners for India. Unlike in the developed countries, in India, agriculture has continued to maintain its pre-eminent place in the national economy even after the country went through a good measure of industrialization. In most of the developed countries, agriculture ceased to be the major sector of the national economy when industrialization took place at a rapid pace. For example, in U.K. and U.S.A., agriculture and
allied occupations contribute to only three percent of their GDP; in Canada, it is five percent and in France, it is six percent. But in India, even after it became one of the top ten industrialized countries of the world, agriculture contributes 45% of its GDP. Agriculture is of crucial relevance to India’s economy from yet another angle. Several consumer goods industries in India seem to have turned their eyes on the vast rural markets of the country. There are clear indications that the future growth of many consumer goods industries in the country will depend heavily on the prosperity of the rural people, which in turn will be a function of agricultural advancement. Most of the Indian firms in the consumer goods sector are looking at rural India as a distant heaven, it seems that, these firms have started approaching rural India as land of immediate promise. Agriculture constitutes the foundation of the growth process in India and that the country’s overall prosperity is inextricably bound up with the prosperity of the agricultural sector. In India, rapidly expanding and dynamic agriculture must constitute a basic foundation of a progressive equitable and self-reliant economy in India. It does not require much analysis to show that, without continued self-sufficiency in food and other basic agricultural commodities at steadily rising levels of per capita consumption, the development process in India will experience great strains. Agriculture is of critical importance in sustaining the growth process.

1.3.2. Green Revolution – the great turning point in Indian agriculture
Green revolution is by far, the greatest event in the history of Indian agriculture. Infact, a major part of the agricultural growth of India in the 35 year period between 1950-85. The progress of Indian agriculture will have certainly have to be assigned to the phenomenon of green revolution. Green revolution is the commonly used expression for denoting the remarkable initiative taken by the nation in the late 1960’s in trying out a technological solution to the problem of long standing sluggishness in agricultural growth. The initiative led to a spectacular growth in food grains production. In the earlier stages, the main sources of increase in farm production in India were enlargement of the area under the plough, increase in the area under irrigation and changes, in the cropping pattern and locational shifts among the different crops. As a contrast, the green revolution, relied on technology as the main source of increase in farm production. Technological break through became the cornerstone of the entire strategy employed in green revolution. Green revolution has been essentially a process of modernization based on science and technology and five different revolutions in five different sciences have made their contribution to the green revolution.
The genetic revolution brought the high yielding crop varieties, the chemical revolution brought the fertilizers and plant protection chemicals, the engineering revolution enhanced the efficiency of cropping and removed the drudgery of farmers in multiple and intensive cropping, the communication revolution through Press, Radio, T.V., Farm visits, Training etc., enabled the dissemination of the new farm technology and finally the management revolution enabled the intelligent manipulation of the inputs for the highest output. High yielding crop varieties, High level of irrigation and High use of fertilizers are the most crucial factors deserved to be the main pillars of the green revolution. The transformation of the Indian farming was based on the production interaction of plant nutrient, chemical fertilizers assured and timely crop moisture and grain varieties capable of responding to high applications of each of them.

The green revolution performed another great miracle, besides projecting the high yielding crop varieties and chemical fertilizers as the twin planks of a durable strategy for increasing the farm production in the country. It exploded the age old myth about the Indian farmer – the myth of traditionally Indian farmer. The rapid spread of the new practices among the new farmers should lay to rest the vision of the Indian agriculturist as a stubborn, changeless, robotic slavishly following his inherited agricultural traditions. The fact that millions of Indian farmers took to the new farm technology with enthusiasm and faith stands out as one of the tangible and substantial features of the green revolution of India.

From the information collected by the FAO source, it has been observed that fertilizer consumption has increased from fewer than 1 million tonnes of total nutrients in the mid-1960s to almost 17 million tonnes today. Government policies and the introduction of HYVs in the 1960s favoured the use of fertilizers. The intensity of fertilizer consumption varies greatly between the regions, from 40 kg/ha of total nutrients in Rajasthan to 184 kg/ha in Punjab. There are about 283,000 sales points for fertilizers in India, in a network that comprises private wholesalers and retailers, cooperatives and state-owned outlets, supported by governmental service centres. Three-quarters of them are privately owned, the others are cooperatives and institutional outlets. Urea accounts for 82 percent of total N consumption, DAP for 63 percent of P consumption, and complex fertilizers for a further 27 percent.

1.3.3. Fertilizer Marketing In India has been a Major Socio-economic Process
Marketing of fertilizers in India has never been an ordinary business activity. It has been a socio economic phenomenon that exercised a tremendous and unparallel impact on the economy of the nation and life of the people. It has been a very vital and integral part of the
total process of development that has taken place in India in the post independence period. Its influence has been felt in three important and distinct spheres:

- Commercially, the process has projected the fertilizer business as one of the largest businesses in the country.
- Economically, the process has triggered off a powerful cycle of wealth generation in the country by modernizing the country’s agriculture.
- Sociologically, the process has made a singular contribution to the transformation of India’s rural society from tradition to modernity.

Fertilizer marketing involves at once a sociological-cum-economic enquiry of the most sophisticated type on the one hand and an extension-cum-sales promotion effort of a most complicated nature on the other.

Poor capacity utilization has been a perennial problem with the fertilizer industry of India. This coupled with the long gestation of many of the fertilizer projects in the country has kept the actual production of fertilizers far short of the licensed and installed capacity at any given point of time. Over the years, the capacity utilization in the fertilizer industry has oscillated 45% and 70%. A most exhaustive list of the constraints inhibiting the proper utilization of the installed production capacities in the Indian fertilizer industry is given below to facilitate a clear understanding of the issue. Some of the units in the industry are very old. They are not amendable to high rate of capacity utilization.

- The technology and design employed in some of them are obsolete.
- Some of the units are brand new. They suffer from the difficulties that are inherent in this industry.
- Some of the units suffer from peculiar technological problems due to the process or the type of feed stock chosen by them.
- Some of the units have accepted unproven equipments and suffer from frequent failures of critical equipments.
- Inefficient operation and maintenance of the plants, power problem-power cuts, power failures and voltage instability.
- Shortage of coal – non availability of coal or the bottlenecks in transporting the available coal.
- Shortage of feedstock like naptha, gas or fuel oil.
- Shortage of raw materials other than feedstock like rock phosphate, sulphur and imported phosphoric acid.
Labour problems and disturbed conditions in some parts of the country.
Overall unfavourable environment in which some of the units operate.
An extremely low level of consumption per unit of cropped area.
Unevenness in consumption between the two main crop seasons – Kharif and Rabi.
Unevenness in consumption among the various zones, states and districts in the country.
Unevenness in consumption among the different crops.
Unevenness in consumption of the three nutrients Nitrogen, Phosphorous and Potassium.

From the analysis of India’s imports of fertilizers in the past several years and the projected balance of consumption – domestic production – and gap during the coming years. It will be obvious that India will not be in a position to achieve self sufficiency in fertilizers in the near future. And as long as the deficit between domestic production and requirements of consumption persists, the deficit has necessarily to be made good through imports.

Co-ordinate efforts by Fertilizer Marketing Personnel and Government Agencies

Both the fertilizer marketing personnel and the government agencies in India have played a great role in nurturing the fertilizer marketing process in the country. The fertilizer marketing personnel broke the barriers standing between the Indian farmer and the modern farming and made them accept the novel product as a clue to his progress. It goes to the credit of the fertilizer marketing men that they managed to accomplish this under highly adverse circumstances. While giving due credit to the fertilizer marketing personnel of the country for their pioneering work at establishing fertilizer use in the country. Fertilizer marketing was an area where coordination of efforts was extremely essential relating to distribution and promotion. The government and the fertilizer manufacturers worked hand in hand and nurtured this marketing process by pooling their resources and experiences.

1.3.4. Fertilizer Policy

During the year under review, the Government of India (GoI) has announced Nutrient Based Subsidy (NBS) policy. This policy is expected to promote balanced fertilization through new fortified products and focus on extension services by the Fertilizer industry. This will lead to an increase in agricultural productivity and consequently better returns for the farmers. The first phase of NBS covering only Phosphorous & Potassium have become effective from 1st April, 2010 as per the policy, subsidy amount will be fixed for the entire year based on the
Nutrient contents of the Company’s product and the Company will be free to decide the selling price of the product in the market.

1.3.5. Fertilizer Pricing

In a commodity like fertilizer, ‘Pricing’, is indisputably a very difficult area for decision-making. It invariably involves the balancing of a number of conflicting objectives and considerations. The process of finding the right parity between input prices and output prices is by no means an easy one. Even if the parity is easily arrived at, the question as to the levels at which the input prices and output prices have to be a thorny issue. The following issues in the pricing process are to be focused:

- What is the affordable price of food grains to the consumers of food in the country in a given context?
- What is the fair price the farmer should get for his farm produce in the given context?
- What is the reasonable price that the farmer should pay for fertilizers?
- What is the fair price the fertilizer manufacturers should get for their fertilizers irrespective of the farm level prices of the fertilizers?

Accepting the inevitability of a state subsidy to fill the gap between the affordable price at which the farm produce has to be offered to the ultimate consumer of food and the fair price which the farmer should get, how best the subsidy should be allocated among the farm input prices, farm output prices (i.e., procurement prices) and farm output distribution costs needs consideration. It is essential that long-term parity is targeted for achievement between fertilizer prices and the general level of the agricultural prices. The country has been following for long, a policy of mixed subsidies – the three-channel flow of subsidy-subsidizing partly the farm inputs, farm outputs and the public distribution of the output.

1.3.6. Rationale of Fertilizer Subsidies

Fertilizer subsidies in India rests on the following dimensions:

- Scientific farming must be encouraged; fertilizer use should remain attractive to farmers; and the targeted agricultural production must be achieved.
- Prices of food grains should not go beyond limits.
- Domestic production of fertilizers must remain attractive. The fertilizer units must be assured of a fair return on the investment made by them.
- The small farmers who can’t receive any benefit from higher prices of farm output as they do not have much of marketable surplus of farm output, must be helped through
input subsidies. Fertilizer being an important farm input, fertilizer subsidies should continue in the interest of small farmers.

- New - areas, farmers and crops must be brought into the fold of fertilizer use.
- The imbalances in the consumption of different fertilizer nutrients must be rectified.
- Availability of fertilizers in all parts of the country, including the remote and inaccessible areas of uniform prices must be encouraged.
- Maintenance of buffer stocks of fertilizers in the interest of uninterrupted agricultural production must be supported, unmindful of the costs.
- Subsidies extended to specific target groups of farmers to meet specific requirements, such as small and marginal farmers, farmers in the drought affected areas of drought prone areas, farmers in the tribal, hilly, dry land and inaccessible areas.
- Subsidies given by some of the state governments on specific fertilizer nutrients, with a view to promote a more balanced use of fertilizers.
- Freight subsidies on the transport of fertilizers depending upon exigencies.

Factors responsible for the enormous increase in fertilizer subsidies

- Quantum jump in fertilizer production
- Increase in production on account of higher investment costs of the new units.
- Steep increase in costs of inputs
- Increase in the costs of transportation, marketing and distribution
- Hesitation on the part of the government to increase the farm gate prices of fertilizers despite heavy increases taking place in the components of the costs.
- Inability of the industry to achieve highest levels of efficiency in production, marketing and distribution.

1.3.7. Fertilizer Promotion

- A close study of the evolution and consolidation of the process of fertilizer marketing in India, reveals that promotion has been the most creative part of the process. Promotional effort in the fertilizer business could not confine itself to the mere commercial propagation of the use of the material; it had to involve a massive campaign of education of millions of farmers on modern farming techniques. The promotional effort in the case of fertilizers necessarily had to be a synthesis of an extension system and a commercial promotion system. Over a period of time, fertilizer promotion innovated a number of special media that were relevant to the fertilizer context.
1.3.8. Fertilizer Transport

- Transportation is a major function in the fertilizer business. It is also a major cost area in the business. Infact, the efficiency of the fertilizer marketing system is largely decided by its transportation and warehousing efficiency. Fertilizer is a bulky commodity. The annual consumption of the commodity runs into millions of tones. The consumption of the product is highly seasonal and time sensitive. There is no uniformity and continuity in consumption over the twelve months in the year. Consumption is restricted to a few months in the year. Infact, a very large part of the total consumption takes place during a few critical days before and after the sowing/transplantation of crops. In dry crop area and areas where only one crop is grown in an year, the number of fertilizer application is really very few. The monsoon greatly influence the critical days of the fertilizer application. Government policies have all along influenced fertilizer transport in India in a significant manner. The following are the major policies that have directly influenced the fertilizer transport in the recent pasts as follows :
  - Government determining a normative transport cost/equated freight for each fertilizer unit.
  - The policy of limiting movement of fertilizers to unit trains/block rakes on a point to point basis, to a few selected rake receiving railheads.
  - The policy of delivering fertilizers freight paid right upto the block headquarters.
  - The steep hike in rail freight rates for the fertilizer cargo.

- The two most noteworthy features emerging from the analysis of the costs of fertilizer are :
  - Transport costs in the fertilizer business are showing an uptrend.
  - There are wide inter firm variations in fertilizer transport costs.

- The two main routes available for minimizing the transportation costs can be achieved by optimizing the modal mix (rail and road) and reducing the lead of the traffic through rationalization of the distribution – rational streamlining of marketing territories and transport leads can yield a very substantial reduction in transport costs.