

## “A STUDY ON THE AWARENESS AND ACCEPTANCE OF BIO FERTILISERS IN SOUTHERN DISTRICTS OF TAMILNADU”

**S. NANTHINI & D. JAYAPRAKASH KANAGARAJ**

Assistant Professor, V.S.B. Engineering College, Karur, Tamil Nadu, India

### **ABSTRACT**

The purpose of this research is to find out the awareness and acceptance of Bio fertilizer in Southern districts of Tamil Nadu. Questionnaire has been constructed and survey has been conducted in order to identify the awareness and acceptance of the bio fertilizer among the farmers. Though they are aware of fact that bio-fertilizers will give more yield when compare to chemical fertilizers, farmers are reluctant in using it because of certain limitations like less availability, high cost, usage methods and initial lower productivity. As the bio fertilizer usages are in nascent stage, its usage has to be penetrated by conducting various awareness campaigns which should be undertaken by government agencies and NGOs which paves way for considerable increase in acceptance level of bio fertilizers in their farming activities. Since, Bio fertilizers have an significant and enduring environmental implication, which nullifies the adverse effects of chemical fertilizers; it is indispensable that the farmers has to diversify their usage of conventional chemical fertilizers to bio fertilizers which is the need of the hour.

**KEYWORDS:** Consumer Awareness, Customer Acceptance, Rural Marketing, Agriculture Marketing, Bio Fertilizers Usage and Awareness

### **INTRODUCTION**

Fertilization obtains increased efficiency and better quality of product recovery in agricultural and farming activities. It is one of the most important ways to improve soil fertility and for better yield (Mazid and Khan, 2015). Non-organic fertilizers mainly contain phosphate, nitrate, ammonium and potassium salts which is consumed exponentially by the today farmers that cause serious environmental problems. For the next three decades, the usage of fertilizer will be more as the need of the agriculture produces are more. Too much usage of chemical fertilizers in agriculture leads to major environmental problems like accumulation of inorganic pollutants, pollution of well and ground water, deterioration of cultivated produces and considerable reduction in soil health.

As there is a massive increase in the use of chemical fertilisers which indicates that we are depleting our natural resources knowingly which made the researcher to find out the awareness and acceptance of Bio fertilizer among south Tamil Nadu farmers and to find the ways and means of providing awareness to the farmers about the bio fertilizer in order to increase its usage. In recent agriculture, usage of chemical fertilizers and pesticides detriment the sustainability of agriculture systems that soars the cost of cultivation which makes farmer's income stagnated and challenges the food security and safety.

### **Background of the Study**

The Indian Agriculture Industry is on the brink of a revolution that will modernize the entire food chain, as the

total food production in India is likely to double in the next ten years. As per recent studies the turnover of the total food market is approximately Rs.250000 crores (US \$ 69.4 billion) out of which value-added food products comprise Rs.80000 crores (US \$ 22.2 billion). The Government of India has also approved proposals for joint ventures, foreign collaborations, industrial licenses and 100% export oriented units envisaging an investment of Rs.19100 crores (US \$ 4.80 billion) out of which foreign investment is over Rs. 9100 crores (US \$ 18.2 Billion). The agricultural food industry also assumes significance owing to India's sizable agrarian economy, which accounts for over 35% of GDP and employs around 65 per cent of the population. Both in terms of foreign investment and number of joint- ventures / foreign collaborations, the consumer food segment has the top priority. The other attractive features of the Indian agro industry that have the capacity to lure foreigners with promising benefits are the deep sea fishing, aqua culture, milk and milk products, meat and poultry segments.

Excellent export prospects, competitive pricing of agricultural products and standards that are internationally comparable has created trade opportunities in the agro industry. This further has enabled the Indian Agriculture Industry Portal to serve as a means by which every exporter and importer of India and abroad, can fulfill their requirements and avail the benefits of agro related buy sell trade leads and other business opportunities.

This Indian agro industry revolution brings along the opportunities of profitable investment and agriculture-industry-india.com provides you the B2B platform with agro related catalogs, trade leads, exporters & importers directory etc. that help you make your way to profit easy.

Agriculture continues to be the most predominant sector of the economy, as 70% of the population is engaged in Agriculture and allied activities for their livelihood. The Government's policy and objectives have been to ensure stability in agricultural production and to increase the agricultural production in a sustainable manner to meet the food requirement of growing population and also to meet the raw material needs of agro based industries, thereby providing employment opportunities to the rural population.

The Agriculture Department has taken up the challenge to achieve higher growth rate in agriculture by implementing several development schemes and also propagation of relevant technologies to step up the production. Intensive Integrated farming system, massive Wasteland Development Programme, comprehensive watershed development activities, water management through Micro irrigation systems, Organic farming, Soil health improvement through Bio-fertilizer including Green Manu ring, adoption of Integrated Nutrient Management (INM) and Integrated Pest Management (IPM) technologies are given priority through various programmes, besides crop diversification to fetch better return and value addition to agricultural produce are also given priority to improve the economic status of the farming community.

### **Problem Statement**

The major concerns in today's world are the pollution and contamination of soil. The use of chemical fertilizers and pesticides has caused tremendous harm to the environment. An answer to this is the bio fertilizer, an environmental friendly fertilizer now used in most countries.

Bio fertilizers will help solve such problems as increased salinity of the soil and chemical run-offs from the agricultural fields. Thus, bio fertilizers are important if we are to ensure a healthy future for the generations to come.

Bio fertilizer is a substance which contains living microorganisms which when applied to seed, plant surfaces, or

soil colonizes the rhizosphere or the interior of the plant and promotes growth by increasing the availability of primary nutrients to the host plant. At present, one of the new challenges of the new millennium is to obtain more and more agricultural food production from shrinking per capita arable land. Bio fertilizers have important and long term environmental implications, negating the adverse effects of chemicals.

Bio fertilizers play a very significant role in improving soil fertility by fixing atmospheric N, both, in association with plant roots and without it, solubilise insoluble soil phosphates and produces plant growth substances in the soil.

### **Objectives of the Study**

The main objective of the study in this cut-throat environmental scenario is to determine the awareness and acceptance of Bio Fertilizers among farmers in the Southern districts of Tamil Nadu.

### **Significance of the Study**

It may be noted, that only 30% of India's total cultivable area is covered with fertilizers where irrigation facilities are available and on the remaining 70% of the arable land, which is mainly rain fed, very negligible amount of fertilizers are being used. It is a very critical task because an efficient strain of the N-fixing/P-solubilising microorganisms is as important in Bio fertilizers production as seed is in crop cultivation (Saravanakumar and Gandhi, 2009).

### **Indian Market for Bio Fertilizers**

Around 170 organizations in 24 countries are engaged in commercial production of Biofertilizers. NifTAL (U.S.A) has played a major role in the popularization of Rhizobium inoculants. In such circumstances, the price of Bio fertilizers along with the risk and responses will be weighed with those of chemical fertilizers, and promotion of technology for environmental reasons would call for some degree of protection to minimize the inter-fertilizer price distortion.

Organic produce provide better health, higher nutritional value and enhanced taste. The bio-products are formulated for maximum performance in the field and provide absolute value for farmer's money.

## **LITERATURE REVIEW**

The census of India defines rural as any habitation with a population density of less than 400 per.sq.km, where at least 75% of the male working population is engaged in agriculture and where there exists no municipality or board. Of the nearly 6.4 lakh villages in India, only 20000 villages have populations more than 5000. Leaving aside Hindustan Lever and ITC, most companies in the FMCG sector would define rural as any place with a population up to 20000. Similarly, durable and agri-input companies would consider any town with a population below 5000 as rural.

Companies face many challenges in tackling the rural markets, some of the more critical being: understanding rural consumers, reaching products and services to remote rural locations and communicating with vastly heterogeneous rural audiences. Sadly, not many companies have invested sufficient effort and money in research and nor have they spent enough time in the field to understand rural consumers, their values, aspirations, needs and usage habits. Marketing is all about 'getting to know your customer', but having largely ignored this cardinal principle, most corporate in rural markets find that success has eluded them (Kashyap & Raut, 2005).

The green revolution brought impressive gains in food production but with insufficient concern for sustainability.

In India the availability and affordability of fossil fuel based chemical fertilizers at the farm level have been ensured only through imports and subsidies. Dependence on chemical fertilizers for future agricultural growth would mean further loss in soil quality, possibilities of water contamination and unsustainable burden on the fiscal system.

The Government of India has been trying to promote an improved practice involving use of bio- fertilizers along with fertilizers. These inputs have multiple beneficial impacts on the soil and can be relatively cheap and convenient for use. Consistent with current outlook, the government aims not only to encourage their use in agriculture but also to promote private initiative and commercial viability of production. This paper analyses available industry side data to find only a limited extent of success till date.

There has been no accelerated growth in distribution with time, inadequate spatial diffusion and despite entry of small private units into the industry there is no clear indication of the success of privatization. The paper however argues that considering the social benefits promised the government has ample grounds to intervene to set up an effective market for the new product while encouraging private players. But the policy and the instruments of intervention need to be designed with care (Ghosh, N. 2004).

Those days are gone when a rural consumer went to a nearby city to buy branded products and services". Time was when only a select household consumed branded goods, be it tea or jeans. There were days when big companies flocked to rural markets to establish their brands. Today, rural markets are critical for every marketer - be it for a branded shampoo or an automobile. Time was when marketers thought van campaigns, cinema commercials and a few wall paintings would suffice to entice rural folks under their folds. Thanks to television, today a customer in a rural area is quite literate about myriad products that are on offer in the market place. An Indian farmer going through his daily chores wearing jeans may sound idiotic. Not for Arvind Mills, though. When it launched the Ruf & Tuf kits, it had created quite a sensation among the rural folks as well within few months of their launch.

Trends indicate that the rural markets are coming up in a big way and growing twice as fast as the urban, witnessing a rise in sales of hitherto typical urban kitchen gadgets such as refrigerators, mixer-grinders and pressure cookers. According to a National Council for Applied Economic Research (NCAER) study, there are as many 'middle income and above' households in the rural areas as there are in the urban areas. There are almost twice as many 'lower middle income' households in rural areas as in the urban areas. At the highest income level there are 2.3 million urban households as against 1.6 million households in rural areas. According to Mr. D. Shivakumar, Business Head (Hair), Personal Products Division, Hindustan Lever Limited, the money available to spend on FMCG (Fast Moving Consumer Goods) products by urban India is Rs. 49,500 crores as against is Rs. 63,500 crores in rural India (Shanthi Kannan, 2001).

## **RESEARCH METHODOLOGY**

### **Research Design**

Research Design is a specified framework for controlling the data collection. It is the basic plan which guides the data collection and analysis phase of the research project. A good design will make sure the information gathered is consistent with the objective of the study. There is no standard / idealized research design to guide the research to achieve the objective of the study. The researcher collected the data from the respondents directly. This is a descriptive research.

### **Sampling Technique and Sample Size**

The researcher has chosen the sampling size as 120 arbitrarily. The farmers belonging to the Theni, Dindigul and Madurai districts of Southern Tamil Nadu are the sample area of this research. The researcher has adopted Convenient Quota Sampling for the research.

### **Data Collection Instruments**

Collection of data is an important and essential part of a project work. The required data has to be grouped, analyzed and interpreted. The important aspects to be considered in data collection are nature of data, method of data collection and sources of data collection.

The primary data was collected directly from the farmers belonging to the sampling area through a questionnaire. The structured questionnaire includes the questions to know the awareness and acceptance of the farmers about the Bio fertilizers; the questionnaire also explores the problems faced by farmers.

### **Sources of Data**

The method adopted by the researcher for the Primary data collection was “Questionnaire Method”. Under the questionnaire method, a list of questions pertaining to the survey was prepared and given to the respondents to be filled in by them. The questionnaire contained questions and the space for answering was provided. The researcher adopted a structured questionnaire. The Questionnaire was constructed in English and then translated in Tamil, as Tamil being the local language.

### **Method of Data Analysis**

The various tools used by the researcher for the purpose of analysis are

- Percentage analysis
- Chi-square analysis
- One-way ANOVA

### **Research Hypothesis**

**H1<sub>1</sub>**: Awareness of Bio fertilizers is positively related with acceptance of bio fertilizing.

**H1<sub>2</sub>**: Area of cultivation is positively related with the acceptance of bio fertilizers.

### **Methodology Difficulties**

#### **Geographical**

The study was limited to Theni, Dindigul and Madurai districts of Southern Tamil Nadu alone.

#### **Temporal**

The research has limited time duration, hence all the data and their temporal context would be limited to the above mentioned period only.

#### **Procedural**

This study was done for a segment which had been divided in to sub-segments. Hence, the sampling method adopted was non-probability sampling (Quota Sampling).

### Analytical

Since it is a qualitative study, the analysis was restricted only with percentage analysis, Chi-square analysis, and One-way ANOVA.

### Specific

The farmers do not have a thorough knowledge about the fertilizers, so the findings are based on overall view of the farmers.

## DATA PRESENTATION, ANALYSIS AND INTERPRETATION

### Chi Square Analysis

The chi square analysis is done using the factors "Area of Cultivation and Acceptance of Bio-fertilizer". The hypothesis set was that Area of cultivation is positively related with acceptance of bio fertilizing. Table 1 shows the significant value as .010 which is higher than the p value (0.05). So, it can be concluded that there is a significant relationship between the area of cultivation and acceptance of bio fertilizer. During data collection process, researchers enquired the farmers and discussed this part elaborately. Farmers those who possess more acres of cultivable land are interested to implement the bio fertilizing in various phases. First they are willing to implement the bio fertilizing on a trial basis for a stipulated sum of land and if the output is gainful in comparison with the conventional farming, the farmers are interested to increase the bio fertilizers.

**Table 1: Chi-Square Tests**

	Value	df	Asymp. Sig. (2-Sided)
Pearson Chi-Square	9.238 <sup>a</sup>	2	.010

### Analysis of Variance

The results furnished in table 2, show that Analysis of Variance was run to find out difference in the belief among the farmers that usage of bio fertilizers will increase the cultivation. The F Value of 0.001 is found to be lower than the significant value at 0.05 levels, which tells that, there is no significant relationship between the awareness and farmers' belief that bio fertilizer will increase the cultivation. Even government agencies are rolling out lots of awareness programmes regarding the usage of bio fertilizers which is not creating much impact among these short sighted farmers as they presume the bio fertilizing gain can be reaped only after long term i.e. 5 years and more.

**Table 2: Anova**

<b>Belief among the Farmers that Usage of Bio Fertilizer Will Increase the Cultivation</b>			
	Sum of Squares	Mean Square	Sig.
Between Groups	18.051	18.051	0.001
Within Groups	83.274	.706	
Total	101.325		

### Percentage Analysis

### Interpretation

**Table 3: Awareness and Acceptance of Bio Fertilizers by the Farmers**

	Accept	Not Accept	Total
<b>Aware</b>	76	6	82
<b>Un aware</b>	0	38	38
<b>Total</b>	76	44	120

- Out of 120 respondents, 76 of them are aware of bio fertilizers and they are ready to accept it.
- Out of 120 respondents, 6 of them though they are aware of bio fertilizers they are not willing to accept it.
- Those who are unaware of bio fertilizers, they are not ready to accept it.
- As 76 farmers are aware or bio fertilizers and they are ready to accept, this segment of the farmers must be concentrated. As they are already aware of it, this segment of farmers need less advertisement and promotional activities.
- 6 farmers, though they are aware of bio fertilizers, are not ready to accept it. This segment can be convinced to use bio fertilizers by educating them about the high yield of bio fertilizers in the long run and eco friendliness of it. Word of mouth advertisement is best suitable for them. The farmers who are already using it and the Presidents or Zaminders who act as opinion leaders can be used to promote it.

**Table 4: Land and Acceptance of bio Fertilizers**

	Accept	Not Accept	Total
<b>&lt; 1 acre</b>	7	12	19
<b>1 acre – 10 acre</b>	25	11	36
<b>&gt; 10 acre</b>	48	17	65
<b>Total</b>	80	40	120

- Among the farmers who have less than 1 acre of land, 7 are ready to accept and 12 are not ready to accept.
- Among the farmers who have land holdings between 1 acre to 10 acres of land 25 are ready to accept and 11 are not ready to accept.
- Among the farmers who have more than 10 acres of land, 48 are ready to accept and 17 are not to accept. These farmers form the major portion of respondents. This segment of farmers who have more than 10 acres of land can be concentrated more. Some of them have 100 acres of land and more than that, these farmers are the potential customers of bio fertilizers.

**Findings**

Some of the findings from the percentage analysis are as follows

- 49% of the farmers are above 50 years of age and they are influenced by the Presidents or Zamindars of the village. They act as opinion leaders. The bio fertilizers can be promoted through them and any local resident can be made as a retailer.
- 54% of the farmers have more than 10 acres of land. In this nearly 37% of the farmers are willing to change from chemical to bio fertilizers. These prospects can be concentrated more.
- 44% of the farmers who use chemical fertilizers are not satisfied with it, these farmers can be contacted and they

can be made to use bio fertilizers instead of chemical fertilizers.

- 68% of the farmers are aware of the bio fertilizers already; these farmers can be convinced to use the bio fertilizers. They can be educated regarding the high yield and eco friendliness of bio fertilizers through field demonstrations and farmer training programmes with the help of the Agricultural officers.
- 72% of the farmers who were aware of the Bio fertilizers believe that yield will increase with the use of bio fertilizers; these farmers can be made as potential customers of bio fertilizers.
- 79% of the farmers in the villages do not have agri clinic in their villages. These agri clinics help the farmers in soil testing, what fertilizers can be used and type of crop to be used. So efforts could be taken to encourage the growth of Agri clinics and Agripreneurs, so that they become the effective channels of distribution for the bio fertilizers.
- 89% of the farmers are not using the bio fertilizers because of its less availability, so bio fertilizers must be made available in all the villages through the local retailers or through some other means like the local self help groups or any one of the farmers itself who are already using it can be used to distribute bio fertilizers as they can explain the usefulness of it clearly to the local farmers.
- 67% (80 out of 120 respondents) of the farmers are ready to accept the bio fertilizers.

## CONCLUSIONS

Through the project the researcher was able to know about the importance of Agriculture and the various hurdles that the farmers are currently facing. This study gives the researcher an insight into rural marketing with respect to fertilizer products.

Through the project the researcher was able to determine the awareness and acceptance of bio fertilizer in Southern districts of Tamil Nadu. This study also helped the researcher to apply the theoretical knowledge gained in the class room to real time business problems.

Though there is considerable amount of awareness for bio fertilizer the farmers are reluctant to buy because of its low yield, high cost and less availability. Hence awareness must be provided to the farmers emphasizing the various benefits of bio fertilizers starting from high yield in the long run to the quality of the crops produced without deteriorating the content of the soil as in case of chemical fertilizers.

## RECOMMENDATIONS

- More advertising can be given for bio fertilizers through Kodai FM and Suriyan FM radios, Local cable channels etc, to promote Bio fertilizers. As 38 farmers are unaware of the bio fertilizers, they can be made aware through advertisement in FM radios and local cable channels; and also through Agri-officers, research institutions and magazines.
- 95% of the farmers are willing to have demonstration fields, so that they can be able to know more about the usage of bio fertilizers and once if they get good yield they will surely change to bio fertilizers. So demonstration field can be organized in all the villages.



- Bodinayakanur (Theni district) consists more of cardamom farmers and most of them are aware of it and ready to accept. For those who are unaware of it, the cardamom planters meet conducted once in every month can be used for promotional activities.
- Samples of bio fertilizers can be given to the farmers to increase the awareness of the Bio fertilizers.
- The awareness for bio fertilizers can be increased through other farmers who are already using it by word of mouth promotion and also through agri officers, research institutions, and magazines.
- The farmers meet conducted once in every month in the villages can be used as a medium of promotional activity of bio fertilizers as most of the villagers used to gather for the meeting.

### Scope for Further Research

The observations of this study are confined to the farmers in Theni, Dindigul and Madurai (Southern) districts whereas it can be further extended to other districts of Tamil Nadu. This study may act as the basis for the researchers who undertake research upon farmer's bio fertilizer usage and satisfaction level of farmers on using bio fertilizer in the farming.

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