

Need and Use of Pesticides in Agro Food Production Industry by Farming Community in Nagpur District (2000-2006)

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Abstract:

In India, most of the farmers feel that use of pesticides for plants' protection is necessary. They have also been found to be aware of the ill effects of pesticides on the human health and the environment. Most of them feel that pesticides have got the beneficial impact on the crop's health and it should be used as per recommendations, and most of the times, use of the pesticides increase their income.

Agricultural development continues to remain the most important objective of Indian planning and policy. In the process of development of agriculture, pesticides have become an important tool as a plant protection agent for boosting food production. Further, pesticides play a significant role by keeping many dreadful diseases. This study was restricted to Nagpur district only. This paper gives the idea about use of pesticides and its effects on agro food products in Nagpur district.

Key words: Pesticides, Marketing, Agriculture and environment etc.

1) Introduction:

Marketing is typically seen as the task of creating, providing and delivering goods and services to consumers and business. Marketers are skilled in stimulating demand for company products.

Marketing is regarded as the activity involving the buying and selling of products and services.

However, as a subject of study, its approach is more than one way commodities, institutional, managerial, societal and systems approaches. Just as production and logistics, professionals are responsible for demand management.

One of the important challenges of producing agricultural crops is damageable nature of agricultural products, which brings about more losses for farmers and rural people and also decreases motive for activate presence in agricultural activities. Farmers and agricultural

producers are always facing with uncertainty in production.

2) Literature Review:

An article by S. K. Thakare, Y. C. Bhatt and A. K. Kamble published in the P.K.V. Research Journal vol. 30 No.1-January 2006, stats that the cotton is the important cash crop of the Vidarbha region in the state of Maharashtra. The total area under cotton cultivation in the region is more than 18 lakh hectares i.e. about 40 percent of total area of India. The crop is threatened by many pest, insect and disease. The control over them can only be achieved if the pesticides are properly applied at the correct rate and on the target. Thus, it is clear that the scientific use of pesticides is the only way to protect crops from pest diseases for increasing agricultural yield.

3) Research Methodology

3.1) Need of Study:

The most sensitive issue of farmers' agricultural condition of Nagpur district has to be studied from both the angles; Social and Economical. So, this topic is selected. Generally, a question arises in our mind that after independence various objectives are set up by Government and Planning commission for the overall development of agriculture sector but inspite of this, last five to ten years worsened the agriculture situation in Nagpur district

3.2) Objectives:

- 1) To make a comprehensive study of consumers attitude towards different pesticides products and their usage for crops.
- 2) To know the need and effect of pesticides in agro food production industry
- 3) To study the awareness about pesticides among the farmers of Nagpur district.

3.3) Scope:

Marketing is typically seen as the task of creating, providing and delivering the goods and services to the consumer and business. Considering this, scope involve for the marketing of the pesticides and the strategies that are adopted by different pesticides companies and effect of pesticide on the productivity of crops. Agricultural statistics are available mostly on an all India basis or state level. In a vast country like India inter-regional and inter-district variations are so pronounced that data at macro level, many a times, do not prove to be useful. It is felt that a micro study such as this would be more meaningful and useful. The study thus is useful to evaluate the agricultural and farmers development and also to bring out the defects in the marketing strategies of pesticides' company.

4) Research Methodology:

This research paper is a part of PhD work and was performed in the area of 12 tahsils of Nagpur district. For the study, the data was collected from the Farmers of the Nagpur district. The area selected for study is limited to Nagpur revenue district comprising twelve Tahsils, excluding Nagpur rural and Urban.

i) Method of Data Collection:

The questionnaire was designed after conducting in-depth interviews with few pilot respondents. A Self-administered structured survey questionnaire was targeted to carefully select respondent farmers using cluster sampling techniques to collect primary data.

For secondary data collection Annual report, e-books Catalogues, Brochures, Agricultural Magazines, Website are used, and the conclusions are drawn on the basis of analysis.

ii) Sampling method:

The sample of the study includes 200 cultivators from each taluka of Nagpur district, thus measuring total 2400 farmers of the district. However, out of 2400, sample of 2330 cultivators have been finalized. For removing language barrier the Marathi language is used.

The sampling procedure adopted for the purpose of study was cluster sampling which involves selection of samples, universe of a group or cluster items.

iii) Research Design:

The present study is Descriptive in nature. Accordingly, the use is made of secondary as well as primary data. Descriptive research aims at answering the 'what' and 'why' of current state of system. Descriptive

Research is carried out with definite objective(s) and hence it results in definite conclusions. Apparently, the conclusions drawn from this study was descriptive in nature.

iv) Hypothesis:

Alternate Hypothesis H1: Use of pesticides has increased the productivity of crops in Nagpur District.

Null Hypothesis H0: Use of pesticides has not increased the productivity of crops in Nagpur District.

5) Farmers awareness about Pesticides:

The farmer is the key to the door of agricultural production. If he is eager to grow more, if he understands the improved technical processes, if his laborers work hard, if he receives seed, fertilizer, pesticides, implements, water and of course credit, there is no reason why the land will not produce enough to spare. Our first basic problem is to know the farmer, his practical day-to-day field problems and of correct guidance to him and if possible the necessary techno-economic and financial help at the time of his need. For all this to solve, it is necessary to remove basic hindrances by the effective implementation of i) Security of tenure, ii) Provision of adequate and timely credit, iii) Stabilization of prices, iv) Provision of consumer goods for farmers, v) Accessibility to hire-purchase system for implements and equipments, vi) Attracting the farmers to adopt new techniques and tools of production through subsidies and liberalized ensured credit, vii) Agricultural aids and viii) Strengthening of quality-cum-quantity demonstrations and demonstrators.

Losses to national economics resulting from insect damage to agricultural products are enormous but rarely comprehended. The proper use of pesticides without pest management procedure doesn't show the proper effects. Sometimes, the farmers are engaged in farm procedures from a long time, for getting solution to particular problems, and at that time he does not have a chance to take proper suggestions and goes for the way of using pesticides in a wrong way. This will give the wrong results on the yield of crops. The proper knowledge and use of pesticides should be given to the farmers. Everyone knows that production in agriculture is a collective outcome of ultimate decisions and actions taken by millions of our cultivators mostly at their free will and on the size of their pockets. This is the striking difference

from industry where with a view to influencing the decisions we have to tackle entrepreneurs, we are relatively less well educated and organized and also more attuned to newer technology.

Many a times there is a racket for duplicate production and for the sale of pesticides. Many of the farmers do not have enough knowledge for the identification of proper pesticides, seeds, and fertilizers. This result into the anti effect on the yield, this type of education should be given to the farmers by the Govt. through the various programmes and schemes. For this purpose, they should appoint Village Salesman (VSM), a graduate in agriculture field. Nagpur district farmers generally are illiterate, ignorant, superstitious, and conservative and bound by old traditions and institutions. Superstitions and belief in fate are the causes, which keep the farmers fully satisfied with their primitive systems of cultivation. Due to the toxic effects of the pesticides and indiscriminate use of pesticides, there are several adverse effects on the human health.

6) Use of Pesticides:

Indian agriculture is the backbone of economy. Agriculture in India has gone through immense changes in the second half of the twentieth century. Use of chemical fertilizers and pesticides has played a positive role in increasing agricultural productivity and in making India self-sufficient in food grain production. India has a vast pesticide market. About 3 per cent of the total pesticides used in the world are utilized in India. India is the second largest manufacturer of pesticides in Asia and is the third largest consumer of pesticides in the world.

Pesticides are defined as the substance or mixture of substances used to prevent, destroy, repel, attract, sterilize, stupefy or mitigate any insects. Generally pesticides are used in three sectors viz. agriculture, public health and consumer use. There is a wide range of pesticides found used in non-agriculture situations such as industries, public health and for a number of purposes in the home. Domestic use of pesticides is mainly as a fly killer, ant killer, moth killer, repellants, rodenticides and fungicides etc. By and large, the industrial use of pesticides is of vital importance in the industries such as wood and carpet, wood preservation, paint industry, paper and board industry, leather industry, building industry etc.

7) Pesticides as a management tool:

Pesticides are a management tool to aid in the control of pests. Pesticides play a major role in raising the crop production. It helps to minimize pest damages to the crop thereby encourages the farmers to get higher yield to meet food crisis. There are some ideal attributes of the pesticides that it should be cheap, simple and effective. It should be a good "wetter" and a good "spreader". Its ingredients should be easily available and transportable.

a) It should keep well under varied conditions of climate, should not be liable to combustion or chemical disintegration.

b) It should be at once toxic to a wide range of insects and comparatively harmless to higher animals and man

c) It should be applicable at all times of the year and under all conditions of weather. d) It should be equally effective when eaten by the insect or contacted by it.

8) Necessity / Importance of use of Pesticides:

Pesticides have made a great impact on human health, production and preservation of food, feed, forage and fiber crops by controlling disease vectors and by keeping in check by unwanted species of insects and weeds. Gains achieved from the use of high yielding varieties of crops and application of increasing amounts of fertilizers have been made possible only due to the protection provided by the pesticide umbrella.

9) Advantages of use of Pesticides:

Pests are an ecological problem and therefore our control strategies must be ecologically sound. There are two approaches to pest control a. Prevention b. Cure or removal of the cause This includes the development of pesticides of control which become very important because of number of advantages.

For example:

a) Cost effectiveness

Pesticides are an economical way of controlling pests. They require low labour input and allow large areas to be treated quickly and efficiently.

b) Timeliness and flexibility:

A suitable pesticide is available for most pest problems with variations in activity, selectivity and persistence. The best product can be chosen for the situation. This allows more flexibility in management options and better timeliness of pest

control.

c) Quality, quantity and price of produce:

Farm chemicals ensure a plentiful supply and variety of high quality, wholesome food at a reasonable price. Modern society demands nutritious food free from harmful organisms. This would be very difficult without farm chemicals.

d) Prevention of problems:

Pesticides are frequently used to prevent pest problems from occurring, e.g. preventing weeds in gardens and lawns; treatment of export and import produce to prevent the spread of pests; treatment of stored products to prevent pest attack and destruction during storage.

e) Protection of pets and humans:

Without pesticides the treatment of spiders, cockroaches, etc in houses; fleas on pets, etc, would be most difficult.

f) Protection of the environment:

If no pesticides were available to control environmental pests like weeds, animals, etc. our environment would have suffered very badly. Using herbicides to control crop weeds reduces the need for cultivation, thus reducing land degradation.

10) Losses caused by insect pests in Agriculture:

The yield loss due to insect pests is a very important issue. Insect is a pest, if they damage it causes to a crop is significantly reducing the yield. So, there is an urgent need to assess such losses, in order to frame strategies to overcome them. The elaborate data of the losses due to insect pests depend on many factors and are therefore, quite difficult to evaluate correctly. Pesticide is one of the major factors responsible for increasing the agriculture production. The farmers have to face problems of loss of product due to various pest attacks on crops. Approximately, 30% of Indian crop yield potential is being lost due to insects, disease and weeds to food grain. The value of total loss represents about 18% of the gross national agriculture production.

The pest wise losses of food grains are as follows:

Table No. 01- The pest wise losses of food grains

| Pest | Loss of Food Grains (%) |
|----------|-------------------------|
| Weeds | 28 |
| Diseases | 25 |

| | |
|---------|----|
| Insects | 23 |
| Storage | 10 |
| Rats | 08 |
| Others | 06 |

Source: <http://www.regional.org.au>

The estimated crop losses caused by insect pests under traditional agriculture in India are shown in the following table.

Table No.02-The estimated crop losses under traditional agriculture

| Crop | Loss in yield (%) |
|---------------------|-------------------|
| Rice | 10.0 |
| Sorghum and Millets | 02.0-5.0 |
| Pulses | 05.0 |
| Cotton | 18.0 |
| Fruits | 25.0 |

Source: Insect, Pest and Crop losses by G. S. Dhaliwal and Ramesh Arora

The estimated crop losses caused by insect pests under modern agriculture in India are shown in the following table.

Table No.03 - The estimated crop losses under modern agriculture

| Crop | Estimated loss in yield due to insect pests (%) |
|---------------------|---|
| Rice | 25 |
| Sorghum and millets | 35 |
| Pulses | 30 |
| Seed Cotton | 50 |

Source: Insect, Pest and Crop losses by G. S. Dhaliwal and Ramesh Arora

Table No.04- The estimated crop loss for Orange crop

| Crop | Estimated loss in yield due to insect pests (%) |
|--------|---|
| Orange | 50% |

Source: Insect, Pest and Crop losses by G.S.Dhaliwal and Ramesh Arora

11) Correct use of pesticides:

It is essential that pesticides should not be used as the sole means of pest control. Misuse and overuse leads to many of the problems. Pesticides must be used as part of a planned systematic pest management program utilizing as many control techniques as applicable. Controls such as biological, physical, cultural, genetic, environmental and mechanical techniques are just as important as pesticides.

When pesticides are used, it is vital that they are used correctly. Some of the considerations involved are:

- a) Selection of product
- b) Compatibility with other controls
- c) Safe work practices
- d) Following label directions
- e) Timing of application
- f) Accurate application to the target
- g) Selection, adjustment and calibration of equipment
- h) Application under favorable weather conditions
- i) Keeping good records.

By correct, safe and accurate use of these products, better pest control will result, adverse effects will be minimized, and farming will be more profitable.

The consumption of pesticides in India for the period 1985–1996 is shown in the table Consumption of Pesticides

Table No.05- Consumption of pesticides in India during period 1985–1996

| Years | Consumption in Tons |
|---------|---------------------|
| 1985-86 | 52 thousand tons |
| 1986-87 | 50 thousand tons |
| 1987-88 | 49 thousand tons |
| 1988-89 | 55 thousand tons |

| | |
|---------|---------------------|
| 1989-90 | 86 thousand tons |
| 1990-91 | 72.1 thousand tons |
| 1995-96 | 61.26 thousand tons |

Source: Crop Management (Under Irrigated and rainfed conditions) by Dr. S. S. Singh

The use of pesticides in India is increasing continuously with some variations in some years because of increased pest attack on the field crops like Cotton, Oilseeds, Cereals, Sugarcane, Pulses etc. Most of the quantity of these crops is found to be damaged by the pest attack.

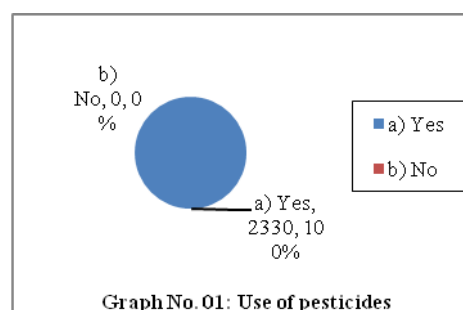
The Consumption of Pesticides in Maharashtra State during 1995-96 to 1999-2000.

Table No. 06-Consumption of pesticides in Maharashtra state during 1995-96 to 1999-2000

| Year | Consumption in M.T. |
|-----------|---------------------|
| 1995-1996 | 5097 |
| 1996-1997 | 4567 |
| 1997-1998 | 3649 |
| 1998-1999 | 3468 |
| 1999-2000 | 3614 |

From the above table it is clear that the consumption of pesticides in Maharashtra goes on decreasing from the year 1995 to 1999. But in the very next year i.e. 1999-2000 it shows increase in consumption. The research study makes it clear that about 90% farmers have expressed satisfaction regarding use of pesticides for increase in yield. Many farmers have opined that the trend of use of pesticides in future will increase.

Que. 01: Do you use pesticides?

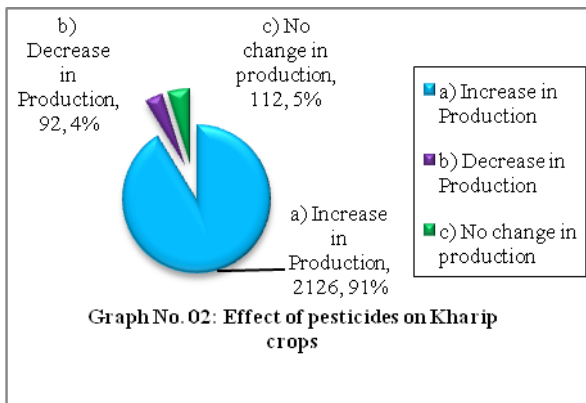


Graph No. 01: Use of pesticides

There are 100% farmers i.e. 2330 out of 2330 who have used pesticides for the crops.

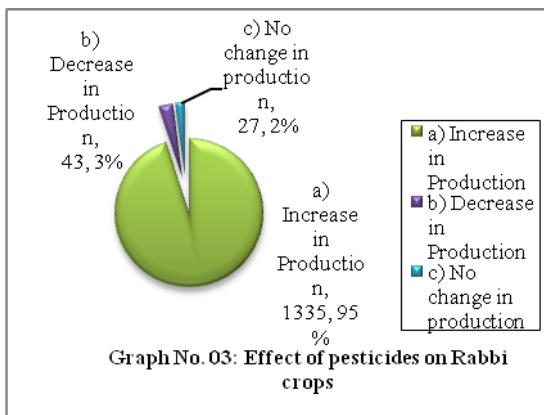
This indicates that the farmers are fully aware about the benefit of use of pesticides for increasing crop yield. The awareness amongst the farmers about use of pesticides has been possible because of marketing strategies adopted by the different companies, dealers and retailers.

Que. 02: a) Effect of pesticides on Kharip crops



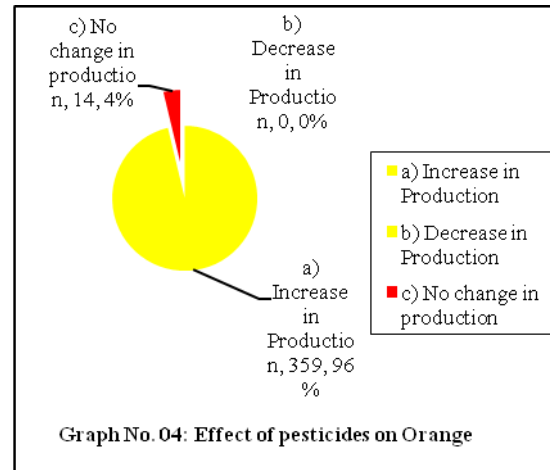
From the above graph, it is clear that, there are 91% farmers i.e. 2126 out of 2330 who have mentioned that pesticides' effect on kharip crops increases the production

b) Effect of pesticides on Rabbi crops



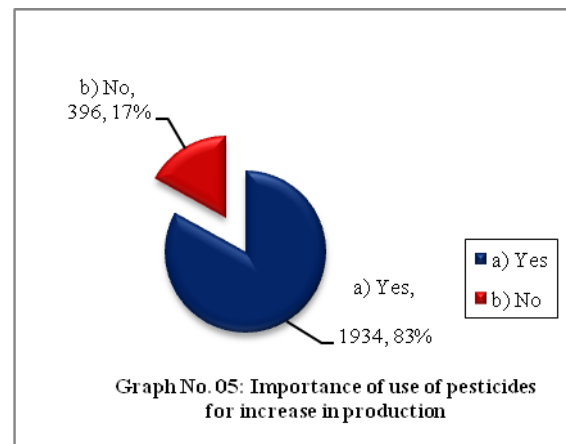
From the above graph, it is clear that, there are 95% farmers i.e. 1335 out of 1405 who have mentioned that pesticides' effect on rabbi crop increases production

c) Effect of pesticides on Orange:



From the above graph, it is clear that, there are 96% farmers i.e. 359 out of 373 who have mentioned that pesticides' effect increases the production of orange

Que. 03: Importance of use of pesticides for increase in production



From the graph, it is clear that, there are 83% farmers i.e. 1934 out of 2330 who have given importance to use of pesticides for increase in production.

During analysis it is observed that almost all the farmers have used pesticides for plant protection. The analysis of data proves that most of the farmers are aware of the good effects of use of pesticides and thus they have used pesticides for preventing pest attacks and diseases on their crops. In absence of use of pesticides by them the crop could have suffered the losses to the yield. Resultantly *the use of pesticides has increased the productivity of crops in Nagpur district.*

Hence Hypothesis No. 1 proved to be true.

Conclusion:

Thus the study proves that;

- 1) Use of pesticides is increasing and
- 2) There is vast scope for marketing of pesticides to increase the agriculture production through judicious and scientific use of pesticides at proper stages studying nature of pest attack on crop and the manner prescribed by the related companies.

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