

A COMPARATIVE STUDY OF ORGANIC AGRICULTURE (TRADITIONAL AGRICULTURE) AND INORGANIC AGRICULTURE (CONVENTIONAL AGRICULTURE)

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ABSTRACT

The main aim of this paper is to provide a high-level overview and the comparison of the two types of agriculture Organic Agriculture and Inorganic Agriculture practiced by the farmers these days. An Organic Agriculture is the practice that relies totally on the ecological processes, biodiversity and natural cycles of local area and excludes the use of inputs with adverse effects. It maintains health of soil, ecosystem and of people. Whereas, the Inorganic Agriculture involves the use of synthetic products such as pesticides and chemicals and does not care about soil health and ecosystems.

In this paper the main aim is to provide an analysis on the adoption of type of agriculture by the farmers and to discuss the reasons and benefits of the adoption of that particular type based on the data collected which is attached in Annexure 1.

KEYWORDS: *Traditional Agriculture, Pesticides and Chemicals, Federation of Organic Agriculture Movement*

Article History

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INTRODUCTION

Agriculture is the method of production of food, fiber, feed, milk and many other desirable products by the cultivation of the crops and the rearing of farm animals (livestock). It is a broad sector and includes the production of timber, leather, industrial chemicals (starch, alcohol), fibers, cut flowers, fish and birds, and both legal and illegal drugs. But at a common level, agriculture includes cultivation of crops and livestock rearing only. The main aim of agriculture is to produce food and employment opportunities for rural populace.

The types of agriculture that this research paper aims to analyze are the traditional type of agriculture Organic Agriculture and the conventional form of agriculture known as Inorganic Agriculture. It is important to know the background and history of both these types before starting the comparison of these two types of agriculture.

Organic Agriculture

This is one of the oldest and original type of agriculture and is practiced since the beginning of human civilization. Organic Agriculture is also known as traditional or eco-friendly agriculture. Sir Albert Howard, F.H, King and others in 1900's introduced the concept of organic agriculture. According to them the use of organic manures produced from animal waste, crop rotations, use of cover crops and the biological and natural methods of pest control give the better way for agriculture. This idea was supported by many others such as J.I. Rodale and his son Robert, in 1940's and they had written various texts on organic agriculture.

The demand for organic agriculture and products had increased in 1960s when people became aware of the various problems resulted by the use of chemicals, pesticides and other modern techniques in conventional agriculture.

In 1972 an International Federation of Organic Agriculture Movement (IFOAM) was founded. The aim of this movement was the diffusion and exchange of information about the principles and practices of organic agriculture around the globe.

As people become more aware of the environmental issues along with the health impacts of fertilizers, pesticides and genetically modified crops, the demand for organic products increased tremendously in the late 20th century. Now the increased awareness has turned the face of originally supply-driven organic movement to demand-driven one.

Inorganic Agriculture

During 1960s the world population increased and put extra pressure on agriculture sector. The demand for food had increased than its production. This problem had raised the issue to increase food production in order to meet the increasing demands. Thus Dr. M. S. Swaminathan had introduced new high yielding hybrid cultivars in India. The requirement of nutrients, water and pre and post cultivation practices were more for these varieties as compared to traditional ones. So this had led to the introduction of chemicals fertilizers and modern practices of tillage.

As these were the cultivars developed originally in the foreign countries according to their environment, so these were also vulnerable to insect pests due to changed weather conditions. Thus, the use of pesticides had also begun with introduction of these varieties. This had turned the face of agriculture from organic to conventional agriculture. Therefore a new form of agriculture was introduced in 1960s and is still practiced and most commonly adopted by the farmers regardless of the concerned issues.

METHODOLOGY

This research paper is based on the data collected. The main aim to study this data was to find out the most common type of agriculture adopted by the farmers and to study the reasons behind their preferences of selection between organic and inorganic agriculture. For this purpose a survey was done and a total of 30 farms were visited and analyzed closely. The marginal farmers having 15–20 acres of land were studied under this research.

Comparative Analysis

Main Aim

The main focus of organic agriculture is to produce good quality food along with the consideration of environmental sustainability.

Whereas, the primary aim of inorganic agriculture is to increase the productivity regardless of the quality of produce and environmental deterioration.

Basic Elements Required

The cultivation of crops under any type of agriculture usually requires four main elements.

- **Soil:** The basic requirement for farming is soil. It acts as the basic growth medium for plant and supplies both water and nutrients to the crops for germination, growth and establishment.
- **Seed:** For better crop production, the good quality seeds are required. Thus the seeds free from impurities, pathogens and other type of seeds are required.

- **Water:** The other most important element required is water for irrigation. Water serves as the main medium for food preparation and transportation of food and nutrients to all plant parts.
- **Pest Management Practices:** Protection of crops from pests is equally important for obtaining high yield and good quality produce. Thus various pest control strategies are also required.

Organic Agriculture

The organic farming mainly relies on the natural processes and biodiversity. The good quality soil free from chemicals and pesticides for atleast 3 years is required. Organic manures are used for the soil enrichment and to supply nutrients to crops.

The seeds required for organic farming are traditional ones. Hybrid seeds are not used as they do not grow well and are not allowed in organic farming. The good quality water free from heavy metals and chemicals is used for irrigation in organic conditions.

The pest control methods required in organic farming exclude the use of pesticides. It only allows the use of natural methods to control pests such as use of traps, predators, neem powder.

Inorganic Agriculture

This type is totally different from organic. The soil enriched with fertilizers is required for better growth of crops. The synthetic fertilizers are used to fulfill the high nutrient demands of crops.

The hybrid seeds are used to produce more yield in less time. The good quality water is needed. The water requirement of hybrid cultivars is more than the traditional varieties. Also these cultivars are more vulnerable to pests, diseases and weeds. Thus different types of pesticides, chemicals and herbicides are used to protect the crops from pests, diseases and the competition of weeds.

Marketing Requirements

Organic Agriculture

To sale a product as organic a special certification is required. For this, the special set of conditions is required to be fulfilled by the farmers. Only after that they are able to sell their produce as organic. Also special market places are needed for the sale of organic produce.

Inorganic Agriculture

There are no special requirements needed for the sale of inorganic products. They are sold freely at any place. No special certification is needed.

Benefits and Limitations

Organic Agriculture

Benefits

Helps to reduce the production cost as there is no need of fertilizers and pesticides. – In long terms it helps to save energy and environment. – It also helps to reduce global warming. – Fewer chemical residues in produced food. – Health benefits. – Pollution of environment and ground water is stopped.

Limitations

Organic food is expensive as compared to inorganic. – Productivity is also lower in initial stages as compared to conventional agriculture and farmers have to bear loss. – Marketing of organic products is not efficient due to small production. – Production is

less and not enough to fulfill demand of food for raising population. – Conversion hassle from inorganic to organic. – Certification and labeling is beyond the understanding of common farmers.

Inorganic Agriculture

Benefits

More production in less time. Less labour requirement as weeds and pests are controlled with chemicals. Marketing of products is easy. – Helps to fulfill the requirements of growing population. – No special certification is required. – Lower costs of produce.

Limitations

Deterioration of land, water and environment. Produce lower quality food with lots of chemicals. – Extra expenses on fertilizers and pesticides. Water wastage.

RESULTS

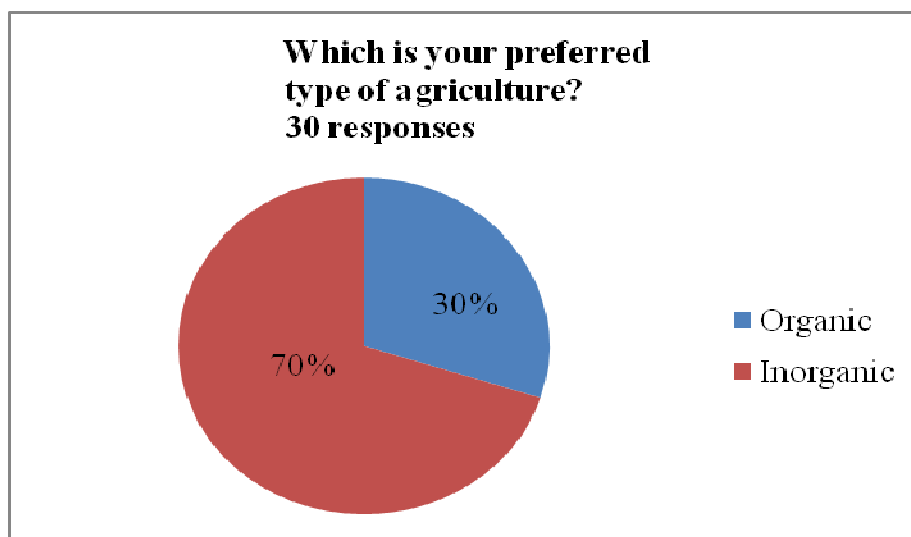


Figure 1: Which is your Preferred type of Agriculture?

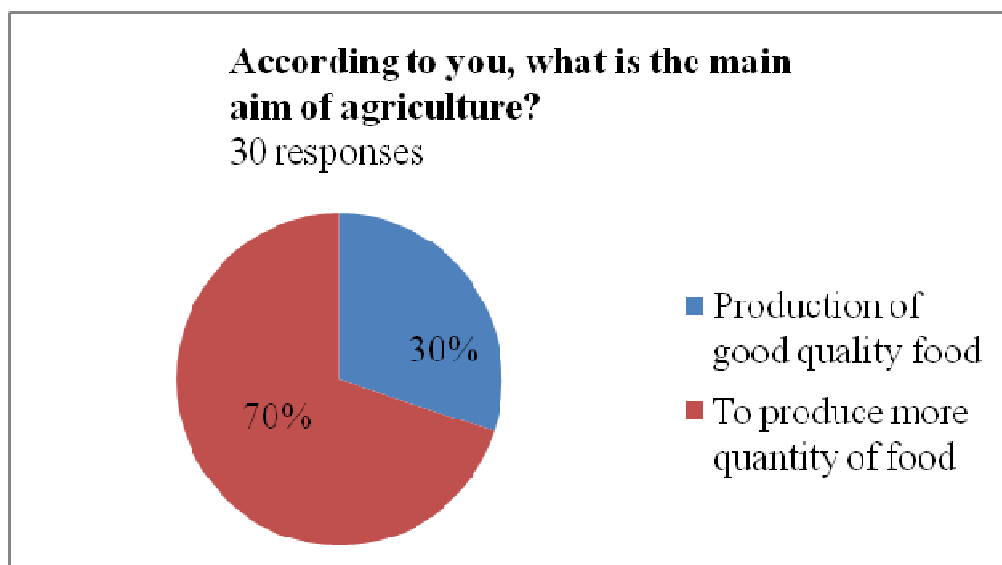


Figure 2: According to you, What is the Main Aim of Agriculture?.

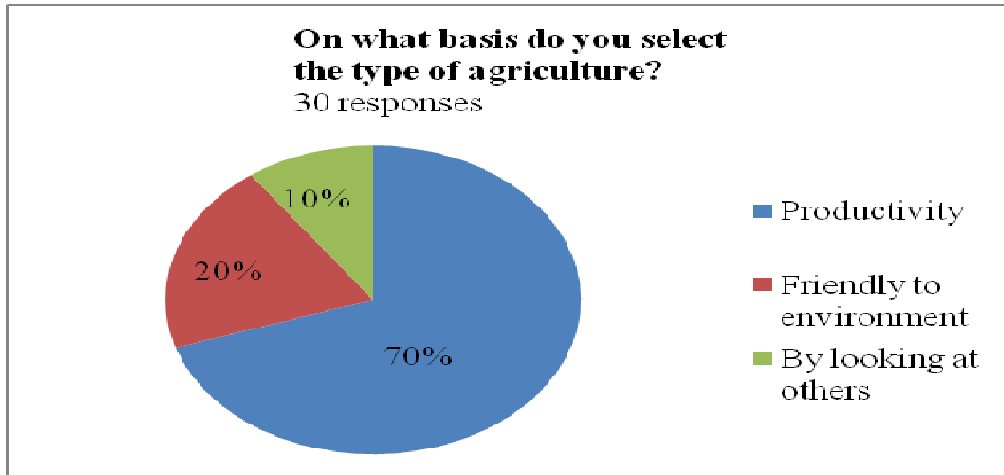


Figure 3: On What basis do you Select the type of Agriculture?

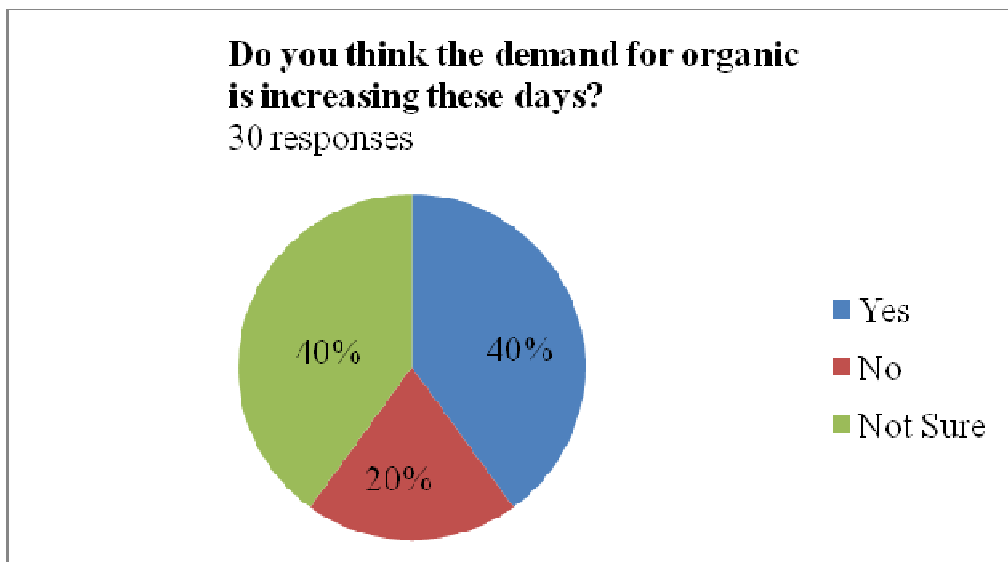


Figure 4: Do you think the Demand fo the Organic is Increasing these Days?.

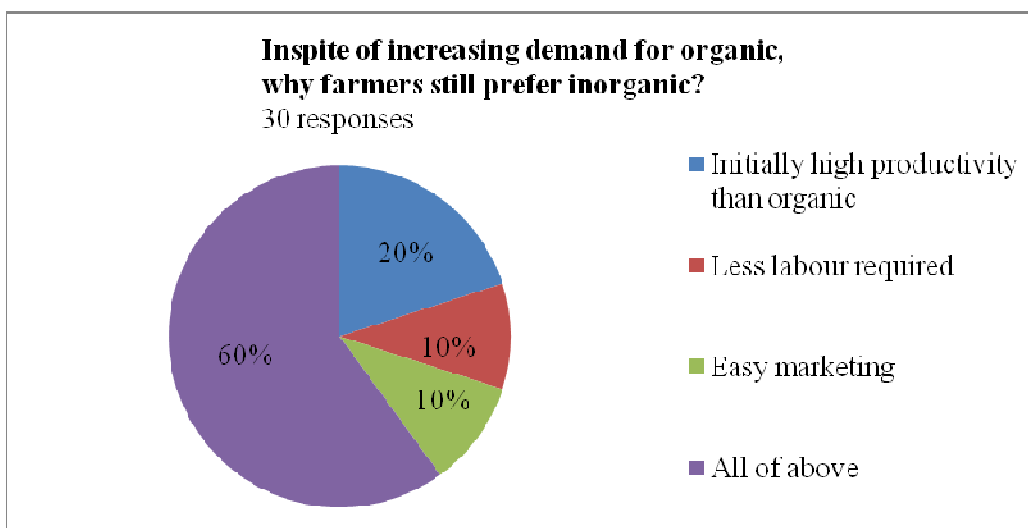


Figure 5: Inspite of Increasing Demand for Organic why Farmers Still Prefer Inorganic?.

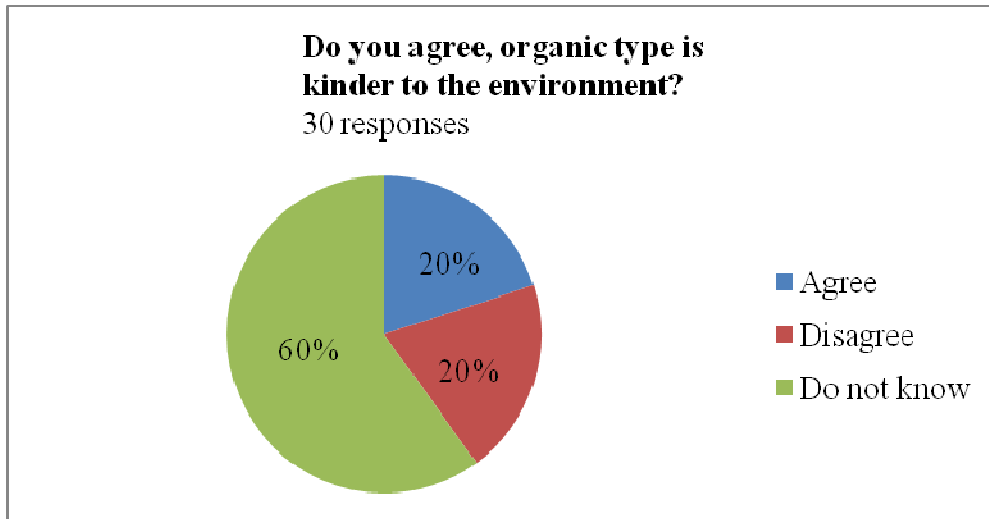


Figure 6: Do you Agree, Organic type is Kinder to the Environment?.

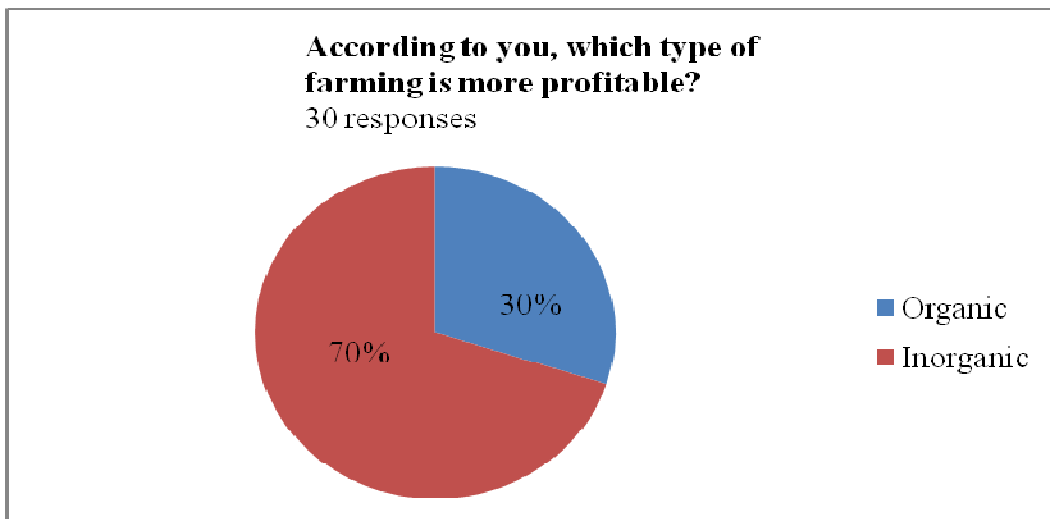


Figure 7: According to you, Which type of Farming is More Profitable?.

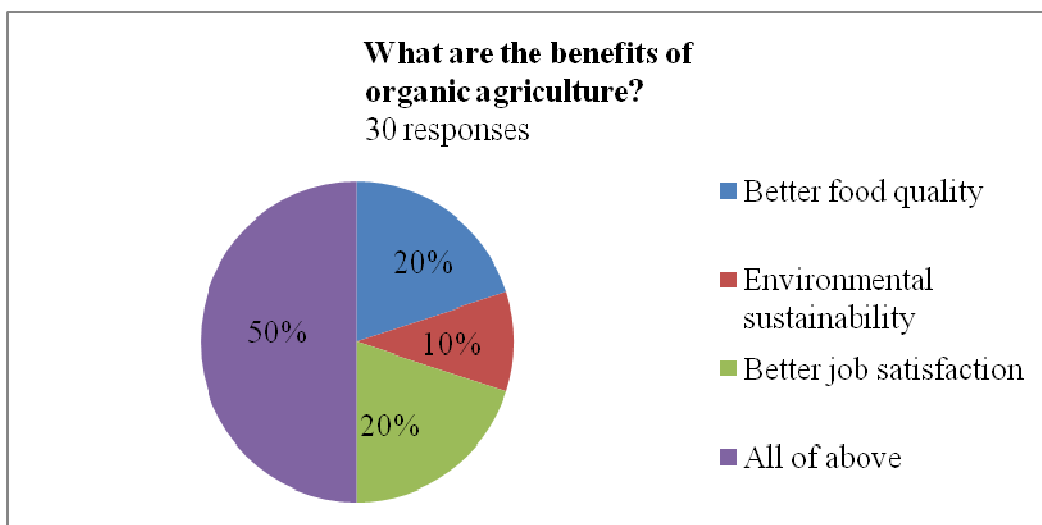


Figure 8: What are the Benefits of Organic Agriculture?.

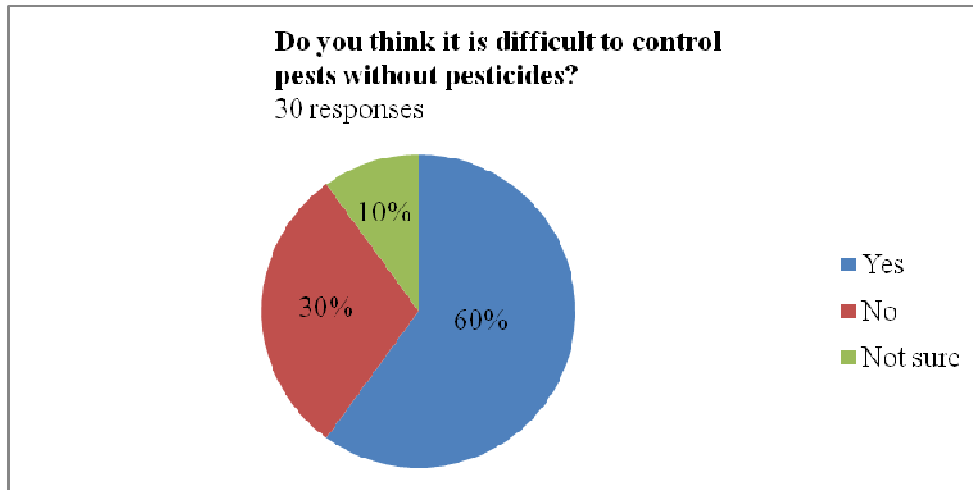


Figure 9: Do you think it is Difficult to Control Pests Without Pesticides?.

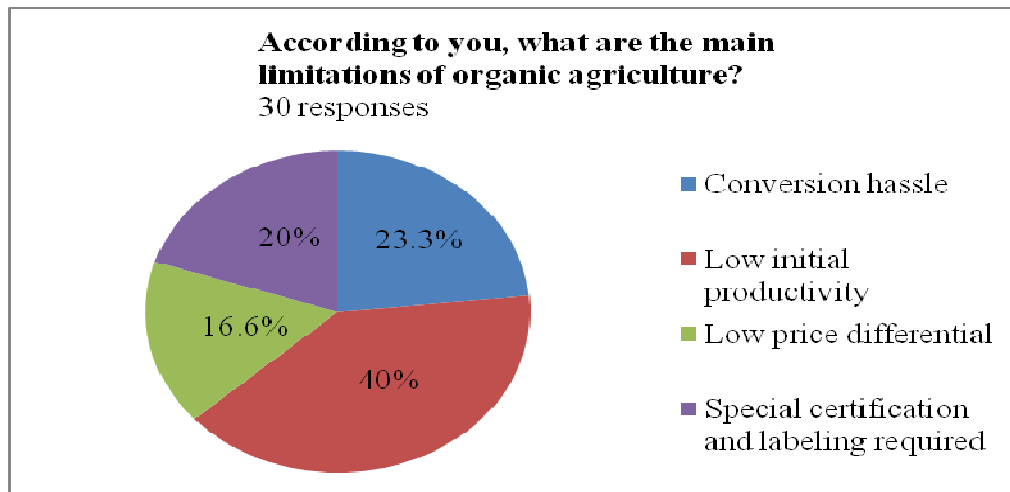


Figure 10: According to you, What are the Main Limitation of Organic Agriculture?.

- The figure 1 pie chart shows that majority of farmers i.e. 70% prefer Inorganic agriculture.
- Figure 2 is seen that 70% farmers do agriculture to produce more quantity of food irrespective of quality.
- Figure 3 is the pie chart depicts that most farmers choose type of agriculture on the basis of productivity.
- Figure 4 is seen that 40% farmers believe that the demand for organic is increasing these days, while 40% are not sure about the same.
- Figure 5 is the Most of the farmers (60%) prefer inorganic because of all the mentioned reasons.
- Figure 6 is seen that majority of the farmers do not know about the effect of organic on the environment and 20% farmers agree that organic is kinder to the environment.
- Figure 7 is the Majority of the farmers believe that inorganic is more profitable (70%).
- Figure 8 is the same proportion of farmers (20%) believes that better food quality and better job satisfaction are the benefits of organic agriculture.
- Figure 9 According to 60% farmers it is difficult to control pests without the use of pesticides.
- Figure 10 is Low initial productivity is the main limitation of organic agriculture according to 40% of farmers.

DISCUSSIONS / INTERPRETATION

With this research paper the author examined and noted that firstly, majority of the farmers 70% preferred inorganic agriculture. Secondly, it was evident from the paper that 70% of farmers mainly adopted agriculture to produce more quantities of food rather than the production of quality food because of increasing demand of food due to the burgeoning population. Thirdly, it was noted that most of the farmers choose type of agriculture on the basis of productivity. As inorganic agriculture produce more yield than organic, thus majority of farmers adopt inorganic. It was seen that 40% farmers were aware of the increasing demand of the organics, whereas 40% were not sure about this fact. Moving further, it was seen that 20% farmers still preferred inorganic due to initially high productivity, while equal proportion (10%) selected it because of less labour requirement and easy marketing. Moreover 60% farmers preferred inorganic because of all these reasons. Organic agriculture is kinder to environment according to 20% farmers; however 60% had not any idea about this fact.

It was evident that 70% farmers believe that inorganic agriculture is more profitable than organic because of higher productivity and easy control of pests and diseases. Among the studied farmers 50% said that better food quality; environmental sustainability and better job satisfaction all are the benefits of organic, whereas equal proportion (20%) thinks that better food quality and better job satisfaction are the benefits of organic. Majority of the farmers (60%) said that it is difficult to control pests without pesticides which is the major limitation in the adoption of organic farming. Also 40% farmers said that they did not prefer organic because of low initial productivity for which they have to bear loss.

CONCLUSIONS

Even though the demand for organic is increasing day by day but still people prefer inorganic because of higher productivity and to cater the needs of increasing population.

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ANNEXURE 1

Questionnaire on Comparison of Organic and Inorganic Agriculture

Which is your preferred type of agriculture?

- Organic (b) Inorganic

According to you, what is the main aim of agriculture?

- Production of good quality food (b) To produce more quantity of food
On what basis do you select the type of agriculture?
- Productivity (b) Friendly to environment (c) By looking at others
Do you think the demand for organic is increasing these days?
- Yes (b) No (c) Not sure
In spite of increasing demand for organic, why farmers still prefer inorganic?
- Initially high productivity than organic (b) Less labour required
- Easy marketing (d) All of above
Do you agree organic type is kinder to the environment?
- Agree (b) Disagree (c) Do not know
According to you, which type of farming is more profitable?
- Organic (b) Inorganic
What are the benefits of organic agriculture?
- Better food quality (b) Environmental sustainability
- Better job satisfaction (d) All of above
- Do you think it is difficult to control pests without pesticides?
- Yes (b) No (c) Not sure
According to you, what are the main limitations of organic agriculture?
- Conversion hassle (b) Low initial productivity
- Low price differential (d) Special certification and labeling required

AUTHOR PROFILE



Naveeninder was born in Bhamian, a village in Punjab state of India in 1997 and, received her Bachelor's degree in Agriculture (Honors) from Punjabi University, Patiala (Mata Gujri College, Fatehgarh Sahib) in 2019. Her background from agricultural family and her passion for helping farmers in all aspects of agriculture has encouraged her to pursue her studies in this field.

She is very much concerned about the degrading soil and water qualities due to the conventional agriculture in the present time. Thus she has selected organic agriculture versus inorganic as her research topic. Naveen wants to aware the farming community about their overdependence on use of chemicals. She has done a good work by surveying farmers of her community and came to know about the figures. She has analyzed that majority is still practicing inorganic instead of the increasing demand for organics. Her only aim is to motivate farmers towards organics in order to conserve soil and water resources and to maintain good human health.