

# A Review on Natural and Chemical Agricultural Practices and the Implementation of Intelligent Farming Techniques

Shiv Raj Yadav<sup>1</sup> and Dr. Sarita Tiwari<sup>2</sup>

Research Scholar, Department of Chemistry<sup>1</sup>

Research Guide, Department of Chemistry<sup>2</sup>

Singhaniya University, Jhunjhunu, Rajasthan, India

**Abstract:** *Today, nutritious food is extremely essential, but producers and market vendors are using more chemicals, resulting in the pollution of all natural resources. The increased use of chemical fertilizers by producers has adverse effects on soil, natural resources, human health, animals, and vegetation. All of these are contaminated by nonorganic agriculture. The primary objective is therefore to reduce the use of chemical fertilizers for crop production and to eliminate their use in marketing. Thus, this reduces the incidence of cancer, heart attacks, strokes, and numerous other diseases. Involving the government and taking the initiative to encourage farmers to use organic fertilizers, as well as providing separate marketing for organic products, and also encouraging the government to give more subsidies to organic farmers and provide free certifications, is crucial for increasing organic yields. This paper explained the distinction between organic and chemical farming, the primary benefits of organic farming, and how organic farming protects the environment and climate. Also, discuss how to use the Internet of things with this organic form.*

**Keywords:** Organic ,Chemical farming, Internet of things

## I. INTRODUCTION

Organic agriculture, natural agriculture, and chemical agriculture are contrasted. Chemical formation entails the application of chemical fertilizers for crop growth, synthetic pesticides for insect control, and chemical herbicides for vegetation management. Chemicals pollute the soil, the atmosphere, the environment, etc., and the cost is quite high. The transition to organic agriculture has increased environmental impact and labor.

Compost, vermin compost, animal manure, primarily bovine manure, and granules containing neem leaves are utilized as organic fertilizers in organic agriculture. Consequently, crop nutrition and crop husbandry are wholly reliant on organic sources and organic fertilizer. Compared to chemical fertilizers, this option is inexpensive and has fewer environmental effects.

In natural farming, humans do not contribute inputs, culminating in a zero-budget system that is also known as zero-budget natural farming. It is no cost, no endeavors because nature will give. Therefore, natural farming refers to cultivating without the use of synthetic chemicals and in harmony with nature. Combining organic and natural farming will be advantageous; more natural farming and organic farming that avoids chemical fertilizers should be utilized.

India accounts for only 2.59 percent, or 1.5 million hectares, of the total organic cultivation area of 57.8 million hectares, according to the report on global organic agriculture. The Indian (Vedic or Vedas) culture was dependent on agriculture. Since at least five millennia, this land has been abundant in topsoil, and "Vedic cows" are primarily responsible for this. "The origins of Indian culture have always been its divine humped cows, Gomata Nandi, which fertilized the earth with their Gomay (Vedic cow dung) and Gomutra (Vedic cow urine). Sustainable agriculture should be the future of India's agriculture because it creates more fertile soil organically and yields vast quantities of high-quality produce in harmony with nature and mother earth, which can only be achieved by divine-humped cows." How organic farming is beneficial for the environment. Organic agriculture has more benefits than chemical agriculture.

Uses of organic farming for the environment or climate:

**Diminished liability to pesticide and chemicals:**

“If every farmer in the United States switched to organic farming or production, 500 million pounds of persistent and toxic pesticides would be eliminated annually, according to the Organic Trade Association. Numerous environmental issues are impacted by farmers' use of pesticides and chemicals. Primarily pesticides increase vegetation' resistance, while plant-eating insects such as parasites, flies, etc. increase fungi and bacteria.

Spraying pesticides and other chemicals on plants pollutes the soil, air, and water. These hazardous pesticides have persisted for decades.

**Organic for forming builds healthy soil:**

Start with good soil since people want to raise nutritious food. Chemical soil management is considerably inferior to natural farming methods. After nine years of study, the USDA Agricultural study Service (ARS) concluded that "organic farming builds up organic soil matter better than conventional no-till farming." In contrast, one teaspoon of chemically treated soil may have as few as 100 good bacteria, according to Dr. Elaine Lngham, who claims that "just one teaspoon of compost-rich organic soil may host as many as 600 million to 1 billion helpful bacteria from 15,000 species."

**Combatting erosion:**

By using organic agricultural methods, you may create healthy soil and prevent major land-related problems like erosion. In a significant research comparing chemical and organic farming practices on wheat fields, they compared chemical and organic farming practices. Eight inches more topsoil is present, and chemically treated fields have just one-third the erosion or cutting loss. Erosion is a serious problem that primarily affects people, food, and the soil.

**Fighting the effects of global warming:**

According to the Organic Trade Association, 500 million pounds of dangerous and persistent pesticides would no longer be released into the environment each year if "all American farmers converted to organic farming or production." Farmers apply chemicals and insecticides. It is impacted by several environmental problems. Pesticides mostly give weeds more resilience, but certain insects that feed on plants—such as lice, flies, and others also grow more bacteria and fungi. Pesticides and other chemicals sprayed on plants harm the land, air, and water. Occasionally, these dangerous insecticides persist for decades..

**Organic farming supports water conservation and water health:**

When there is a threat to the water supply, people and plants suffer more. Water is a highly vital resource. According to "American Rivers" study, employing toxic pesticides pollutes water. employing organic farming, on the other hand, does not contaminate water. Nonorganic farms use fertilizers, pesticides, and other chemicals.

**Organic farming encourages Biodiversity:**

The major function that biodiversity plays directly in the weather, illnesses, and rising reflections, so an organic farm should promote healthy biodiversity. If biodiversity is reduced, it is not good for people or the land. An organic farm uses biodiversity more steadily.

**Advantages of organic farming:**

**Career security:**

One of the agricultural industries with the quickest rate of growth is organic farming. Because many users or consumers consider living a better lifestyle and so generate more revenue, they promote organic goods. Organic agricultural career prospects can include teaching, training, farm management, becoming a certification agent, and more.

**Lower Initial Investment:**

When it comes to chemical farming, the initial investment is much lower since just cow manure and urine are used, and they are combined with neem leaves instead of chemical fertilizers, herbicides, etc., which is why many farmers borrow money from one another.

**Ecological Benefits :**

Organic and environmental Both are not identical. Utilizing organic cultivation that has ecological benefits such as water conservation, biodiversity enhancement, and a reduction in global warming risks, etc.

Drought-Resistant Crops:

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Due to Drought, producers face numerous problems involving minimal or no income. Organic farming is more drought-resistant than conventional farming because chemical fertilizers are not readily soluble and therefore require more water.

**Healthier Soil:**

The most important aspect of agriculture is a healthy soil, so using Vedic cow dung and Gomutra (Vedic cow urine) for yields ensures that the land is not atomically damaged and that the soil is healthy, thereby increasing the yield for farmers and producing healthy food.

**Growing Marketing Opportunities:**

People are concerned about their health and the environment, and as a result, the market for organic products has increased.

**Smart agriculture uses**

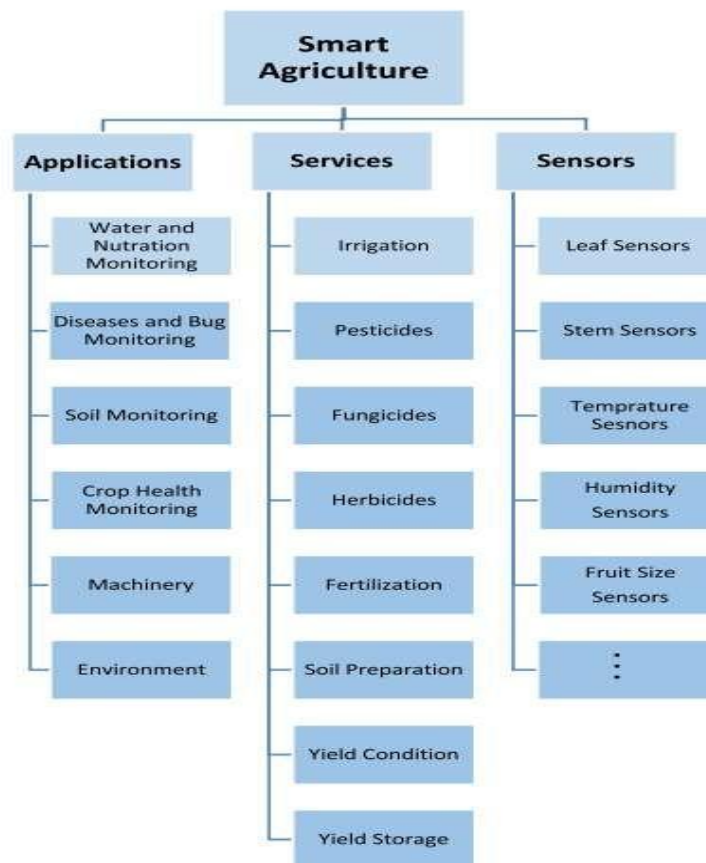


Figure 1: General hierarchy of possible applications, services and sensors for smart agriculture.

Source: <https://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=8784034>

In agricultural practices, the most recent sensing and Internet of Things (IoT) technologies are used for significant applications. Presently, many formers use conventional methods, but those who wish to increase yields must combine conventional techniques with clever IoT technologies.

By adhering to the practices of smart agriculture, IoT can improve the solutions to a variety of traditional agricultural problems, such as yield enhancement, drought response, land suitability, irrigation, and insect control. Figure provides a hierarchical listing of the principal applications, services, and wireless sensors used for smart agriculture applications. While major instances in which the advanced technologies are helping at various stages to enhance overall efficiency.

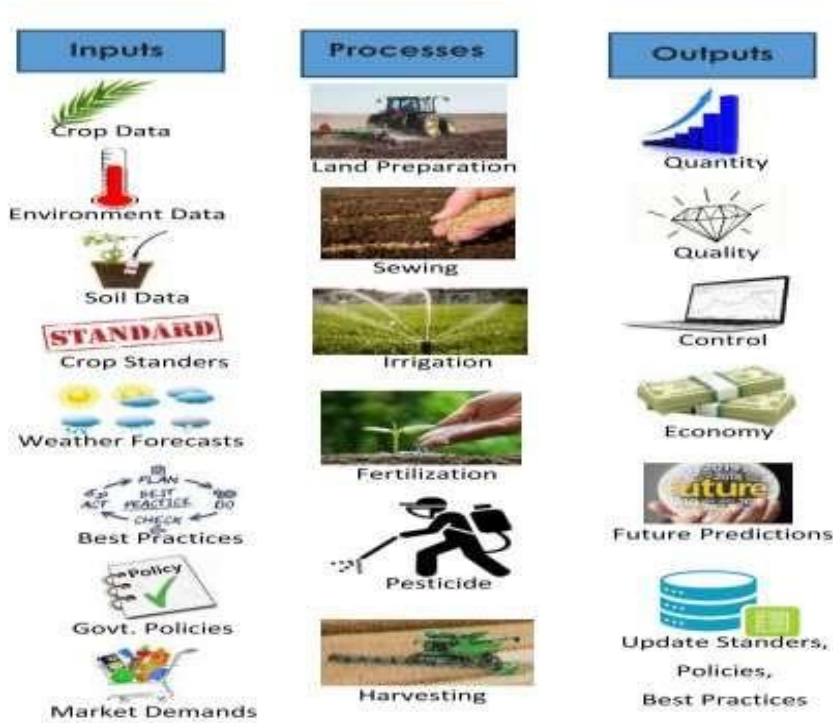


Figure : Some key inputs, processes involved and possible outputs of smart farming.

## II. CONCLUSION

The differences between organic farming and farming using chemicals, as well as the advantages of organic farming and the role that engineering input plays in agriculture, are compared and contrasted in this study. Numerous sensors and computer technology will be put to use in the near future to produce high-quality agricultural goods.

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