

# An Insight into Artificial Intelligence in Agriculture – Boon or Bane?

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**Abstract** - This paper gives an idea about the impact of Artificial Intelligence in Agricultural Sector. As India is an Agrarian Country, our economy is highly depending on the yielding of crops and its maximum productivity. The majority of people in our country depends on agriculture for their daily needs. The application of Artificial Intelligence along with its capability of learning can provide a huge impact to the agricultural sector. This paper also discusses the new technologies that opens the way to a Smart Agriculture. This paper gives an idea about the impact of Artificial Intelligence in Agricultural Sector. As India is an Agrarian Country, our economy is highly depending on the yielding of crops and its maximum productivity. The majority of people in our country depends on agriculture for their daily needs. The application of Artificial Intelligence along with its capability of learning can provide a huge impact to the agricultural sector. This paper also discusses the new technologies that opens the way to a Smart Agriculture.

**Key Words:** Artificial Intelligence

## 1. INTRODUCTION

Artificial Intelligence is a branch of Computer Science in which human intelligence is stimulated to machines. The machines will be programmed to think and act like human beings and also machines will be able to take decisions by its own. It is capable of problem solving and reasoning. Actually, we are teaching the machine to behave like a human being. Farming or Agriculture is one of the most important sector, that contribute towards the economy of our country as well as to the world. As the technology is developing day by day, we can apply those benefits of the technology in the agriculture sector to convert it into a smarter one.

## 2. ARTIFICIAL INTELLIGENCE AND AGRICULTURE

The lifecycle of Agriculture includes a large number of steps like soil preparation, sowing, adding fertilizers, irrigation, protecting the crops from weeds, harvesting and its storage. We can bring the concepts of Artificial Intelligence in order to produce healthier crops. We can also use Artificial Intelligence to monitor the soil, presence of pesticides and weeds.

## ARTIFICIAL INTELLIGENCE – A HELPING HAND TO THE FARMERS

### A. AI FOR BEGINNERS

There are people who are new to this sector and will not have much knowledge about farming methods. So for them, using different algorithms, AI can develop tools for providing them with proper guidelines on how to sow seeds, managing water and other resources, awareness on different kinds of pesticides and weeds, knowledge about different seasons and the corresponding crops to be cultivated, harvesting periods and irrigation.

### B. DATAS RELATED TO WEATHER FORECAST

As the climatic conditions are changing day by day and also the population level is increasing, we cannot predict the weather. So that the farmers will not be able to determine when they have to sow the seeds and to do harvesting. So AI is helping the farmers by providing the data related to weather changes. Using the data, farmers will be able to predict the changes and to start their plans accordingly. Those data will also help them to take necessary decisions and precautions.

### C. DETERMINING CROP HEALTH

AI is applied in drones to capture the images of the crops. Those images will be useful for the farmers or other experts to predict the health of the crop. It also uses the images and compares it with previous data using the algorithms, it will predict the life of the crops and also detects the presence of the pesticides and weeds. If their presence is noticed, then emergency warnings are sent to the farmers, informing their presence and also to take quick actions and precautions.

### D. DRIVERLESS TRACTORS

By applying the applications of AI, we can develop a driverless tractor. It will benefit a lot to the farmers. Those tractors were called 'Autonomous Tractors'. In those tractors, manpower is not needed, it works automatically.

### E. ROBOTS FOR FARMING

Robots are in their way to agricultural sector. Many AI companies are developing Robots to help the farmers and also in reducing their work loads. Robots are trained to do all the works from the starting, that is from the preparation of the soil to the storage of the crops. The robots will be able to analyze the crop health, health of the soil, presence of pesticides and weeds. Robots can harvest more crops than a human being. They will take the necessary actions against the pesticides and weeds which are damaging the crops.

### 3. CHALLENGES

Though there are several benefits for AI, the challenges before them are many. One of them is the cost of implementation. Not only for implementation but also for its maintenance too. This huge amount can't be affordable to all the farmers. As we say machines can act and think like human beings, we can't replace human with machines. How smart or how efficient it be, it will never replace a man. The adoption of AI in agriculture may leads to unemployment. As some farmers are unaware of the technology, they will not be able to completely digest the concepts of AI.

### 4. ARTIFICIAL INTELLIGENCE – THE FUTURE SCOPE

As compared to elder farmers, younger farmers can make huge investments. To complete sowing, spraying, harvesting and irrigation, we need 20-30 workers. But in the case of robots, they can complete these works within small amount of time. To prevent water scarcity and flooding, the images from the drones will be helpful.

### 5. CONCLUSIONS

Artificial intelligence in Agriculture sector, uses a limited amount of resources to produce maximum yield and maximum income. It also uses minimum labor. This will help the sector to contribute more to the economy and make it stable. The farmers will be able to compensate those investments they made to make their agriculture a smart one from the profit they got from their yields.

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