

Applications of Advanced technology in Crop and Animal Production

Sunidhi Kasana, Gaikwad D.S., and Naleeni Ramawat

Amity Institute of Organic Agriculture, Amity University, Noida (U.P.), India.

SUMMARY

Smart agriculture, on the other hand, is mostly used to denote the use of Internet of Things (IoT) solutions in farming. Let's see what is meant by smart agriculture using Internet of Things (IoT). In this article we are more focus on by using IoT sensors to gather environment related and machine metrics, farmers can take better and informed decisions, and improve each aspect of their work ranging from livestock to crop production.

INTRODUCTION

Food is among the basic needs for the survival of all the living beings. From animals to human beings, all are involved at some stage or the other in the food chain. Regardless of the advancements made in the field of technology, human beings still must depend upon the farmers of the country for their country for the supply of food. The reason is enough to provide our farmers with best of technologies so that they can continue feeding the ever-growing population. Equipping our farmers with modern technological tools is a win-win situation as it will benefit both the farmers and the consumers. There are ample of examples where we can witness the use of modern technologies being utilized in different sectors and all these examples demonstrate promising outcomes. Artificial Intelligence (AI), Deep learning, Machine Learning (ML), and Internet of Things (IoT) are some examples of technology serving humans by helping them in getting their work done efficiently and with slightest effort. The most used among all the above stated technologies is the Internet of Things (IoT) which has made it easier for us to build our smart homes. It helps in connecting all the computing devices, making it easier for us to monitor and control their working.



(Source: www.isical.ac.in)

Global Positioning System (GPS)

Global Positioning System (GPS) and Geographic Information System (GIS) together helped in the growth and efficient application of Precision Agriculture or Site-specific Agriculture. These technological tools allow the linking of real-time statistics collection with accurate site-specific information, leading to the well-

organized management and study of huge amounts of geospatial data. Various farm related activities such as farm mapping, field planning, tractor management, soil sampling, crop inspection, yield mapping, and variable rate applications are being efficiently carried out with the help of applications working on GPS System. GPS also allows the farmers to work under harsh weather conditions such as rainfall, darkness, fog, and dust. In earlier times, the farmers had a hard time to correlate productions practices and crop yields with the variability of the land. This problem made it difficult for the farmers to find and implement the most efficient soil and plant treatment approaches, hence making it hard for them to increase their production. Nowadays, the precise and efficient use of fertilizers, pesticides, and herbicides, and limited spread of these chemicals have been made possible with the help of precision farming, making it possible for the farmer to have higher yield in less expenses and in the process create a friendly environment for the farm as well.

Numerous new age innovations are relying on the use of on-board computers, data gathering sensors, and GPS time and location reference systems collectively. With the help of GPS equipment manufacturers, farmers and agribusinesses have been equipped with the latest tools, making them more effective and productive in their precision agriculture techniques. Nowadays, most of the farmers take the help of GPS-derived applications to improve operations in their agricultural businesses. Various activities such as mapping farm boundaries, roads, irrigation systems, and problematic areas in produce such as diseases and weeds are carried out using location information gathered with the help of GPS Receivers. The precise information retrieved using GPS enables the farmers to make farm maps with accurate acreage for field areas, location of roads, and distances between points which are of interest. GPS also makes it easier for the farmer to precisely navigate to points of interest in the field, every year, to gather soil samples or monitor the condition of the crop.

IoT Applications:

Keeping in mind the ever-growing population of the world, projected to reach close to 9.6 billion by 2050, the farming sector needs to expand to meet the demand of this huge population, irrespective of the challenges faced due to the climate change and harsh weather conditions. To make the ends meet, the agriculture sector will have to implement innovative technologies to gain a much-needed edge. New agricultural applications in smart agriculture and precision agriculture through Internet of Things (IoT) will make the industry capable of increasing operational productivity, lesser costs, cut waste, and improve the quality of their produce.

CONCLUSION

Farmers can use smart agriculture sensors to keep a check on the condition of crops, they can decide on the amount of fertilizer and pesticide to be applied on the crops to obtain optimal efficiency. Same concept applies to the definition of smart farming. Now that we have mentioned how IoT can be valuably useful in the field of agriculture, let's see how the above-mentioned benefits can be useful in actual life.

REFERENCES

- <https://easternpeak.com/blog/iot-in-agriculture-technology-use-cases-for-smart-farming-and-challenges-to-consider/>
- <https://www.toppr.com/ask/content/concept/application-of-biotechnology-in-agriculture-202427/>
- <https://www.iotforall.com/iot-applications-in-agriculture>
- <https://agris.fao.org/agris-search/search.do?recordID=US201500224137>
- <https://www.forbes.com/sites/forbestechcouncil/2020/03/25/artificial-intelligence-machine-learning-and-deep-learning-whats-the-difference/>