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THE IMPACT OF TECHNOLOGY ON AGRICULTURE SECTOR IN INDIA

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Abstract
The main motto of this paper is to highlight the present scenario of the impact of technology inagriculture sector in India. There are many challenges in the present agriculture sector in India.The farmers will be benefited with adoption of technology in agriculture sector. In developing nations like India, despite of technological advancement we have been less attentive towards our agriculture. Present condition of agriculture is not so satisfactory to produce maximum crop yield because of lack of technology awareness among farmers. As the literacy rates of farmers those involved in agricultural field is significantly low, applying and working with new technology is a major concern. If farmers can embrace new technologies properly, agriculture sector can be a major sector for generating employment as well as increasing GDP in developing countries like India. Therefore, we need to implement technology like smart devices which will enhance farming procedure. Objective of this paper is to present an idea how technology can enhance the overall farming output as well as increase GDP.

Keywords: ***Technology, Agriculture, Smart Farming, Smart Devices, Agricultural Productivity***

Introduction

Agriculture was the key development in the rise of sedentary human civilization, whereby farming of domesticated species created food surpluses that enabled people to live in cities. Thehistory of agriculture began thousands of years ago. Industrial agriculture based on large-scalemonoculture in the twentieth century came to dominate agricultural output, though about 2 billion people still depended on subsistence agriculture. Over one-third of the world's workersare employed in agriculture, second only to the service sector, although in recent decades, the global trend of a decreasing number of agricultural workers continues, especially in developing countries, where smallholding is being overtaken by industrial agriculture and mechanization that brings an enormous crop yield increase. Agriculture is both a cause of and sensitive to environmental degradation, such as biodiversity loss, desertification, soil degradation, and global warming, all of which can cause decreases in crop yield. With the increasing populationin India, there will be a huge requirement of food in coming days. More than 70% of Indian population relies on agriculture for their livelihood. The advancements in technology have made its impact on almost every field. India being an agricultural country, proper use of technology can greatly help in improving the standard of living of the farmers. With varying weather conditions, illiteracy of farmers and non-availability of timely assistance, the farmersof this country could not get the best out of their efforts.

Literature Review

Role of IoT Technology in Agriculture for Reshaping the Future of Farming in India: A Review - Pradeep Kumar Singh, R. K. Naresh, Akash Kumar, Lalit Kumar, M. Sharath Chandra and Shivangi (2021): The Internet of Things is an emerging paradigm in which physical objects are connected to each other and user via the Internet in order to share information between devices and systems. Farming is an occupation which is playing the ultimate role for survive of this world. It supplies maximum needs for the human being to live in this world. Technology has played a major role in the recent revolution in agriculture, which faces major challenges, including meeting the needs of a growing world population, reducing production costs and adapting to climate change as using IoT and moving into the smart farming as the promise's way.

SMART AGRICULTURE: A BLISS TO FARMERS - Snigdha Sen, Madhu B (2017): In developing nations like India, despite of technological advancement we have been less attentive towards our agriculture. Present condition of agriculture is not so satisfactory to produce maximum crop yield because of lack of technology awareness among farmers. As the literacy rates of farmers those involved in agricultural field is

significantly low, applying and working with new technology is a major concern. GDP in developing countries like India.As of 2012, this sector contributes about 18% of the total GDP. IoT will help us to increase theproductivity of this huge % of people involved in this sector. Study says we will have 9.6 billionpeople on Earth by 2050 which will increase demand for food and IoT in agriculture should bean important driver to meet this requirement.

Will Digital Technologies Transform Agriculture in Developing Countries - Uwe Deichmann, Aparajita Goyal and Deepak Mishra (2016): Mobile phones and the internet have significantly affected practically all sectors of the economy, and agriculture is no exception. They promote greater inclusion in the broader economy, raise efficiency by complementing other production factors, and foster innovation by dramatically reducing transaction costs. Digital technologies overcome information problems that hinder market access for many small-scale farmers, increase knowledge through new ways of providing extension services, and they provide novel ways for improving agricultural supply chain management.

Survey of Impact of Technology on Effective Implementation of Precision Farming in India - Meena Kushwaha and Dr. V. R. Raghuveer (2017): India being an agricultural country, proper use of technology can greatly help in improving thestandard of living of the farmers. With varying weather conditions, illiteracy of farmers and non availability of timely assistance, the farmers of this country could not get the best out of their efforts. Precision farming focuses mainly on the aspects that can improve the efficiency based on the data collected from various sources viz. This paper surveys the existing methods of precision farming and highlights the impact of technology in farming. An overview of different technologies used in precision farming around the world and their implications on the yield are discussed.

Objective of the Study

The objective of this research article is to find out the current scenario of use of technology inagriculture field of India. This also aims at looking for the benefits from use of technology andmechanization in agriculture and its utter need in the present day. Several initiatives by the corporate companies, schemes launched by government and local innovations that incorporate technology into agriculture are discussed here the problems in use of technology in agricultureand possible solutions for it are looked after.

Research Methodologies

This research paper is descriptive in nature and gives a review about the current situation aboutuse of technology in agriculture in India. The available data are gathered from various secondary sources like research articles, published scholarly papers, books, journals, and databases available on various websites. The data available were analysed as per its nature.

Issues and Challenges in Agriculture Sector of India: **Traditional Indian Agricultural Practices and its Problems:**

The Indian agricultural sector is in a difficult phase due to the lack of mechanization and dearth of technological advances. The agricultural sector in India: Along with this, the scientific rotation system of crops is not understood or appreciated in India. Most of the Indian farmers plant one crop on the same ground for years. This leadsto depletion of soil with specific nutrients, leading to infertility and subsequently decreased yield of the crop. rotation from modern agricultural practices maintains the fertility of the soil for subsequent crops through the years

Solution

India needs Agriculture technology to deal with problems faced by this sector and enable sustainable farming. Technology will not only assist in solving these problems but will also boost the yield and increase income of farmers.

- Crop Lack of relevant technical knowledge
- Produces from low quality of seeds
- Do not use the fertilizers and pesticides intelligently
- Lack of adequate irrigation infrastructure
- Lack of sufficient credit of capital for growth
- Lack of adoption technology in farming
- Lack of support from government authorities

Agriculture is the predominant occupation in India. Indian Agriculture sector employs more than half the population of the country directly or indirectly. However, if there are notechnological changes the agricultural sector will face a lot of difficulties in future.

1. Agriculture 4.0: The report submitted in the World Global Submit calls for the incorporation of technology in agriculture in order to deal with problems faced in future. According to the report, agricultureproduce demand will rise by 70% in 2050. Further problems for agriculture sector include population rise, climate change, scarcity of natural resources and food waste. The report is named Agriculture 4.0- The Future of Farming Technology. Agriculture 4.0 intends to employ modern technology such as IOT, sensors, remote sensing, cloud computing, AI, block chain, etc to deal with the challenges faced by the agricultural sector.

2. Hybrid Seeds: Seeds mostly used by farmers in India are of inbred or OPV variety. The hybrid seeds have an upper hand over these seeds due to high yield and disease resistance. Cotton and maize industry have benefited from hybrid seeds but that needs to implement in rice, wheat and other crops. The need is to develop new hybrid seeds which have higher yield, and are resistant to adverse climate conditions. Technologies such as genetic modification employed to enable genome editing might be helpful in producing such hybrid crops. A clustered regularly interspaced short palindromic repeat (CRISPR) is a new approach to this technology. This technology allows greater selectivity of traits that is to be imparted in the hybrid seeds. The technology also imparts certain vitamins in the breed in addition to the above-mentioned qualities.

3. Up gradation of Irrigation: Irrigation facilities in India are hindered due to water scarcity and low water table. However,water inputs can be optimized by using IOT, which uses sensors to manage the water supply and the farmers can operate it from anywhere using their smart device. Drone technology canalso help in irrigation as it identifies through the sensors the dry areas and the area which require improvement.

4. Drone Technology to Identity Dry Agricultural Areas

5. Fertilizers and Soil Health: The use of pesticides increases cost for farmers and degrades the soil quality. About 60% ofthe fertilizers are lost in the environment which causes pollution.

6. Pesticide Use on Farm Land: Technologies derived from nano technology such as nano fertilizers help in reducing loss of fertilizers. As a result, application involves slow and sustained release of fertilizers into plants. Bio sensors can detect the pesticides in the crop. This information helps farmers to take effective decisions.

7. Minimize cultivation costs and data driven farming: Drone technology can help in easing various process like soil and field analysis and spraying of fertilizers. Soil and field analysis would help farmers to plan their crops. Aerial spraying saves labour costs and is five times faster. Data provided to farmers using IOTtechnology would provide data related to weather conditions, seed quality, soil quality and history of seeds would help farmers to take effective decisions.

8. Credit and subsidy supply to farmers: Technologies such as block chain and other apps can enable farmers to avail subsidy and credit(loans) from the government directly, thereby enabling transparent and secured supply

of credit.

9. Market Insights and Forecast: Block chain technology can help in providing insight of market to the farmers. It will let them know the demand in the market and the prices of food and can get correct price of their produce.

Conclusion

In conclusion, India needs to incorporate technology in agricultural sector to deal with agricultural challenges and also to sustain its position in the global market.

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