**A REVIEW ON IMPACT OF SMART FARMING IN**

**AGRICULTURE OF INDIA**

**Abstract:**

The main aim of this paper is to highlight the present scenario of use of technology in this day and how the farmers have lack of knowledge regarding farming. Our paper is based on the topic “Smart Farming”. Smart Farming is a dynamic website for the farmers where farmers gain all the important information in our website and with the help of information regarding crops. The main steps for agricultural practices include preparation of soil, sowing, adding manure and fertilizers, irrigation, harvesting, distribution and storage.

Optimization of agricultural practices for enhanced crop yield is considered to be essential phenomena for the countries like India. In order to strengthen the economy and also to meet the food demand for the exponentially growing population, optimizing the agricultural practices has become necessity.

In India, weather and geographical conditions are highly variable and were thought to be the major bottleneck of agricultural practices to achieve improved crop yield. Agricultural practices in India are facing many challenges such as change in climatic conditions, different geographical environment, conventional agricultural practices; economic and political scenario. Economic loss due to the lack of information on crop yield productivity is another major concern in the country. These hurdles can be overcome by the implementation of advanced technology in agriculture.

1. **INTRODUCTION:**

Agriculture is the basis for food security and survival. Mankind living on the globe depends majorly on the agri based crops for their survival. India is an agricultural dependent country and the fact that the majority of the populations are vegetarians and solely depends on the agricultural products for their survival. Being an agricultural based nation, country’s economy is principally influenced by annual crop yields of agricultural practices. Agriculture is the primary source of livelihood for about 58% of India’s population and the majority among the rest is connected to the other aspects of agricultural practices. In the country like India, farmers cultivate major food crops such as rice, wheat, cereals, pulses, different vegetables known as onions, potatoes, sugarcane, oil seeds, mango, orange, red chilli and also various commercial crops such as coconut, coffee, tea, cotton, rubber and jute. The majority of the rular population close to 40% depends on the agriculture for their household. Agriculture contributes approximately 18% to the total GDP of the country and provides employment to over 60 to 70 % of the population in India.

At present India stands second globally in terms of agricultural based products. Cultivation of various agricultural crops influences the economy of the country at broadest range and plays a pivotal role in the overall in socio-economic structure of the country. The success rates of agri practices majorly influenced by certain factors namely soil fertility, climatic conditions, weather forecast, temperature, water level with the rainfall measures, irrigation condition, fertilizers availability, pesticide used, controlling of weed population, process of cultivation, harvesting methods employed and economic and political scenarios . Majority of the former communities in India predict crop yield based on the conventional practice with the knowledge of previous experiences, but this approaches alone may not be efficient as the climatic conditions keep changing drastically due to the overall change in the weather forecast at global level. In order to address this issue, a more scientific methodology with technology advent known as agro based big data analytics is essential. Big data analytics provides an opportunity to analyze the significant factors that controls the crop yield and also about the socio, economic and political impacts on the success rates of the various agricultural practices. Higher crop yield can be achieved by increasing the overall cultivable land suitable for the growth of particular crop and also by decreasing the crop damage, overall operating cost through implementation of good agricultural practices. The enhanced crop yield can be reported by controlling the major factors of the agricultural practice such as fertilizer type and quantity, water resources and levels, quality of the seed used for cropping, minimization of biotic stress caused by weeds, pests and the control of abiotic stress. Manual and conventional methods such as physical crop inspection and manual removal of weeds and contaminants are not very effective approaches and do possess significant limitations in supporting the higher crop yield. On the other hand, the sensor mounted practices can be effective in understanding the needs of the agricultural conditions of the growing crop in a much scientific way. The Big data analytics is one such technology, which provides an opportunity to analyse the various crop yield influencing factors to provide an optimum condition for the enhanced crop yields and also helps in designing the strategies for crop yield marketing .

1. **Objective :**

The objective of this research article is to find out the current scenario of use of technology in agriculture field of India. This also aims at looking for the benefits from use of technology and mechanization 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 and the useful information from the websites published by the governments of each state in agriculture and possible solutions for it are looked after.

1. **Research Methodologies :**

This research article is descriptive in nature and gives a review about the current situation about use of technology and online portals (Website) in agriculture in India . Since last decades even in some rural area ..many of farmer have lack of perfect knowledge in field of farming, after the green revolution . Still some area in India that they have less knowledge about perfect farming still they don’t know about the soil i.e. which type of soil is perfect for which type of crop and also they don’t know about best pesticide, insecticide and fertilizer for their soil. And approximately every time farmer’s don’t know about the schemes that are circulated by government (yojanas). So , if farmers have less awareness and knowledge regarding farming then the development of our country will be halted.

So, for the above problem we make a website in which user are satisfied and gain their all solution regarding farming of six states is our website, we provide every essential things as well as details regarding farming. The available data are gathered from various secondary sources like research articles, published scholarly papers, white papers form companies, books, journals, annual reports, and databases available on various websites. The data available were analyzed as per its nature.

1. **Findings :**
2. **Challenges in Indian agriculture :-**

Despite the large arable land and huge part of the population engaged in agriculture, there are lots of challenges in the Indian agricultural industry. The government of witnessed some key challenges for the sector before initiating the twelfth five year plan (2012-17). The major are shortage of farm laborand youth participation. In agriculture along with inadequate mechanization. Introduction of better equipment’s and improvement in the techniques of agriculture in the process of globalization increased the production in terms of quantity as well as quality.

1. **Fragmented land holdings :-**

India’s arable land area of 159.7 million hectares (394.6 million acres) is the second largest in the world, after the United States. Its gross irrigated crop area of 82.6 million hectares (215.6 million acres) is the largest in the world.

1. **Lack of storage facilities :-**

Estimates say that 9.3% of the produce gets wasted because of improper storage and maintenance and storage facilities in the rural areas are either totally absent or grossly inadequate. Under such conditions the farmers are compelled to sell their produce immediately after the harvest at the prevailing market prices which are bound to be low. Such distress sale deprives the farmers of their legitimate income. The parse committee estimated the post-harvest losses at 9.3 per cent of which nearly 6.6 per cent occurred due to poor storage conditions alone.

1. **Agricultural marketing :-**

Agricultural marketing still continues to be in a bad shape in rural. Most of the agricultural products in India are sold by farmers in the private sector to money leaders (to whom the farmer may be indebted) or to village traders. Products are sold in various ways. For example, it might be sold at a weekly village market in the farmer’s village or in a neighboring village. According to an estimate 85 per cent of wheat and 75 per cent of oil seeds in Uttar Pradesh, 90 per cent of jute in west Bengal, 70 per cent of oilseeds and 35 per cent of cotton in Punjab is sold by farmers in the village itself. Many market surveys have revealed that middlemen take away about 48 per cent of the price of rice, 52 per cent of the price of groundnuts and 60 per cent of the price of potatoes offered by consumers.

1. **Lack of mechanization :-**

In spite of the large scale mechanization of agriculture in some parts of the country, most of the agricultural operations in larger parts are carried on by human hand using simple and conventional tools and implements like wooden plough, sickle, etc. Little or no use of machines is made in plugging, sowing, irrigating, thinning and pruning, weeding, harvesting threshing, pesticide, insecticide, fertilizer and transporting the crops. This is specially the case with small and marginal farmers. It results in huge wastage of human labor and in low yields per capita labor force. There is urgent need to mechanize the agricultural operations so that wastage of labor force is avoided and farming is made convenient and efficient. Agricultural implements and machinery are a crucial input for efficient and timely agricultural operations, facilitating multiple cropping and thereby increasing production. Some progress has been made for mechanizing agriculture in after independence. Need for mechanization was specially felt with the advent of green revolution in 1960s. Strategies and programmers have been directed towards replacement of traditional and inefficient implements by improved ones, enabling the farmer to own tractors, power tillers, harvesters and other machines. A large industrial base for manufacturing of the agricultural machines has also been developed. Power availability for carrying out various agricultural operations has been increased to reach a level of 14 kw per hectare in 2003-04 from only 0.3 kw per hectare in 1971-72. This increase was the result of increasing use of tractor, power tiller and combine harvesters, irrigation pumps and other power operated machines. The share of mechanical and electrical power has increased from 40 per cent in 1971 to 84 per cent in 2003-04. Uttar Pradesh recorded the highest average sales of tractors during the five year period ending 2003-04 and/west Bengal recorded the highest average sales of power tillers during the same period. Strenuous efforts are being made to encourage the farmers to adopt technically advanced agricultural equipment’s in order to carry farm operations timely and precisely and to economize the agricultural production process.

1. **Initiatives :**
2. **Corporates**

ICRISAT adopted Microsoft Cortana intelligence suite including machine learning and power bi or business intelligence, to empower farmers and government officials with technology, and promote digital farming practices in the state. The personalized village advisory dashboard has been especially developed to enable officials to better manage programs of scale. The personalized village advisory dashboard has been especially developed to enable officials to better manage programs of scale. Using powerful bi tools, this dashboard provides important insights around soil health, fertilizer recommendations, and seven-day weather forecasts derived from the world’s best available weather observations systems and global forecast models. This data is then downscaled for the highest possible accuracy at the village level, to transform how small holder farmers tackle climate change to drive effective decision-making for their crops. The app sends sowing advisories to participating farmers on the optimal date to show the best part - the farmers don't need to install any sensors in their fields or incur any capital expenditure. All they need is a feature phone capable of receiving text messages," the company said.

1. **Government**

Since the government realized the need of mechanization in agricultural practices, it has launched several schemes to promote use of technical equipment’s by the farmers.

Rashtriyakrishivikasyojna (RKVY), mission for integrated development of horticulture (MIDH), national mission on agricultural extension and technology (NMAET) are few of the government schemes aimed to strengthen the extension machinery and utilize it for synergizing the interventions under these schemes. The government is therefore promoting farm mechanization by subsidizing purchase of equipment as well as supporting bulk buying through front-end agencies. The government also provides credit and financial assistance to support local manufacturing of farm mechanization equipment. Agricultural loans are also available to farmers for a multitude of farming activities through public sectors banks in India.

In April 2016, prime minister Narendra modi launched Enam (national agriculture market), an online platform for farmers that integrates agricultural markets online. This allows farmers and traders alike to view all agriculture produce market committee-related information and services, commodity arrivals and prices, and buy and sell trade offers, thus helping farmers bid for the best prices across markets.

1. **Problems**

There are several challenges in increasing the penetration of technology in agriculture. There is absence of proper maintenance facility center in rural areas. There is lack of facility for the upgrading and monitoring of agricultural tools and equipment’s. This discourages the farmers to adapt to the use of technical tools. Other than that most farmers are stuck to traditional way of farming. They are not aware about the use of them and are skeptic about its benefits. They also lack training on how to use these equipment’s. It was also observed that sufficient training for the use of equipment’s in the farm is to be imparted to the farmers. It is seen than only 47% of labor in farm is women. But women are not open to use of technology in farm. Women participation in the use of technical equipment’s is very low.

1. **Recommendations**

Precision agriculture is a modern farming technique that uses research data of soil characteristics, soil types, crop yield data collection and suggests the farmers the right crop based on their site-specific parameters. This reduces the wrong choice on a crop and increase in productivity.

1. **Conclusion:**

The food requirement is going to rise to 350 million tons in 2021. More than 40 percent of youths in India and rural part of the country. Use of technology in agriculture can lure them to work in the field of agriculture. There needs to be a change in the agricultural procedures in India to increase the food production. And use of technology will disrupt the agricultural process. Now, there is only a limited amount of use of technology in agriculture. Support from the government, private companies and local bodies is required to make it happen soon.

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