



ADOPT OF NEW TECHNOLOGY IN AGRICULTURE

Dr. Tippanna B Kolkar

Assistant Professor of Economics Govt. First Grade College-Kittur

Dist- Belagavi- Karnataka-591115

Email: drtippannakolkar@gmail.com

Abstract

Technology plays a pivotal role as a vehicle for change in many discipline, especially in agriculture sector new technology enhance productivity and food grain production on a large extent. Agriculture has remained as a centerpiece of Indian economy, though it is a main source of livelihood for a majority of Indian population, it still stands as a technologically backward sector..Farmers are tech savvy and are open to adopting new technologies that can help them improve their income. For instance, a Face-book group for organic farmers in India with a member strength of 25,000 has become an engaging platform for farmers to seek help or advice from other farmers. Nowadays, technology is widely used in farming. Technology has enabled man to get rid of the manual efforts that he put into agriculture. Now there are machines to help him. We live in a world where technology is at the heart of our everyday lives. Similar to the transformations in other sectors, technology is sure to shape farming practices. Technology can transform Indian agriculture by addressing challenges related to quality, quantity, distribution and storage. Majority of Indian population still depends on agriculture as the main occupation. Not only is it the main source of livelihood for many but also the major contributor to national GDP. Many farmers are still deprived of minimum facilities and that is one of the major reasons for low agricultural productivity in India. The Economic Survey 2017-18, highlighted that the percentage of agricultural workers of the total workforce would drop to 25.7 per cent by 2050 from 58.2 per cent in 2001. Therefore, there is a need to enhance the level of farm mechanization in the country. As a result, few startups are developing innovative ways to help and empower the farmer community. Farmers no longer have to apply water, fertilizers, and pesticides uniformly across entire fields. Instead, they can use the minimum quantities required and target every specific areas, or even treat individual plants differently.

Benefits include Technology has played a big role in developing the agricultural industry.

Introduction

The increasing rate of technological advancement across various disciplines, and in particular the agricultural sector, has resulted in increased efficiency and productivity. Recent advances in biotechnology research and development offer new prospects for increased food production and security in various jurisdictions. However, adoption and commercialization of existing and emerging technologies both at the farm and industry levels have been of great concern to governments and the food industry. Nowadays, everything is modernized using technology. Technology has replaced even the most recent techniques for better and efficient outcomes. Earlier everything was manual; now everything is automatic and more advanced. Technology has been a great asset for human kind. Presently one of the biggest needs of humanity for its existence is agriculture and central stage is always occupied by the agricultural industry alone. This condition is irrespective of time and lifestyle changes. Few years back, the survival of agricultural industry was critical, but now the situation is contradictory where new developments in the industry have been made with the help of technology. The areas like productivity, cost and labour have been highly enhanced or supported with the help of technology. Categorizing them, first comes the information technology which has played a vital role in circulating information in the field of agriculture. Agriculture has found its path sparking only after information exchange within it. Information here definitely means the data relating to market prices, demand, cultivation ideas and seasonal changes. Information relating to weather is the most important one which saves the farmer from any kind of losses in cultivation. Today Whatsapp groups are now used extensively by farmers to exchange knowledge and collaborate with peers. From ordering seeds online to seeking inputs on social media, there is rapid adoption of information technology by Indian farmers. Despite its importance to the economy, little has been done to revive the sector. From production challenges to financing inefficiencies, Indian agriculture is plagued by several issues. Inadequate farm equipments, lack of

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access to fairly priced credit, distribution challenges due to intermediaries between farm to fork are some of the challenges facing the Indian farmer. Farmers are the sole risk bearers of all these challenges that arise in the farming cycle. Be it lack of quality tools, erratic monsoons or pest outbreaks, farmers have to face it all without any risk mitigation among other stakeholders. We live in a world where technology is at the heart of our everyday lives. Today More and more agricultural practices have now been transformed using technology. Development of new innovations or technologies require huge amount of investment in research and development activities, But once innovation is accepted practically in agriculture it is possible to grow crops even in a desert with the help of technology.

Present Trend of Production in Agriculture

Technologies that enable contract farming arrangements can help solve financing inefficiencies in the system. This reduces the farmer's risk with guaranteed off-take arrangements and agri-inputs supplied by the contracting company. Apart from with this, technology can also help farmers avail crop insurance and credit that are rightly priced. This can be possible by analysing data from various sources including land records, weather analysis, historical and current satellite imagery and remote monitoring using drones. In spite of new technologies making their way into agriculture, some factors still hold back their adoption. Quite often, farmers can be hesitant to try out and invest in new technologies due to lack of clarity on ROI or lack of successful case studies of other farmers. Infrastructural issues like power supply and internet connectivity in remotely located farms can be a challenge while building connected farms or deploying solutions. Last mile logistics, to get agriculture products, into the hands of farmers, is still a big challenge, and very often needs to rely on cash-based traditional distribution channels, which are not nimble enough. Currently farmers choose crops on the basis of the trends of the last season. Technology can assist them in making right growing choices by carefully analyzing demand, pricing and fluctuations in weather conditions. This will create a better balance between supply and demand. Technology enabled farming tools can be a boon for

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small farms. Large machinery used in developed countries have very little applicability in most of our small farms. The key is to build mechanized processes suitable for small farms, that reduces dependency on manual effort and results in better productivity. Technology based crop advisory around crop planning, pest control, disease mitigation can be very useful. Online marketplaces offering wide variety of authentic agriculture inputs that are backed by scientific agriculture -advisory can also help.

Uses of machines in farm holdings

Various types of modern agriculture machinery and technology are used in different agricultural operations nowadays. Different levels in crop production include – Primary and secondary level tillage of the soil, Seeding and planting, Cultivation, Fertilizer application and distribution, Pest control, Harvesting, Irrigation, Drainage , Transportation, Storage, Handling the residues of earlier crops etc. Since the olden times, animals were the primary source of energy when it was about tough jobs in farming. Later on, steam power started replacing the same. And then gas-powered tractors took over, followed by diesel engines. In the developed nations, it caused lowering the number of farm workers, however, farm production continuously increased with the use of agriculture machinery. Now a farmer can cultivate on more than 2 acres of land with less labor, and can cut costs even more when they are looking for a used tractor and other harvesting technology, versus new equipment. The use of planters and harvesters makes the process so easy. In agriculture, time and production are so important; you have to plant in time, harvest in time and deliver to stores in time. Modern agricultural technology allows a small number of people to grow vast quantities of food and fiber in a shortest period of time.

Technology in agriculture has transformed and increased production and quality of produces. In modern times, farmers who are doing heavy works on farms using traditional and old agriculture tools are wasting their health and time. A tractor that used to be known as a technological genius in the agricultural field is old news now. The modern farm machinery has upgraded the agricultural industry for the best. Some of the essential and most used

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machinery are Combine or Combine Harvester, Rotary Tiller, Plough or Plow, Tractor Trailer, Power Harrow, Leveler, water browser, ripper machine, and disc harrow.

Cooling facilities

These are used by farmers to deliver tomatoes and other perishable crops to keep them fresh as they transport them to the market. These cooling facilities are installed in food transportation trucks, so crops like tomatoes will stay fresh upon delivery. This is a win-win situation for both the consumers of these agricultural products and the farmers. How? the consumers get these products while still fresh and the farmer will sell all their products because the demand will be high

Genetically produced plants

Like potatoes, can resist diseases and pests, which rewards the farmer with good yields and saves them time. These crops grow very fast they produce healthy yields. Since they are resistant to most diseases and pests, the farmer will spend less money on pesticides, which in return increases on their (RIO) return on investment.

Production and Productivity in Agriculture

Since the introduction of economic planning in India, agricultural development has been receiving a special emphasis. It was only after 1965, i.e., from the mid-period of the Third Plan, special emphasis was laid on the development of the agricultural sector. Since then, a huge amount of fund was allocated for the development and modernization of this agricultural sector every year. In India the growth in gross area under all crops has increased from 122 million hectares in 1949-50 to 151 million hectares in 1964-65 and then it increased to 188.4 million hectares in 2018-2019. Further, gross area under all food grains has increased from 99 million hectares in 1949-50 to 118 million hectares in 1964-65 and then to 138.2 million hectares in 2018-2019. Similarly, the gross area under all non-food-grains has also increased from 23 million hectares in 1949-50 to 33 million hectares in 1964-65 and then to 56.2 million hectares in 2018-2019. After the introduction of modern agricultural technique

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along-with the adoption of hybrid seeds, extension of irrigation facilities and application of intensive method of cultivation in India, yield per hectare of all crops has recorded a steep rising trend. Agricultural production in India can be broadly classified into food crops and commercial crops. In India the major food crops include rice, wheat, pulses, coarse cereals etc. Similarly, the commercial crops or non-food crops include raw cotton, tea, coffee, raw jute, sugarcane, oil seeds etc.

Impact of Technology in Agriculture

Technology has had a great impact on agriculture. The productivity and yield of goods have increased, and at the same time, it has proved to be profitable for the farmers. Technology has not only made the farmers profitable but has brought us good products. It is a challenging task to meet the food demand of such a big population. In such a situation technology, has enabled the farmers to produce a much larger yield than ever before. With the advent of technology, we have got better and hybrid products. The nutritional value of crops has now increased, and plants are no more prone to diseases. Now our farmers no more depend on rainfall, they have pumps to irrigate their fields. Thus, the price of food items has gone down significantly. Scientists have prepared better DNAs of plants which are powerful enough to sustain any attack. Technology has primarily impacted this sector.

Impact of Technology

Higher crop productivity
Decreased use of water, fertilizer, and pesticides,
which in turn keeps food prices down
Reduced impact on natural
Less runoff of
chemicals into rivers and groundwater
Increased worker safety

Growth Trend of Food Grain

The government of India has set a target of record 285.2 million tonne of food grain production in the 2018-19 crop year despite deficit rains so far this monsoon. India harvested a record 284.83 million tonnes of food grain in the 2017-18 crop year (July-June). The food grain output in the 2017-18 crop year (July-June) is estimated at an all-time high 277.49 million tonnes, as per the second advance estimates released by the ministry in February. The record

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production in last couple of years has led to fall in prices of agri-commodities and level of distress in farm sector.

Year	Production(Million Tonnes)
2012-2013	257.13
2013-2014	265.4
2014-2015	252.2
2015-2016	251.57
2016-2017	275.11
2017-2018	284.83

Source: Department Of Agriculture Govt Of India Report (Jan-2018)

Conclusion

Majority of the poor in developing countries heavily depend on agriculture for survival, as a result, agriculture is considered as a key fundamental for stimulating economic growth, overcoming poverty, and enhancing food security. Productivity increases in agriculture can reduce poverty by increasing farmers' income, reducing food prices. It is a good sign that technology has touched agriculture. The benefits that technology has provided in the agricultural sector are numerous. Technology has proved to be the perfect companion for farming. Global population has mostly been affected by the use of technology in agriculture. It is a real legacy and will be vastly useful in the future when we face scarcity in some of the most valuable natural resources the introduction of technology in agriculture has led to a massive increase in food productivity as well as removing any concerns relating to a scarcity of food in the future. Advancements in technology such as crop sensors, irrigation systems and fertilizers have all helped crop yields meet their maximum potential, and variable rate technologies have also ensured that fields obtain the required amount of input that will as a result lead to huge increases in production. History has shown that farmers have been relatively good down through the years at adopting new methods and technologies.

Referance:

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