E-technology in the Aid of the Farmers

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Abstract

The history of agriculture is the story of man's progress in controlling for his own advantage the plants that make products useful to him by applying his knowledge. Agriculture is major sector in the enhancement of economy of any country. Information has the potential to improve efficiency in all spheres of agriculture. Through the exchange of knowledge from different agriculturally-involved individuals from all over the world, improvement of techniques can be experienced as well. It has made an impact on how information is shared, and being able to use this information for the progression of the agricultural sector and gives a great positive impact that is helpful for everyone. The main phases of the agriculture production include crop cultivation, water management, fertilizer application, pest management, harvesting, post-harvest handling, transport of food products, packaging, food preservation, food processing /value addition, quality management, food safety, food storage, and food marketing. All stakeholders of agriculture industry need information and knowledge about these phases to manage them efficiently. In Indian context, farmers in India are recommended to use Information and Information Technology for agriculture. India's food production and productivity can be increased by proper use of Information Technology for farming purposes.

Keywords

E-technology and E-agriculture

Introduction

Agriculture in India is the core sector for food security, nutritional security, and sustainable development & for poverty alleviation. It contributes approx. 14 % of GDP. Indian Landscape is dominated by small and marginal farmers (80%) and increasing their productivity and incomes can make a major contribution to reducing hunger and poverty. So the future of sustainable agriculture growth and food security in India depends on the performance of small and marginal farmers. Enhancing their work on field in India is favoured by the Green revolution, Evergreen revolution, Blue revolution, White revolution, yellow revolution, Bio technology revolution and the most recent one being Information and communication technology revolution. However, the technological changes in Indian agriculture started in 1960s when access to modern inputs, especially high yielding variety of seeds, fertilizers, mechanization, credit and marketing facilities improved. The central government also introduced intensive area development programme in 1960.

Impact of information and communication technology in agriculture can be evaluated broadly under two categories. First, Information technology as a tool for direct contribution to agricultural productivity and secondly as an indirect tool for empowering agriculturalists to take informed and quality decisions which will have positive impact on the agriculture and allied activities conducted. It has made an impact on how information is shared, and being able to use this information for the advancement of the agricultural sector gives a great positive impact that is beneficial for everyone. Agricultural biotech and InfoTech together are helping to create new tools to attack the problem of rural poverty, generate employment of farm productivity and production, improvement quality and explore marketing and income generating opportunities in newer days. To bridge the information gap between the farmers and to build productive and competitive market, different IT interventions support rural and under-developed markets to become efficient and productive like new methods for precision agriculture like computerized farm machinery that applies for fertilizers and

pesticides. Farm animals are fed and monitored by electronic sensors and identification systems. Access to price information, access to agriculture information, access to national and international markets, increasing production efficiency and creating a 'conducive policy environment' are the beneficial outcomes of e-Agriculture which enhance quality of life of farmers.

Pros and Cons of IT in Agriculture

Farming and Information Technology seems to be the most distantly placed knowledge sets in the world. Farming being the most primitive and most basic of the jobs and IT related being the most advanced and most modern exhibit the two poles of the globe. However, the barely put together factor has been merged together to create a fantastic guide of development in the food production sector. The Indian farmers instantly require timely and reliable sources of information inputs for taking decisions. Currently, farmers depend on dropping down of decision inputs from conventional sources which are slow and unreliable. The changing environment faced by Indian farmers makes information not just useful, but necessary to stay competitive. E-Agriculture is a new area of knowledge emerging out of convergence of IT and farming techniques. It enhances the agricultural value chain through the application of Internet and related technologies. Information technology can aid Indian farmer to get significant information regarding agro-inputs, crop production technologies, agro processing, market support, agro-finance and management of farm agri-business. Basically IT helps farmers to have better access to information which increases the productivity. It also enables him to get better prices through information of change in price in different markets. Some of the benefits derived by the farmers through ICT are given below:

1) Improved decision making – By having the necessary information, farmers make improved decision concerning their agricultural activities. The exchange of knowledge from various countries and organization also helps farmers be more aware of factors to consider before making their decisions.

2) Better planning – IT has paved the way to come up with farming software which determines the best paraphernalia to use on the farm. Gaining information from their farm is essential in sustaining its success and fuelling further growth.

3) Community involvement – There are several programs which are made possible by IT applications which promote community involvement in agriculture. When a community adopts modern methods for agriculture, the production of local goods can be increased. With IT, there can be improved union in local farmers which can lead to their community's overall improved production leading to better income for everyone involved.

4) Agricultural breakthroughs – IT makes the spread of information concerning the latest agricultural breakthroughs more possible. When scientists develop new and improved grains or techniques that help grow crop in adversities, farmers from all over the world may benefit from being connected to the rest of the agricultural world. Sharing information to help everyone progress is made much easier through resources made available and accessible by IT.

5) Agriculture for everyone – Farmers show in-depth knowledge when it comes to their trade. However, interested individuals who may be called backyard farmers may also benefit from how modern technology has changed. Growing your own sustainable garden of herbs, fruit trees, and other agricultural produce can be possible in a smaller scale using IT and having your own produce even helps assure the freshness and quality of the food your family eats

Along with the advantages, e-agriculture have lots of problems like technical feasibility of connectivity in rural areas, cost involved in ensuring services, need for basic computer literacy etc. Some of those problems are:-

1) The reach of the technology is still very poor and large chunk of farmers are still ignorant about such advancements. The distribution of technologies is not uniform throughout the country..

2) The use of technology is being used by the already rich farmers and utilising these services they are further prospering. The small and marginal farmers are again being left out in the process of development.

3) Due to low literacy rate among farmers and digital divide, there is a rise of new class of middle man, who provide ICT services to farmers. They are also believed to distort the information for their own benefit.

4) The rural infrastructure for the use of ICT is also not uniform and lot of regional disparity persists

Initiatives by Government on Information Technology for the farmers

In India, there have been several initiatives taken by State and Central Governments to meet the various challenges facing the agriculture sector in the country. The E-Agriculture is part of Mission Mode Project, which has been included in NeGP (under National E-governance Plan) in an effort to consolidate the various learning's from the past, integrate all the diverse and disparate efforts currently underway, and upscale them to cover the entire country. The MMP is to be operationalized by Department of Agriculture and Cooperation (DAC), and aims to provide services, such as Information to farmers on seeds, fertilizers, pesticides, Govt. Schemes, Soil quality, crop management and Information on weather and marketing of agriculture produce

The Government had constituted National Commission on Farmers in 2004 under the chairmanship of Dr. M.S. Swaminathan. Based on the recommendations made by the Commission in its Revised Draft National Policy for Farmers and the comments/suggestions received from various Central Ministries and Departments and State Governments, the "National Policy for Farmers, 2007" has been formulated and approved by the Government of India. New technologies which can help enhance productivity per unit of land and water are needed. Biotechnology, information and communication technology (ICT), renewable energy technology, space applications and nano-technology to provide opportunities for launching an "Evergreen Revolution" capable of improving productivity in perpetuity without harming the ecology.

AGRISNET: An infrastructure network existing at block level facilitating agricultural offices, agricultural extension services and agribusiness activities to enhance rural development.

Digital green: The agri. information of local relevance is disseminated through digital video. The system consists of a digital video database prepared for farmers by farmers with the help of experts. The recordings are shown to individuals or small groups using laptops, DVD player, television and to communities through village cable network.

eSagu: eSagu provides personalised expert advice in a timely manner from sowing stage to harvest for small and marginal farmers at their door-step. The farm situation is brought to the expert in the form of digital photographs and text information. The expert advice after analysing the situation is prepared and is delivered to the concerned farmer on the same day or subsequent day.

Warana: The project provides access to a wide range of information including agriculture to the member of the cooperative in local language. It provides information on crops, market prices, employment schemes, educational opportunities, etc. The information is provided through the village information kiosks. The operators of these kiosks are the main linkage between the farmers and the information centre.

IKSL: The relevant information is delivered to the farmers on mobile phones through five voice message in local language. Customized solutions are provided to the farmers through helpline. The farmers can also speak to the experts on specific subject through special 'phone-in' programmes.

Agmarknet: This initiative provides daily market price and arrival information in respect of 300 commodities and 2000 varieties in eight local languages. The wide range of information on prices, arrival and other related aspects like grades, standards, packaging, etc. is collected and disseminated by networking major agricultural produce markets operating in the country.

Pravara: The project aims to connect a hundred villages in Ahmednagar to empower rural population and improve quality of life. The information on government scheme, agricultural marketing, healthcare, education, agro-processing and economic development are disseminated through IT centres established under the project.

iKisan: iKisan is a one-stop solution for farmers in providing information on crops, crop management techniques, fertilizers, pesticides and other related information like market updates and weather forecasts.

Earik Single window: it is to improve the access to agricultural information and technology in north-eastern India. It provides expert consultation on production, plant protection and marketing.

Digital Mandi: Digital Mandi is an electronic trading platform for agri-commodities to bring the benefit of ICT to farmers and traders by eliminating geographical barriers and temporal limitation and removing cash crunch through active participation of various financial institutions. Digital Mandi is inspired by the vision of Media Labs Asia sustainable village through culturally appropriate use of new technologies.

Akashganga: The initiative facilitates timely collection of milk, proper payments and generates higher income for dairy farmers. The system includes weighment of milk electronically, fat testing, capturing unique ID by the software and printing of pay slip and payment settlement.

a-AQUA: aAQUA is a multilingual online problem solving system that facilitate farmers getting their queries answered by experts. The reply to the queries raised by the farmers is sent in one to three days depending on the nature of the problem.

e-Krishi: The communication network established under eKrishi is utilised to educate farmers, provide real time information on prices, arrivals and issue disaster warning and weather forecast. The aim is to enable farmers to take informed decisions on sale of their produce and bring transparency in the working of the Madhya Pradesh State Agricultural Marketing Board

Mahindara Kisan Mitra: The initiate provide information on daily market prices, weather updates, crop advisories, agri-related news, etc. The information is also available on other sections such as loans, insurance, Mandi database, cold storage and warehouses, etc. The farmers can also get motivated and take benefits from the success stories of other fellow farmers reported on the website.

Haryali Kisan Bazar: HKB has set up centre across different states to provide solutions to wide range of problems of farmers under one roof including agri-inputs, financial services, farm-output services and round the clock expert advice. The centres provide information on crops, latest technologies, weather forecast, market prices, customised services based on the farmer database maintained under the initiatives.

Fisher Friend Mobile Advisory: The information relevant for fishermen is provided in local language through mobile phones. The information covered are wave height, wind speed and director, potential fishing zones, relevant news, government schemes and market price

Reuters Market Light: Reuters Market Light provides mobile phone based customised information according to the individual farmer's preferences on crops, markets, and location. The information in local language in respect of over 440 crops and varieties, more than 1400 markets and 2800 weather locations are available across 13 states through SMS.

e-choupal: An initiative by ITC provides alternative marketing channel, information on weather, agricultural practices, input sales, etc. It is a kiosk located in a village and equipped with computer with internet access managed by trained sanchalak.

e-agri kiosk: An initiative by NABARD and Central Agricultural University. Touch screen kiosk for technology transfer among tribal farmers of Arunachal Pradesh.

MSSRF FFMA: Fisher Friend is a BREW-based application offered on a low cost CDMA handset with a graphic interface, an icon-based menu and programmable shortcut keys. In addition to safety and weather information, fishermen can receive the locations of fishing areas and real time market prices with one-click in their local language.

Agricultural Technology Management Agency (ATMA): It may be referred to as a group of people who are involved in agricultural activities and are interested in sustainable development of agriculture in the districts. It takes the responsibility of technology dissemination in the districts. In this way it promotes further research and extension activities in this sector.

National mission on agricultural extension and Technology: The aim of the Mission is to restructure and strengthen agricultural extension to enable delivery of appropriate technology and improved agronomic practices to farmers.

National Agriculture Market (e-NAM): The National Agriculture Market scheme (e-NAM) envisages initiation of e-marketing platform at national level and to support creation of infrastructure to enable e-marketing in 585 regulated markets across the country by March 2018. This innovative market process is revolutionizing agri markets by ensuring better price discovery, bringing in transparency and competition to enable farmers to get improved remuneration for their produce moving towards 'One Nation One Market'

Voice Krishi Vigyan Kendra: It is an extension of the Krishi Vigyan Kendra (KVK) by greater emphasis on the aspect of e-technology. The voice KVKs are group of advisors who remain connected through mobile and internet technologies. Two parties interact through the means of this technology.

Bharat Nirman: it has registered as the increased tele-density in rural areas. And it is this base which is being used to provide 'm' service to farmers, giving them right information at right time.

Bharat Nirman Kendra shall be a single window for providing the information on the NREGS and shall provide feedback on the quality of implementation of the program. Slowly move to the wage employment to

self-employment by providing skill development facilities to the rural people and in the process give a fillip to the rural economy.

Kisan credit card: It was started by the Government of India, Reserve Bank of India (RBI), and National Bank for Agriculture and Rural Development (NABARD) in 1998-99 to help farmers access timely and adequate credit. The Kisan Credit Card allows farmers to have cash credit facilities without going through time-consuming bank credit screening processes repeatedly.

Kisan Call centre: An expert advisory system and the farmers needs to call the toll free number 1800-180-1551 to seek expert advice on different matters related to agriculture and allied sectors

Kisan SMS Portal: Here farmer keeps getting SMS messages providing information or delivering service or giving advisories on his mobile from experts, scientists and officers at various level after once opting for messages on agricultural practises / crops of his interest. In short, messages are customized based on farmer's preferences in the language chosen by them. The services of the portal include crop production, including horticulture, animal husbandry, dairying and fisheries. It sends messages relating not only production aspect but also marketing of produce, weather forecast, soil testing, etc.

Village Knowledge Centre (VKC)

Village Knowledge Centre (VKC) serves as information dissemination centre providing instant access to farmers to latest information/ knowledge available in the field of agriculture, starting from crop production to marketing. A "VKC In-charge" who looks after the operations of the VKC mans every VKC.

Village resource centres (VRC)

The VRCs are connected to Knowledge/Expert Centres like Agricultural Universities, Skill Development Institutes and Hospitals. Over 6500 programmes have been conducted by the VRCs in the areas of, Agriculture/horticulture, Fisheries, Livestock, Water resources, Tele health care, Awareness programmes, Women empowerment, Supplementary education, Computer literacy, Micro credit, Micro finance, Skill development / vocational training for livelihood support etc. So far, over five Lakh people have availed VRC services

Conclusion

Information and communication technology (ICT) has always mattered in agriculture. Ever since people have grown crops, raised livestock, and caught fish, they have sought information from one another. Today, ICT represents a tremendous opportunity for rural populations to improve productivity, to enhance food and nutrition security, to access markets, and to find employment opportunities in a revitalized sector. ICT has unleashed incredible potential to improve agriculture, and it has found a foot hold even in poor smallholder farms.

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