Use of Computer in Agriculture

Pawan Choudhary[1], Suresh Kr. Sharma[2], P.K. Kaswan[3] and Ramdhan Jat[3]

Young Professional-II [1], Sri Karan Narendra Agriculture University, Jobner, Rajasthan

Assistant Professor[2], Sri Karan Narendra Agriculture University, Jobner, Rajasthan

SRF[3], Sri Karan Narendra Agriculture University, Jobner, Rajasthan

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Computers and their applications changed the face of most traditional occupations including agriculture. From computerized milk collection and seed estimators to weather predictions and automated farmland assessment, computers have revolutionized farming practices. Technological advances have brought about drastic changes in farming and animal husbandry resulting in a tremendous increase in production capacity. The most common use of computers has been in replacing human effort and intervention in traditional farming machinery and other equipment. In addition, even the support functions for farming such as delivery of machinery, fertilizers and production of raw products have been successfully automated. But all these are just the labour-saving, basic uses that have been around even before the turn of the century. If computers have changed the ways of farming, then the Internet has only doubled that pace of change.

Applications of Computing Technologies in Agriculture

In today's times, agriculture is not just about crop production or livestock farming and associated activities. The challenges brought forth by ecological factors affecting the environment need to be a major consideration for any kind of farming activity. Farmers need to pre-empt environmental impact due to climate change and this is where modern technology comes to the rescue. In a nutshell, the uses of computers in agriculture include:

- There are softwares which help in the prediction of weather conditions and estimation of agricultural production.

- Computers are used for record-keeping of information related to costs involved in production, transport, agricultural processes, and in the estimation and calculation of profit and/or loss.

- The Internet aids communication among farmers and between farmers and agriculture experts. This leads to an exchange of knowledge and serves as guidance for farmers to improve production and earn profits.

- Thanks to the use of software technology, farming practices have evolved into those requiring less effort and leading to greater output. Mechanization has reduced human/animal effort and increased the speed and quality of production.

Farmland Assessment:

Geographic Information Systems (GIS) are being used for developing ranking systems that evaluate land and provide a site assessment to aid what is now known as precision agriculture. These hi-tech, interactive systems provide information based on a variety of factors such as soil conditions, drainage and slope conditions, soil pH and nutrient status, etc. Prior to the use of these systems, farmers were often in the dark about soil output, and unpredictable weather conditions affecting crop quality and profitability. Precision agriculture provides farmers with control by predicting vital information including fertilizer application and problems with drainage, insects, and weeds. Most government websites provide this kind of information free of cost, covering agricultural land masses across the United States. **Global Positioning System (GPS)** based technologies also help to monitor irrigation, field mapping, soil sampling, tractor guidance and crop scouting. This kind of technology equips farmers with enough information to increase crop yield in a manner that is consistent with the best environmental practices for sustainable agriculture.

Autonomous Farm Equipment and Tractors

Automated farm equipment, needless to say, scores over human controlled equipment in terms of consistency and reliability. Engine and machine functions such as transmission and hydraulic power output are controlled using microchips built into the equipment. Guidance technology is already being widely used in self-propelled equipment to aid crop seeding and fertilizer application. Automated feeding systems, computerized milk collection and milking machines have been around since the late 20th century, resulting in better economic yield for the dairy industry as well as livestock production. Automated tractors are probably not far away.

Farm Software

With regard to livestock farming, ready-made computer applications are available to track animals, storing and evaluating information such as age, health records, milk production, offspring productivity, and reproductive cycle status. This is often called herd recording. Similarly, most farm accounting software and other computer applications in agriculture provide services for record keeping, simulation of prediction-based models using that data, and revenue and productivity estimation. Most farm software vendors provide you with an option to customize their applications to the specific needs of your farm or ranch.

Internet Forums, Social Networking and Online Knowledge Bases

Any business in the world that you can think of, has benefited from the advent and global reach of the Internet and related communication technologies (mobile computing, e-commerce, etc.). Agriculture is no different. Imagine using the power of the Internet to connect with farmers, agriculturists and agricultural scientists and other experts spread across the globe. There are several forums and social networking sites on the Internet where farmers can connect with other farmers and farming experts and exchange know-how. In addition, there are several learning repositories that provide information on a wide variety of agricultural topics. These avenues serve to reduce the rural digital divide, influence public policies, foster partnerships and connect all stakeholders across the agricultural value chain. For instance, a farmer can easily seek out and connect with an agricultural entrepreneur and begin the exchange of ideas or business proposals. Information such as price review for grain and livestock, pest information, real-time weather information (precipitation, temperature, humidity, solar radiation, wind speed, soil moisture and soil temperature) in any part of the world is literally available at one's fingertips.

E-agriculture

An emerging field of agricultural practices, e-agriculture focuses on coming up with innovative ways and best practices to use the existing information and communication technologies (ICTs) for sustainable agricultural development and food safety standards, particularly in rural areas. E-agriculture encompasses other related technological fields such as agricultural informatics, agricultural development and business. It aims to deploy all available technologies (computers, mobile computing, satellite systems, smart cards) for the empowerment of farmers and strengthening of partnerships across the food value chain.

The uses of computers in agriculture do have some real constraints such as, the lack of hardware and software infrastructure, training and skills, and research priorities. However, once these are overcome, the use of computers goes past automation and software application. In fact, it could be instrumental in bridging the digital divide and bringing prosperity to agriculturists not only in the United States, but also in other developing and emerging economies around the world.

Digital transformation is acting as a game-changer for Indian agriculture. This has led to the rise and development of mobile apps which are helping existing government schemes and other agriculture-based information to reach farmers in rural India. Now, with a click of a button, farmers can access all the necessary information he needs.

Table 1: List of 25 Mobile Apps which can definitely bring significant change in the lives of farmers and agriculture

S.No.	App Name	Download Link
1	My Agri Guru	https://play.google.com/store/apps/details?id=com.myagriguru&hl=en
2	IffcoKisan	https://play.google.com/store/apps/details?id=com.IFFCOKisan
3	Agriplex	https://play.google.com/store/apps/details?id=com.agriplexindia.agriplexconsumer
4	Market yard	https://play.google.com/store/apps/details?id=com.globalfarm.marketyard
5	Indian Satellite Weather	https://play.google.com/store/apps/details?id=com.shahul3d.indiasatelliteweather
6	Zero Budget Natural Farming	https://play.google.com/store/apps/details?id=com.oyepages.zbnf
7	Kisan Space	https://play.google.com/store/apps/details?id=com.kisan
8	Crop Insurance	https://play.google.com/store/apps/details?id=in.farmguide.farmerapp.central&hl=en
9	Mandi Central	https://play.google.com/store/apps/details?id=com.tradeforsure

10	Machinery guide	https://play.google.com/store/apps/details?id=hu.zbertok.machineryguide&hl=en
11	Kisan Suvidha	https://play.google.com/store/apps/details?id=in.cdac.bharatd.agriapp
12	Kisan Yojana	https://play.google.com/store/apps/details?id=com.purplechai.admin.kissanyojnaapp
13	Krishi Network	https://play.google.com/store/apps/details?id=com.krishi.krishi
14	MSAMB	https://play.google.com/store/apps/details?id=com.msamb
15	e-Gram	https://play.google.com/store/apps/details?id=com.reformist.krushiking001
16	Fasal Salah	https://play.google.com/store/apps/details?id=com.weathersys.agro
17	Farm Bee	https://play.google.com/store/apps/details?id=com.rml.Activities
18	KVSMT	https://play.google.com/store/apps/details?id=com.kvsmt.mobile
19	CCMobile	https://play.google.com/store/apps/details?id=com.root.ccmobile&hl=en
20	Bijak	https://play.google.com/store/apps/details?id=com.bedwal.bijak.mvp&hl=en
21	Agromedix	https://play.google.com/store/apps/details?id=com.iqra.agromedix
22	BajarBhav	https://play.google.com/store/apps/details?id=com.bajarbhav
23	Agriculture Business	https://play.google.com/store/apps/details?id=com.AgriculturalBusiness3dsp
24	Agri Live	https://play.google.com/store/apps/details?id=agri.live
25	Agri App	https://play.google.com/store/apps/details?id=com.criyagen