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Application of Cloud Computing in Agriculture Sector

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INTRODUCTION

Over the years, computing technologies have played an important role in every field such as transportation, healthcare, smart online shopping, smart education, or warehouses. Computing technologies in every field and region make it easy for humans to follow their information. The goal of this technology in every field is to provide real-time, reliable, effective, secure information when needed. In addition, computing technology provides technology to each individual to make it easier in user-friendly environments. On the other hand, since communication and information have always been an important part of humanity, the main goal of technology is to improve communication in various fields.


As we know agriculture is the backbone of Pakistan's economy. This article highlights the application of cloud computing within agriculture development, as a result of the utilization of each resource on time is extremely vital for the expansion of agriculture. Therefore, the importance of the application of cloud computing in the agriculture sector has been studied significantly. Though the technology cloud computing and net tend to attach the varied objects within the world to the web.

So, to handle and to avoid challenges two-faced by the assembly of food, there's want for the technology to speak and to handle the knowledge regarding resources of agriculture sectors properly. Therefore the introduction to these technologies is a nice breakthrough in the agriculture era. In recent years, new ICT technologies have been implemented in every region of developing countries and the role of ICT in the agricultural sector has always been very important because of the unpredictable nature of the latter. Domain cloud computing is ICT's new application that can be used extensively and aptly for the advancement of the agricultural sector.

Cloud computing is a general term used to describe a new and modern class of network-based computing that occurs over the Internet. This article introduces the concept of cloud computing implementation in Pakistan's agriculture. It intends to introduce a cloud computing model with two main components, the first of which is the cloud agro system to monitor and meet user needs with a user-friendly and fast approach, which includes services such as demand-supply, communication, communication tools, e-knowledge, e-data bank, which stores all relevant data in a centralized location, monitors crop-related weather, soil information, and development progress. There are clouds of farmer data etc., so, if we have to improve their financial situation. Developing countries are trying to reform the Pakistan's agricultural sector. This technology has attracted the attention of the governments of various countries like the United States, the Britain, Japan, and other developed countries, and all have begun to use the national cloud computing infrastructure for the future development and growth of their agricultural sector.
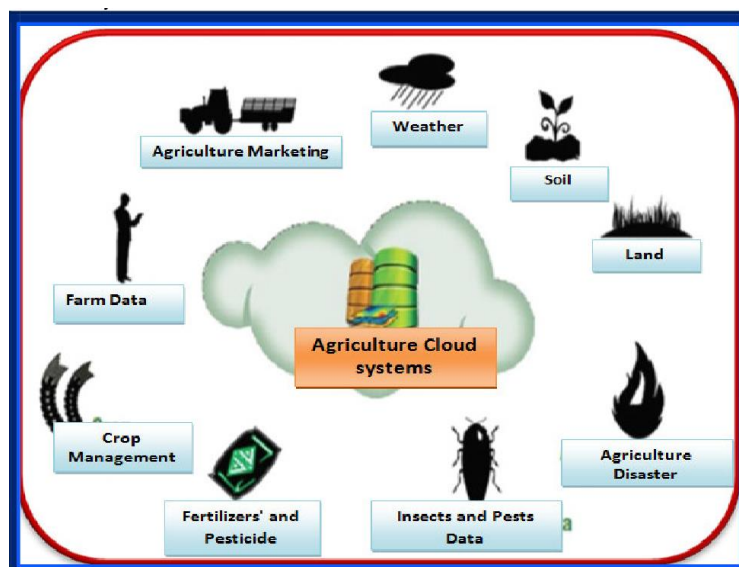

Cloud-based technology is an evolving solution to better manage agricultural processes. Cloud computing refers to the sharing of technology over the Internet and facilitates farmers to convert and analyze data, much like cloud computing in agriculture. Stores data about related topics; data on weather conditions, waterlogging, pest disease, crop production, crop model database, and critical database. Cloud computing platforms require less work to facilitate the development of agriculture. Cloud computing data can be accessed everywhere and by various researchers, workers and farmers. Farm farmers and workers do not have the technical skills to use cloud services or use other technologies. No doubt agriculture is an important sector of Pakistan but it is facing several challenges, like; lack of modern agricultural technology, waterlogging and

salinity, the use of traditional production methods, lack of knowledge and insect/pest & diseases of crops etc. Lack of proper mechanism for these challenges, lack of information about crops, lack of information about climate and crop diseases make the farmer and worker do not have a proper understanding of agriculture.

An application of cloud computing can help solve these challenges. Cloud can provide a kind of bank that can store all the information related to agriculture. This information is available to farmers and other consumers in the agricultural sector to collect data for them anywhere and anytime. Cloud computing technology provides a platform for workers, farmers, and researchers to not invest in software and hardware. These farmers, workers, and researchers can adopt crop control methods as well as pest control and disease control methods, they can also monitor issues related to animals and plants.
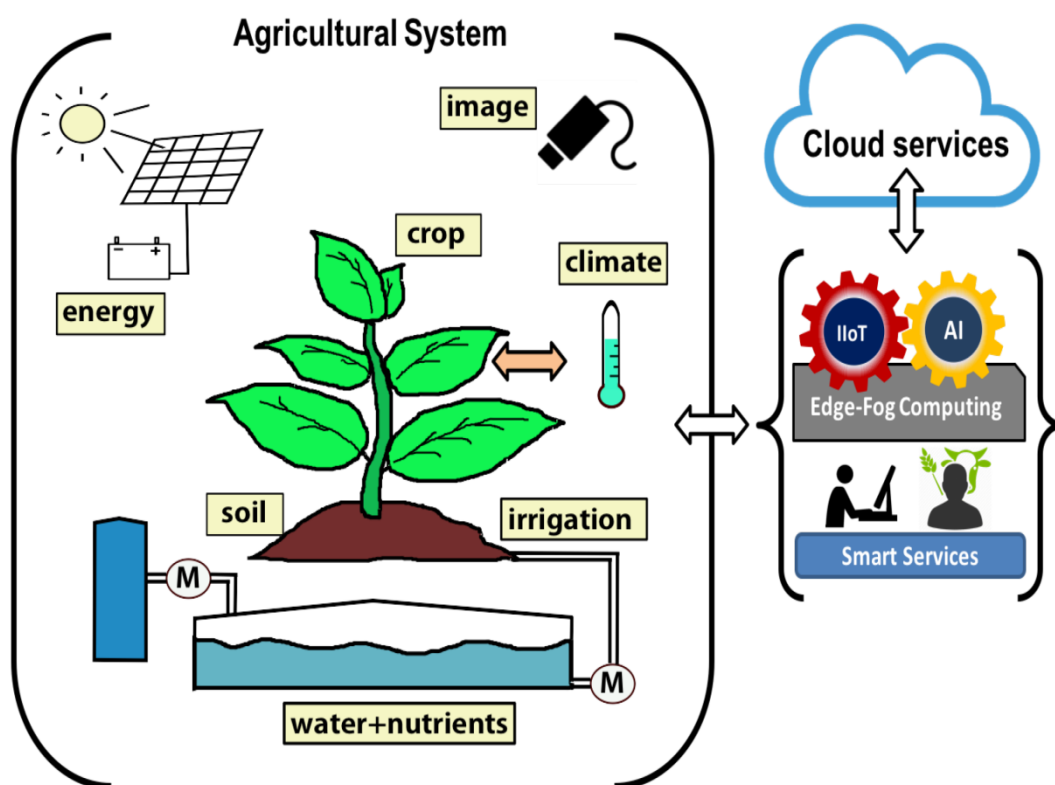
Some of the clouds computing applications for agriculture are given as:

- **Database for weather regarding information:** It helps to know the specific weather conditions and climatic conditions for seasonal crops through weather forecasting.
- **Database for disease-related information**: This will help in getting information about the pest disease, which attacks the crops and damages the crops as Pakistan is suffering from

the worst locust attack on the crop and destroying the crop.

- **Database for a new technique of crop production**: It makes various tools to learn about new systems and new methods of crop production. It also stores information about a specific crop grown in a specific area.
- **Sharing of agriculture information:** It is another application of cloud computing because cloud computing has powerful network access so it plays

an important and easy role in providing information and sharing about agricultural challenges to the users. It is another application of cloud computing because cloud computing has powerful network access so it plays an important and easy role in providing information and sharing about agricultural challenges to the users.

- **Monitoring of Agricultural product quality:** Cloud computing technology continues to provide scientific research, access to raw materials, crop production, storage and transportation, marketing, quality of information services, product quality monitoring, and more.

- **Real-time monitoring of crops**: One of the applications of cloud computing in agriculture, provides monitoring information and status about crop growth, leaf circumference, stem height, leaf diameter, and root height, which also monitors fertilizer and water quantity in the soil.

- **Providing agricultural science and technology:** As an important ancillary technology of digital agriculture, cloud computing technology provides advanced information technology services and digitizes, controls, designs, and maintains all agricultural-related goods and digitizes and expresses the whole process. Agricultural extension, education, and scientific research achieve recognition in cloud computing environments. In addition, cloud computing technology can be used to build accurate agricultural technology and equipment systems that use advanced agricultural product information and professional geographic information software to obtain biological relationships between agricultural production and operational processes.

Cloud computing based technology is an important component in the development of agriculture, the benefits of these applications are; increased GDP and the economic condition of the country, eliminate technical problems for farmers, accessing data anytime and anywhere, and provide global and local communication, cloud does not require proper skills to use cloud services, and farmers inspire farmers and researchers.