

# Recent approaches of Agriculture production with respect to cloud computing in India

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In recent year cloud computing is one of the new approach in agriculture development based on computing system that evaluate configurable computational data storage resources that frequently provide released information and attraction among farmers to farmers or expert system. Cloud computing is “a new trends of computing in which zestfully effective and often efficient resources are provided as a service over the networking”. Latest technological development has through a dramatic change in every field and agriculture. There is a positive view of this technology as well as some issues. But even though several benefits of this technology it has several barrier in it's implementation. There is a positive view of presentation of this technology as well as some negative impact.

Key word : Cloud computing, Agriculture, Systems used in agriculture, Barrier in technology.

## Introduction

India is an agriculture country approximately 60- 70 percent of population depend on this sector. It plays most important economic sector in our India. In coming era to feed this huge population we have to withdraw our attention over new trends of production as cloud computing. Through use of IT resources as internet in which source is integrated as cloud computing made available now a days for present community which comprises various services as processing unit, storage, networks, specialized hardware etc. As per their requirement these resource of cloud computing under in useful for various aspect. Use of Cloud computing technology in agricultural areas has greater chance in the overall development of India to fulfill the global food security. This technology can make the production process centralized, sophisticated, updated and modernization is very fast. Emergence of ICT (Information and Communication Technologies) plays an important role in agriculture sector by providing services through computer based agriculture systems. Agriculture plays vital role in global food system. Our life totally dependent on agriculture .Due to lack of technology Indian farmers are low position as compared to other countries. There are several disadvantages faced by Indian farmers such as availability of land, technology, trade, government policies, etc. Now a days such technology has played important roles to distribute agriculture product in different way such as marketing , selling products ,exporting etc. We can improve facilities of agriculture by using application of cloud computing.

## **Impact of cloud computing in agriculture**

We know that India is the 2<sup>nd</sup> position in the world populations. To fulfill the feeding needs of such exploring population we should withdraw our attraction over such valuable sector as agriculture and their product production. Due to the several issues like speed in data processing, data storage speed this clouding system is most beneficial and utilized efficiently (Kaloxyllos, et. al; 2012). Thus this technology come up as boon creativity by several scientists and researchers. They are providing different innovative ideas to increase production as well as distribution of agro products. Researchers collect information through peasant community by using IT tools and implements. In agriculture from production to marketing this technology as cloud computing play important role and interfaces each and every steps with contribution of specialized equipment in agriculture field such as in planting, breeding, weather forecasting, organization of production, product management system. (M.S.V.K.V. Prasad, et. al, 2013). Due to this technology extension work is also made possible with proper networking and sharing of experience, communication among the farmer community. This technology fulfill the demand of such exploring population not only in India but world too. (R. Patel, et. al; 2013). It is one of the self management system, autonomic clouding system provide basic environment as per the requirement of crops by maintainance quality service without human involvement (Rajkumar et, al; 2012) (Sukhpal Singh et, al; 2015). In several domains of agriculture like crop information, integrated crops management, weather information, soil types, fertilizer requirement, irrigation as per crop, season, soil type, type of pest information, cattle information and type of equipment requirement in several aspects like pricing, budgeting, area. First of all data is collected, preprocessed the data then processed data is interpreted as per the respective domain format in agriculture. For this principal component analysis is used to diagnose distinct attributes in agriculture domains. (Hervé Abdi et. al; 2010).

Raimo et al. 2010 investigated over precision farming to capturing information through web networking by maintaining GIS data and proposed one system as Farm Management Information System. GIS is used to gather and analyze the graphical images for making new rules and decisions for effective management of data.

## **Cloud computing systems used in agriculture**

Cloud computing is the combination of cluster and grid computing. Grid computing collect data and explore high quality service globally. In cluster computing several computers operate as a single one for load balance of servers and distribution the loaded data in each server of computer.

This is farm management system which focussed on farming procedures and exchanges information among other farmers. This method helps to better management of farming system without any autonomic concepts.



ALSE (Agriculture Land Suitability Evaluator) used to investigate different types of land to find the land for different types of crops as per available geo-environmental factors. ALSE used GIS (Global Information System) to analyze land using local environment conditions through digital map and based on this information decisions can be made.

FMIS (Farm Management Information System) widely used to fetch out the appropriate information agriculture sector through web networking and in exact timing improve decision processes and implement as per requirement (Sorensen et al 2010). This is initial analysis mandatory for identification of process. But one drawback in this system to automation and time taking so there is not satisfaction in it's acceptance (Zhao et al; 2002)

WASS (Web-based Agricultural Support System). In this system collaboration of information collection, group network working and decision supportive system. The basic functions of this system is in transfer of technology, knowledge as extension work, exploration of agriculture based education, research work and management of agriculture system.(Yuegao et al. 2004)

GIS is system which abbreviated Global Information System .It is used to collect and analyze information about location of environment .It is the digital map which find geo environment further helps to design graphical draw of location using new rules and changes to make attractive design , Shitala Prasad et. al; 2013 studied over mobile computing application for cultivation, preservation and marketing by analysis of images of crops. So many applications is executed for the farmers for solving their crop related problem in appropriate timing.

### **Why accept such technology?**

**Lack of mechanical effort in farming-** India is considered as developing country as well agricultural country but technical mechanization in agriculture is not that much improved. In India very few states are used proper mechanization with tools and equipments from seeding to harvesting like Punjab, Karnataka, Tamilnadu, Andhrapradesh e.t.c. Thus due to lack of mechanical effort in various states leads in low in yield per unit area.

**Lack of marketing facilities-** After better production in the farm main aspect of better outcome from farming is facilities of transport with better marketing areas. So through this computing system online networking, mobile computing increase wide level production dispatching of product in sort range of time. This trends also increase the socioeconomic condition of people.

In meanwhile cloud computing is suitable mode to locate proper communication and experiences among rural people and helpful in choosing appropriate crop as per demand of marketing.(G Sahoo et. al;)

**Lack of transport facilities-** Even though after sufficient production, scarcity of proper transportation leads effort in vein mainly for distinct market transportation like from Mumbai to Kolkata, Banglore to patina, Punjab to south states e.t.c because it is not possible that every farming attributes is available in same states or country. So in this case better transportation play vital role in gaining good output from respective input. Example apple production is better in Jammu & Kasmir or Himachal Pradesh, orange production is better in Punjab or Maharastra, flower production is better in Banglore, onion in Maharastra, coffee in Karnataka, cocoa in kerala, jute in West Bengal, milk in Haryana and Gujarat, fish in Maharastra, Orissa and West Bengal, wheat in Punjab, rubber in kerala. Thus better transportation is important in balance distribution of all product as per their requirement in different states as well for better economic returns and this cloud computing is one of the best source to fulfill as per requirement.

#### **Advantages in acceptance of cloud computing**

Agriculture data bank- This is act as data bank of agriculture related sources like soil, climate, fertilizer, irrigation, planning of production anytime, anywhere. As for example data collected by remote sensing and ground sensors which accepted as precision farming in particular areas of farm as fertilizer requirement as per availability of nutrient in a particular area (Chui *et al.*, 2010).

We can easily access and store large amount of data by using cloud computing .

Effective communication: It can correlate, explore effective and efficient communication with web networking one farmers to other farmers using centralized cloud communication. It is advantageous for locally as well as globally mass.

Rural-Urban livelihood status : This is advantageous part all over world which provides different types services in this world. Agriculture is not only concise in production aspect however it also explore over post harvest handling, set up of several industries like cotton, timber, plywood, jute, sugar, food, rubber, petroleum and so on. Thus these all facilitates the living status of the rural as well as urban society and generate employment in effective way.

Assurance of food security : To feed such huge hunger population it one of the good approach. Since it has capability to increase efficiency of mobility, performance, quality maintainace, level of productivity more as comparison to common technology. Because through this we can come to know as earlier as any problem hamper our crop and it is basic technology of pre decision process however we can resolve our problem.

Contribute in GDP: Agriculture plays major role to increase economic level high. Our Indian economic is not totally but average economy dependent on agriculture. Every farmer is doing hard work with acceptance of such cloud computing system to grow good crops in the farm so that they can get more income and GDP of country in agriculture approaches to hike.

### **Barriers of introduced technology in agriculture**

**Data security :** By using cloud computing application, it is less secure because its maintenance and supervised by third party. Data is not safe and secure to the updated technology.

**Network connection :** Still in some part of our country lack of connectivity which is important to execute this cloud computing technology. If connectivity is low modem or internet the unable to operate particular application. Everyone connected to each other through network connectivity by node. It plays important role for making communication. To implement any information in wide range connectivity is important aspect so that exploration of technology should be done in appropriate time and place.

**Point of attraction to hackers:** We know that cloud computing is less secure. There is a risk of security to protect data from hacker. This is maintained and supervised by third party. Hackers can attack on codes and get details about apps.

**Unknown technology:** Every farmer is not aware about new software and technology. Reason is that lack of extension work with proper training or microteaching methods. They need more trainings and online programs to be aware about cloud computing in agriculture. Farmers need proper platform facility for operating technology well maintained.

### **Conclusion**

Cloud computing application is a basket of diversification in agriculture domain. This is a source of e-agriculture which implementation which makes the management and assessment efficiency faster, accurate and appropriate. Such advanced technology will change the living status of the country so that we can achieve or fulfill our dream of replacement from developing to developed one and step up with the other developed country. Now it is most important to withdraw our attraction over such technology in farming section so that context over higher production, marketing and proper decision making in a particular moment of time. Our government is also giving their effort by several schemes, projects, research, expert system, mobile computing, kisan call center, kisko so on. However as a citizen of India we have to help our government to execute such technology in our day to day life in farming management. Application for the improvement of agriculture growth, food, grain, product, economic condition, ensure food safety, GDP of the nation and circulate information related to agriculture etc. Hence think big, do big, implement big and raise India as one of the developed countries.

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