

# Using Big Data Analytics in the Field of Agriculture: A Survey

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## ABSTRACT

Big data science plays a major role in the current generation deals with the betterment of agriculture field mainly because of the population growth and climate change importance of big data is increased. Big data include the advanced analytical tools. Big data include the advanced analytical chain. Farming is undergoing a digital revolution. Smart farming is depending by the phenomenon of big data. In the field where the cereals and crop seedling growth as well as status and trends of their growth is estimated. Big data is essentially used a global crop growth monitoring system based on remote sensing is dependent on big data science. Big data analytical is a data-driven technology useful in generating significant productivity improvement in various industries by collecting, storing, managing, processing, and analysing various kind of structure and unstructured data. The role of big data in agriculture provide an opportunity to increase economic gain of the formers.

**KEYWORDS:** Agriculture, Big data Analytics, crop, Environment, Smart farming

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## 1. INTRODUCTION

Big data is more real-time in nature than traditional applications. According to the united nation it has been estimated that global population will grow 47% to 8.9 billion in 2050. Theoretically increase in the global population major food crops are adversely affected crops such as wheat, maize, rice etc. Due to global warming and climate change. Hence forth research activities which are involving to advancement of agricultural research mainly concerns on genomics, agricultural bioinformatics have been extensively improved the quality of agricultural product.

Big data analysis helps in controlling the reduced food grain loss. It has been reported that big data science helps in forecasting the crop condition needed to establish food policies. It also helps in the usage of better equipped instruments in the field of agriculture. The major purpose of use of big data to obtain quality agricultural crops, production of good variety and betterment for human kind.

## 2. LITERATURE SURVEY

Massively data processing, scale out architectures are unit compatible for big data applications. Govt. of India created an open data ecosystem for the motive of sharing crop dataset as per National Data Sharing and Accessibility Policy (NDSAP) initiated Open Government Data (OGD) Platform.

Yang CL. et al. proposed that the size of the dataset is very massive, so the traditional data analysis methodologies may not be sufficient to predict the crop patterns in the dataset. If

the entire process is done by a single node, it usually gets exhausted and consumes time to analyse crop price and yield information.

M. Moorthy et al., presented in their work, the data clustering will be handled under distributed Hadoop environment which serves choice in crop planning by forecast the demand in the market at the earliest.

A. Pal et al. proposed a popular Map-Reduce concept utilized clustered file system extensively with Hadoop Distributed File System (HDFS).

K. Grolinger et al. presented the purpose behind the Map-Reduce paradigm is high scalable which executes massively parallel and distributed over a huge number of computing nodes.

The theme of the International Conference CSIBIG-2014 Big Data Analytics is transforming every domain and everything that in the society, including science, healthcare, government, finance, IT, etc.,

Steve Sonka proposed in their work Big Data Analytics can examine so-called all "5V": volume, variety, velocity, veracity and value. Both organizational and technological innovation required to have impact of Big Data within the agricultural sector.

Joseph O. Chan in their work, analytics, the main element, exploits the values from Big Data to invent new models for business and government. The ICT Platform associates the farmers with the buyers of Agriculture Commodities – viz. Large Retailers, Exporters, Food Processing Units, and Mandies. G. NasrinFathima et al., in their work suggested data mining techniques, the expert can characterize the expansion of farming exercises to fortify different powers in existing agribusiness.

### 3. BIG DATA TECHNIQUES

Big data is a term for collection of data sets so large and complex that it becomes difficult to classes using on and data base management tools or traditional data processing application. Big data is also sometimes defined as “it is similar to small data but bigger in size”. Every minute of every seconds getting large amount of data.

For example:

- more than 204 million email messages/day,
- over 2 million Google search queries/sec
- 684000 bits of content shared in Facebook
- 48 hours of new YouTube videos/min

#### 3.1. 4V'S BIG DATA

##### ➤ Volume:

It is getting vast as compared to traditional sources through which data used to be captured large amounts of data generated every seconds. (email, twitter, msz).

##### ➤ Velocity:

The speed at which data is being generated, it is phenomenal and never stops the speed of data moving in and out data management.

##### ➤ Variety:

Data comes from various sources, machine generated and people generated and people generated different data formats in terms of structure or unstructured data. Data comes in all varieties in form of structure, numeric data in traditional databases to unstructured text document, email, video, stock ticker and financial transactions.

##### ➤ Veracity:

It refers to Trustworthiness of data and the quality of data,

#### 3.2. FEATURES OF BIG DATA

- Big data Hadoop control faults by the process of replica creation.
- It is freely available and even we can change it source code as per your requirement.
- Store huge amount of data.
- Extremely scalable platform.
- Any machine goes down data can be retrieved from the other path.
- Very flexible.
- It is easy to use.
- Not very expensive.

#### 3.3. APPLICATIONS OF BIG DATA:

- Big data in public sector services.
- Big data in healthcare contribution.
- Big data in learning.
- Big data in insurance service.
- Big data in industrial and natural resources.

- Big data in transportation.
- Big data in banking zones.

### 4. BIG DATA IN AGRICULTURE:

Previously in the older day's collection of data was not digital. This led to several confusion and loss. Over all big data made promises for the small-scale & large scale farmers a level of precision, information storage, processing and analysing that was previously impossible due to backward technological usage. Ex: Farmers able to log information about their crop performance with digital phone 'app' used to predict and direct future production practices. Technology has for advanced as by using application information can be logged, voice recognition made farmers more easy to handle the application. Agriculture management tools provide access to interacting with datasets.

Big data has implication not just for farmer but also for stakeholders throughout the agricultural food system. For instance, food processors are monitoring social media in an effort to predict consumer sentiment and secure social approval. The critical data studies framework therefore allows for the careful examination of the possible ethical implication.

#### 4.1. ADVANTAGES OF BIG DATA IN AGRICULTURE

- Provide information on factors like fertilizer and seed varieties.
- Enable weather forecasting.
- Monitors and evaluates supply chain and its management.
- Increase productivity.
- Optimizes resource use.
- Minimize agricultural expenditure.
- Ensure maximum consumer satisfaction.

#### 4.2. CHALLENGES FOR AGRICULTURE IN BIG DATA

- Mechanisms for Strategic Agenda Setting on data Driven Agriculture and Nutrition.
- Impact of interoperability, big data analytics for beneficiaries in agriculture & nutrition
- Coherent evolutionary development of standards-as-a-service.
- Big data technologies and machine learning with open data in agriculture & nutrition.
- FAIR Data ecosystem to support open science in Food 2030.
- Farmer participation in data value chain.

### 5. CONCLUSION

As per the reference big data analytics has become the boom to agriculture sector and it is to be one of the best systems for crop planning to increase agriculture productiveness. Proper use of the big data analytics results in no true side effects. This technique is able to analyse the global crop growth monitoring system. In this condition we built a system that can monitor the global crop growth with remote sensing data. The system realizes the multi-scale global crop growth monitoring by taking the as data source and using two monitoring method which are real time monitoring and crop growing process monitoring. The system showed the characteristics of fast, effective, high credibility and operational in its run. When the data is prepared, the system needs only 2day's time to finish the data processing of one period which reached the demand to monitor the crop

growth instantaneously. Big Data Analytics on crop planning may be very significance work to boom agricultural sector.

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