Impact of Big Data on Agriculture Sector: Co-Relation with the Indian Economy

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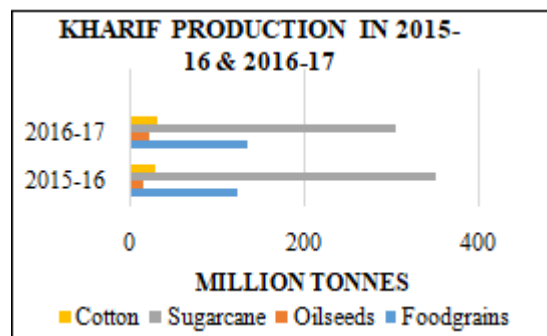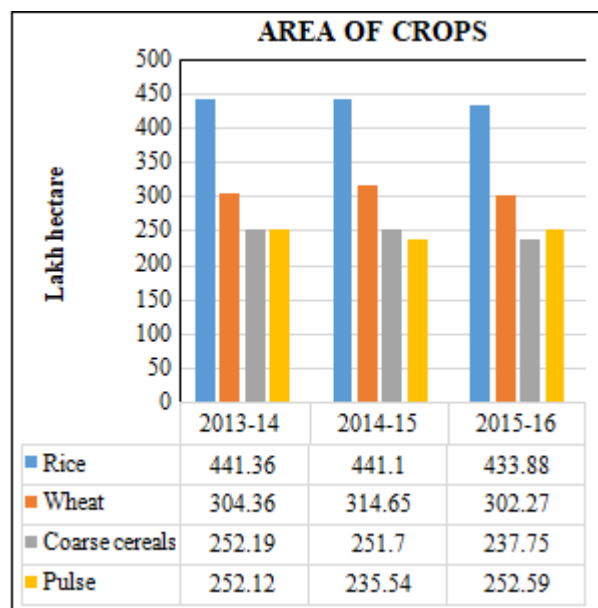[2]BCOM plan, Shree Krishnajirao Pawar Institute, Dewas, (M.P.)

Abstract: *Agriculture is the mainstay of India's economy which plays a very imperative role in the development of the country. Agriculture of India is very vast and extensive approx. More than 50% of the country population engaged in the agriculture sector by occupation. Apart from this big data also plays a very vital role in the agriculture sector, it obtains the huge quantity of data and provides useful information to producers. Agriculture has been inactive to embrace innovation but even here it's starting to consider an enormous impact. There are almost plenty of organization offering everything from tools to drones, etc. Besides of this, the climate changes is the crucial concern for 21st century it plays a very negative role in the agriculture sector. One concern of agriculturalists regarding towards climatic changes involve the effects on pest populations. Climate change may permit population expansions or pest migration which may tremendous effects on profitability and on agricultural productivity. Using a newly developed worldwide irrigation prototype with a space motion of 0.5 by 0.5, we show the first international analysis of the effect of climate changes and climate on irrigation water demand. Furthermore, the future scope of agriculture fully depends on the monsoon but some statistics facts and figures predicted the horrendous future of agriculture in India. Smart farming with the help of big data provides new techniques and innovation such as drones, sensor techniques, automatic advance tractors, etc. which helps a lot in increasing the efficiency in the field.*
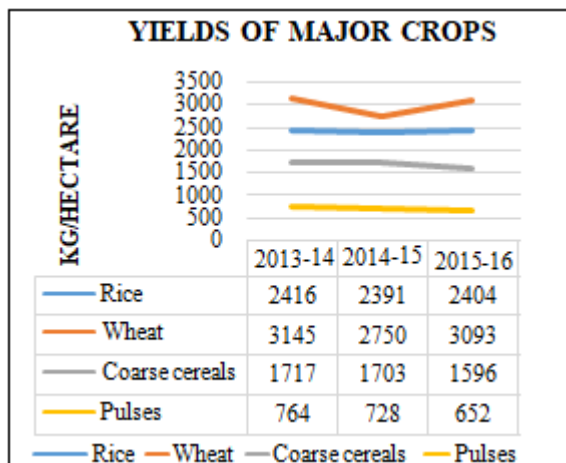
Keywords: Agriculture, Big data, climatic changes, Future scope, Smart farming

1. Introduction

Agriculture is playing a crucial task in the country for development. The term agriculture is an originated from the Latin word 'ager' its means the cultivation of the soil. In the recent era, agriculture sector contributes 17.32% of Indian's total GDP. In India 2/3rd of the population are occupied in agriculture activities. Food grains are the best agriculture products made in India. Agriculture is closely correlated to the natural environment and also known as farming. As per the year 2000, approx. 37% of Earth's land area was agriculture land and approx. 1/3rd of this area around 11% are used for farming only. At Present, In the country like India most people are shifting towards the tertiary sector due to less growth in agriculture sector but in the earlier time more the 50% of population{directly or Indirectly} engaged to the primary sector. Besides of this, there is a different type of bad impact on an agriculture in future due to climatic changes, global warming, greenhouse gases etc. other than this big data providing new approaches in the field of agriculture. Big data is a new concept in all the field which collects the huge amount of data and provides a significant information in future because this new method the farmers collect information to their field and take benefit in the future.

2. Some Facts and Figures

	2013-14	2014-15	2015-16
Rice	441.36	441.1	433.88
Wheat	304.36	314.65	302.27
Coarse cereals	252.19	251.7	237.75
Pulse	252.12	235.54	252.59

YIELDS OF MAJOR CROPS

	2013-14	2014-15	2015-16
Rice	2416	2391	2404
Wheat	3145	2750	3093
Coarse cereals	1717	1703	1596
Pulses	764	728	652

Data Sources: (www.agricoop.nic. in)

Data of the percentage of agriculture GDP spending on Research and Development in Asia
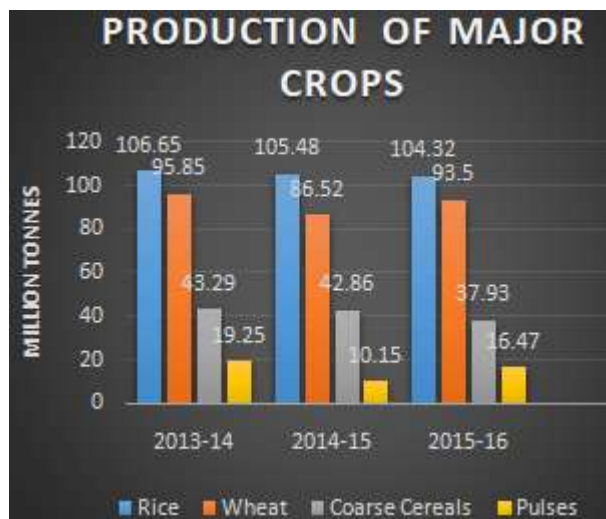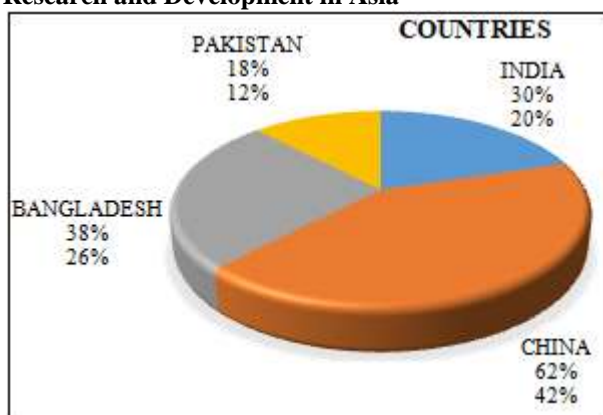
Data Sources: (www.agricoop.nic. in)

1) Impact of climate changes on India's agriculture:

Agriculture has a direct connection with monsoon from the ancient time which is originating from the Indian oceans. The impending climate changes in the present time are the increases in atmospheric temperature due to some greenhouse gases such as Methane (CH_4), Nitrous oxide (N_2O), Carbon dioxide (CO_2) etc. Because of the increasing number of greenhouse gases, there is anxiety about future changes in our climate and effect on agriculture. India is home to 16% of World population, but we have only 4% of World water resources. Agriculture is directly or indirectly depend on climate, for example- Sunlight and water are the crucial drives of crops grown. In some era, climate changes also have a precise effect on the agriculture sector such as extensive growing season and warmer temperature also gives so much benefit in crops growth. Climate changes already consider significant consequences to our present crops profile and intimidate to bring some more dangerous consequences in the future. Wheat is forecast to plummet up to 7-12% with every increase of 15°C. India would decline 40% of agriculture productivity by the 2080s. One research institute predicted that increase in high temperature of 0.5°C is imaginable for Whole India by the year the 2030s and warming of 2-4°C by the finale of twenty centuries. Recent studies done at the IARI indicated that Rice production is decreased almost a tonne/hectare if the temperature goes up to 2°C. If the inversion goes up to 3°C to 3.5°C they harm the soybean crops of M.P., Climate changes show the future scenario in Madhya Pradesh the model projector an average increases of 1.81°C to 2.0°C rise in regular topmost temperature and 2.0 to 2.4°C rise in minimum temperature by 2030 and in long period to 2080s. Agriculture will be worst influenced in a coastal region like Gujarat, Maharashtra, Goa etc.

2) Big data is unlocking the Future for agriculture:

Big data is portraying a crucial role in the farming sector by providing efficient decision-making tools for helping agriculture development as a living organism protection. Big data also obtain and share substantial information and knowledge among different sector involved in agriculture. It also helps to combine large sources in several ways including seeds, soil, cultivation practices, fertilizer, pesticides, weeds, etc. Agriculture companies, organization, the government maintains and use plenty amount of data related to agriculture, insurances, weather, agriculture production, packaging, etc. Big data providing a convenient technique to develop our production plan. Because of this data & information, only the producer get the best plan for their farm. Growing value originated from the conventional on-farm detail sources conscious from fertilizers and planting to make more suitable input decision. Big data also indicate great future to urban farming which never feeds the Planet but the primary point is that natural capital in cities can be vastly ameliorated. One prominent researcher says that big data helps in urban planning to determine the best balance between urban infrastructure and open space like a playground, parks, forest, and farms, etc. Besides of this digital agriculture industry also help in merging huge data sources with facilitating crop and environment models to supply functional on-farm decision. At present if the scarcity of something is hurting to Indian agriculture is the paucity of data due to these the Indian farmer are taking the erroneous decision in farming sector. There are so many advantages of big data when we have availability of data analytics that gives us an information about forecast diseases and damage detection which have a considerable inputon the agriculture sector. Because of this, only the farming is very predictable for farmers across the country.

3) Big data helps in smart farming

Big data innovation plays an imperative role in the farming. Big data is supposed to have a tremendous number of effects on smart farming. Big data gather a substantial amount of

information and helps them on smart farming, actually, both smart farming and big data is a new concept in the agriculture sector. Due to data only we created so many new innovations such as the smart sensor, new equipment, tractor, drones, etc. which aids us in farming. Furthermore, devices and smart farming are collecting the big quantity of data that expands the capabilities of decision-making in farming. Other than this smart farming is the development that focuses to manage information in the farm management process and some new technologies are also found like Robot and artificial intelligence which helps a lot in the agriculture field. Apart from this, the ambition of big data is to enhance farm productivity which assists a farmer to take a plenty of decision in their quotidian day life about their field for instance where to plant, how much fertilizer will be used, how many seeds to use, irrigation facilities, etc. There are also few new challenges according to a season like the new issue related to crop up such as plant disease, fertility and so more. "Because" of the smart-farming the producers can actually understand what is happening on their field in real time. According to some expert "We bring data to life and can offer-real time information."

3. Conclusion

In this paper, a literature analysis on the big impact on agriculture simultaneously also show how big data and smart farming helps to improve farming productivity in the future. The husbandry sector has an interesting history regarding its growth & development in India and it's the soul of Indian economy. Approx. 50% Indian population are engaged in the agriculture sector. Agriculture contributes to Gross Domestic Products (GDP) is between 4 to 15%. This growth in itself constitutes an extraordinary achievement in the history of agriculture. In the recent time, the climatic changes play a very negative role in India's agriculture sector due to increases in pollutant gases such as CO_2, CH_4, methane, etc. the farmers have to face so much hassle into their fields. In addition, the big data & smart farming both are the new concept in the society for development. Big data gathering a plenty of information from the farmers and from the fields and provide a support to them. Besides of these new innovation like drones, sensor, tractors, etc. also play a very crucial role in the agriculture sector.

4. Future scope of agriculture in India

Agriculture has been a source of income for a notable percentage of India's population. The whole agriculture depends on nature's benevolence. The rising food prices over the past two years and the overflow effect on the entire economy of a showing less growth on the economy. The Indian budget of 2016-2017 has a given generous benefit to farming and to the rural economy because the tremendous number of populations in India depends on the agriculture sector. The prediction of a good monsoon gives consolation to the farmers. Although we require some distinctive approaches and techniques to expand the production of crops simultaneously also appreciate some benefit from the agriculture sector. The government of India proposes several complications such as new irrigation facilities, installation projects for groundwater as well as conservative of soil

fertility & doubling the income of farmer by 2022 with the budget of 35,984 corers only.

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