CAP471 - CA1

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Q1. Create Google Docs
Link -
https://docs.google.com/document/d/1gxfWRbEJe7h7HIOpfI-VBxsqDAkw3kLUKjiXr0ya1pM/edit?usp=sharing

Q2. Create Google Sheets
Link -
https://docs.google.com/spreadsheets/d/1RPQfVVfltwQ7rI1sGPVZ54MAfkkIR6-624qukFNPpvs/edit?usp=sharing

Formula:
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=IF(C2>50000,30/100*C2,IF(C2>30000,40/100*C2,IF(C2>15000,50/100*C2,0)))
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Latest trends and technologies used in agriculture sector in India

Overview

The agriculture sector, currently valued at US$ 370 billion, is one of the major sectors in the Indian economy. According to the Economic Survey 2020-21, GDP contribution by the agriculture sector is likely to be 19.9% in 2020-21, increasing from 17.8% recorded in 2019-20. Over the years, the government has taken major steps to aid and enhance the agriculture sector with proven farming technologies and supportive policies. The recent evolution of digital technology in farming will further accelerate growth by ensuring higher crop yields and enhance sustainability by reducing water consumption and the use of agrochemicals.

Digital technologies, such as artificial intelligence (AI) and machine learning (ML), remote sensing, big data, block chain and IoT, are transforming agricultural value chains and modernizing operations. While several countries, such as the Netherlands, the US, Australia and Israel, have successfully adopted and exploited digital solutions to revolutionise agriculture, their adoption in India is still in its infancy. The future adoption of digital agriculture in India is anticipated to nurture under the Public-Private Partnership (PPP) mode.

Latest trends and technologies used

Cisco developed an Agricultural Digital Infrastructure (ADI) solution in August 2019, that enhances farming and knowledge sharing. This ADI is likely to play a vital role in the data pool that will be created by the Department of Agriculture under the National Agri Stack. The pilot project for this initiative will take place at Kaithal (Haryana) and Morena (Madhya Pradesh).

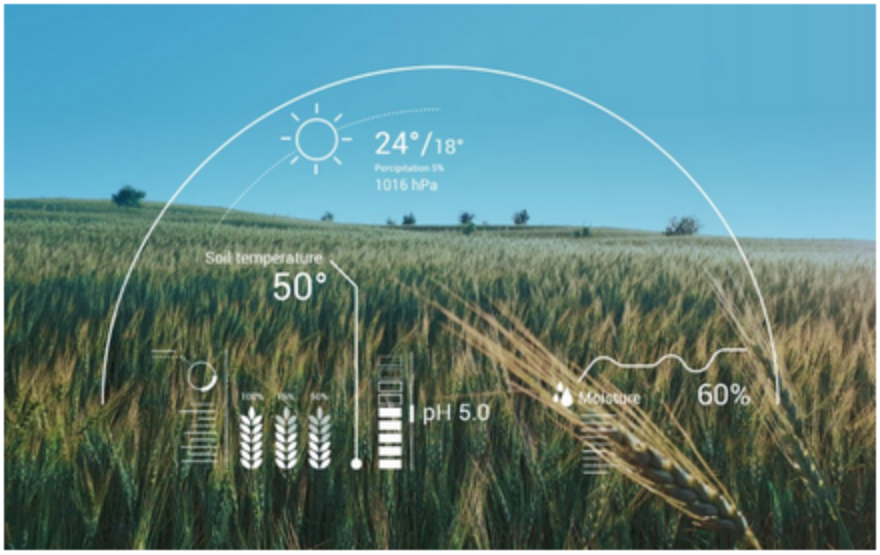
The Jio Agri (JioKrishi) platform launched in February 2020, digitises the agricultural ecosystem along the entire value chain to empower farmers. The core function of the platform uses stand-alone application data to provide advisory, the advanced functions use data from various sources, feed the data into AI/ML algorithms and provide accurate personalised advice. The pilot project for this initiative will take place at Jalna and Nashik (Maharashtra).

ITC has proposed to create a personalized 'Site Specific Crop Advisory' service to turn conventional crop-level generic advice into a personalised site-specific crop advisory for farmers, using a digital crop monitoring platform, hosted on ITC's e-Choupal 4.0 digital

platform. The pilot project for this initiative will take place at Sehore and Vidisha (Madhya Pradesh).

Technological interventions based on remote sensing, soil sensors, unmanned aerial surveying and market insights, etc., permit farmers to gather, visualise and assess crop and soil health conditions at different stages of production, in a convenient and cost-effective approach. They can act as an initial indicator to identify potential challenges and provide options to deal with them in a timely manner.

Artificial Intelligence/Machine Learning (AI/ML) algorithms can generate real-time actionable insights to help improve crop yield, control pests, assist in soil screening, provide actionable data for farmers and reduce their workload.



Blockchain technology offers tamper-proof and precise data about farms, inventories, quick and secure transactions and food tracking. Thus, farmers don't have to be dependent on paperwork or files to record and store important data.

Using smart contracts, Producers can submit the yield or production data digital ownership certificate to the **blockchain.**

The main factor behind the gradual acceptance of digital farming in India is the prominence of segregated small-holder farms in the country, this complicates data gathering. Additionally, limited penetration of mechanisation tools and frequent natural calamities, like droughts, floods and excessive monsoon rains, have negatively impacted the deployment of digital solutions in the sector. Thus, a customised approach would be needed to implement digital agriculture to a typical Indian small farm, this can be later be scaled up and made available to many Indian farms. Following measures could be implemented to make digital agriculture a success in India: -

Low cost technology: - The average annual income of an Indian farmer is >US$ 1,000. This low income explains the precarious financial circumstances in which a typical farmer operates in India. Thus, lowering the cost of technology will help.

Portable hardware: - As typical Indian farms are small, plug and play hardware has a better opportunity in the Indian market. Also, agricultural land leasing is widely prevalent under various farming arrangements, therefore a farmer farming on a specific plot of land may move to another farm plot next season. In such scenarios, investing in portable equipment is better for farmers.

Renting and sharing platforms for agriculture equipment and machinery: - Owing to both constrained financial resources and small farm plots, opportunity exists for digital platforms that offer equipment renting and sharing services instead of outright purchases. A few agritech start-ups like Farmkart (rent4farm), EM3 AgriServices and Trringo, are already providing equipment rental services.

Academic support: - The local agricultural organisation and academic institutes regularly interact with farmers through various locally conducted programs and government initiatives. Training facilities provided by various academic institutes and agricultural organisations will improve digital adoption among farmers.

Conclusion

As the Indian Agriculture and Allied sector is on the verge of adopting modern technologies, such as IoT, AI/ML and agri-drones for unmanned aerial surveying, Indian and foreign agritech players can play a vital role in supplying these advanced technologies to farmers. Currently, there are few players in the market, but catering to ~267 million farmers in a country exhibits a huge opportunity for private and foreign entities to expand their footprint in the country. However, influential factors that will define the success of digital agriculture in India are technology affordability, ease of access and operations, easy maintenance of systems and supportive government policies.

Adopting a holistic ecosystem approach to address challenges faced by the Indian agriculture sector is of national interest, to achieve objectives, like doubling farmer incomes and sustainable development. Thus, a multi-stakeholder approach will be required for the wide-scale adoption of digital agriculture in India, with the government playing a key enabler's role in the ecosystem.

S. No.	Name	Salary	Bonus	Bonus Amount	Total Salary
1	Apurwa	48648	40%	19459.2	68107.2
2	Astuti	29248	50%	14624	43872
3	Aprajita	15105	50%	7552.5	22657.5
4	Tannu	44614	40%	17845.6	62459.6
5	Komal	49931	40%	19972.4	69903.4
6	Jasmeen	31688	40%	12675.2	44363.2
7	Sirjanpreet	37792	40%	15116.8	52908.8
8	Anchal	15476	50%	7738	23214
9	Bhawna	17112	50%	8556	25668
10	Megha	37817	40%	15126.8	52943.8
11	Akansha	58101	30%	17430.3	75531.3
12	Bharti	11024	NA	0	11024
13	Nikita	48085	40%	19234	67319
14	Shambhavee	64014	30%	19204.2	83218.2
15	Sunita	42391	40%	16956.4	59347.4
16	Muskan	10814	NA	0	10814
17	Pallavi	30435	40%	12174	42609
18	Anwesha	29367	50%	14683.5	44050.5
19	Anjali	34040	40%	13616	47656
20	Shruti	69517	30%	20855.1	90372.1