



Agri-Tech, Digital Revolution

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Prime Minister, Narendra Modi

"India has stepped up its efforts in using the latest technology like Artificial Intelligence (AI) in areas like crop assessment, land records digitization, deployment of drones for spraying of insecticides and nutrients and providing various services."

"On one hand, we are focusing on expanding production of millets, chemical-free farming while on the other we are using modern technology from solar pumps to deploying drones. This is a key part of our vision for agriculture growth for the next 25 years,"

India Moving towards Agri-Tech hub Startups

India is known for its agriculture rich status and traditional farming which employs almost half of the population of the country. India is the fastest-growing startups ecosystem in the world. We have more than 100 Unicorns and 60,000+ Startups. According to the data of tracxn, there are 1483 agri-tech startups in India providing end-to-end services, with different business model of business-to-business (B2B), B2C, farmers-to-business (F2B), SaaS (Software-as-a-services), Internet of things (IoT) and online platforms. Building a startup is incredibly difficult. The majority of these startups are demand and supply aggregators, which need extensive logistics, supply chain, inventory, and procurement management. Agri-tech stands for agriculture technology. Agri-tech is the application of technology to farming in order to increase efficiency and profitability.

According to the National Statistical Offices (MOSPI), Provisional Estimates of Annual National Income at current prices, the percentage of Agriculture and Allied Sectors in the country's Gross Value Added (GVA) has increased in recent years. During pandemic (2020-21) its contribution was maximum as people migrate from cities to their villages and started doing their farming again as other industries were almost shutdown and no other employment opportunities was left.

Agriculture plays a key role in both internal and external trade, establishing India as a major agri-exporter, with agriculture accounting for [17%](#) of India's exports in FY21. Cereals, non-basmati rice, wheat, millets, maize, and other coarse grains are among the items that India is exporting in greater numbers. Non-agricultural segments such as consumer goods, retail, chemicals, and e-commerce are also impacted by the agriculture, that rely on agricultural cash crops as a source of raw materials (tea, coffee, oilseeds, etc.)

"Agri-tech Start-ups are critical to India's future economy"

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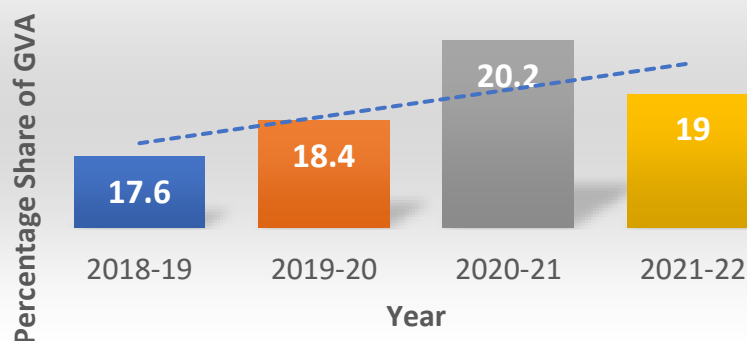
Dr Jitendra Singh,
Union Minister of India

"The future of food security will depend on a combination of the ecological prudence of the past and the technological advances of today."

—

M. S. Swaminathan

Percentage Share of GVA of Agriculture and Allied sector to Total Economy vs. Year



Source - National Statistical Office (NSO), M/o Statistics & PI.

- Increasing GDP
- Export percentage increased
- Creating Employment
- Raises farm incomes
- Reducing food prices across the nation.



Drone technology will play a major role in empowering farmers and modernising their lives: PM Modi

What are the reason behind the sudden increase in agriculture startups contributing to Indian economy. SO, we are witnessing the change in agriculture sectors with use of technology, AI/ML and advance farming methods. The exchange of knowledge with ease of Internet availability in village led the farmers to use the advance technique and equipment available easily. Here the agriculture startups plays the important role provide end to end solution from the production of crop to the selling in the market. These agri-tech startups helps the farmers with finance and use of technology in farming. They uses data and technology to address farmers' worries about obtaining high-quality agri-inputs.

The revolution of startups in agriculture going to boost the Indian Economy and will increase the contribution of GDP percent. These startups creating employment and job opportunities in remote areas and villages, which will reduce the migration of people who moved to big cities for work. The Startups companies plan the production of agricultural product according to the demand of the market and uses high variety of seeds for germination which results into good production of the crops. This helps the farmer with increase of their annual income, securing their farming occupation and backing with resilient reforms in agriculture.

So now comes the question what is startups and what they are doing in agriculture. Startups is a new business that is just getting started. Startups are small companies with innovative ideas, financed by its investors, loan or individual and operated by founders. These startups companies with its small input are creating big impact and revolution in agriculture sector. The agritech startups assists farmers by providing professional advise on how to manage crops and increase productivity. These startups are working in different agri-tech segments such as farm inputs, implements, farm managements, hybrid seeds, irrigation, farmer advisory, post-harvesting, precision agriculture, AI ML, equipment leasing, supply chain and e-distribution, Bigdata, IoT, weather forecasting, drones and Hydroponics.



Agri-Tech Segments

Supply chain

E-distribution,

AI/ML,

Bigdata,

IoT,

Drones,

Farm inputs,

Implements,

Precision

agriculture,

Farm

managements,

Farmer advisory,

Hybrid seeds,

Equipment leasing,

Post-harvesting,

Irrigation, and

Hydroponics.

Steps towards Agri-Tech hub in India

The Indian government recently proposed in its annual budget, to provide hi-tech services to farmers through public-private partnerships (PPPs). This is where agri-tech startups will play a crucial role. According to a report by India's Ministry of Electronics and Information Technology and McKinsey & Company, digital agriculture has a potential economic worth of \$50-65 billion by 2025, representing a 23 percent increase in the current value of agricultural produce. Agriculture is being state subject, the state government is primarily responsible for the growth and development of agriculture and its allied sectors. Public private partnerships will involve collaboration between a government agency and private sector body to finance, build and deliver a public asset or service. They bring together the government's purpose and ability to provide public services with the private sector's investment, technology, products, and distribution channels. Dr Jitendra Singh says "startups providing solutions such as biogas plants, solar powered cold storage, fencing and water pumping, weather prediction, spraying machines, seed drills and vertical farming will help in increasing farmers' income".



AGRI-TECH STARTUPS

Market Linkage



Financing



Precision Agriculture & Automation



Farm Inputs



Farming As A Service



Government Schemes

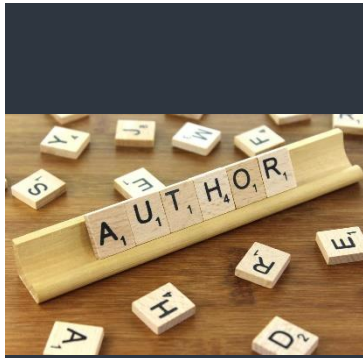
According to the PIB press release, following are various schemes, reforms and policies taken by the central governments.

- Fixing of MSP at one-and-a half times the CP
- Income support to farmers through PM KISAN
- Pradhan Mantri Fasal BimaYojana (PMFBY)
- Providing Soil Health Cards to farmers
- Promotion of organic farming in the country
- Agri Infrastructure Fund , Micro Irrigation Fund
- Promotion of FPOs Scheme
- National Bee and Honey Mission (NBHM)
- Pradhan Mantri Krishi Sinchai Yojana (PMKSY)
- Agricultural Mechanization ,Changes in Disaster Relief Standards
- Setting up of E-NAM extension Platform
- Improvement in farm produce logistics, and introduction of Kisan Rail
- Creation of a Start-up Eco system in agriculture and allied sector

Challenges in Agri-Tech



Start-ups have recognised market pain spots and developed unique solutions to enhance output and profitability for all parties involved. But due to the country's diverse ecosystem, these businesses may still encounter challenges to grow. The Ministry of Agriculture and Invest India have partnered to host a first-of-its-kind event, The Agriculture Grand Challenge, during the TiEcon Summit in New Delhi on December 15, 2017. They have identified 12 key problem statements for agritech startups to solve which are being faced by Indian farmers. The key problem statements are:

1. Development of a simplified, sensor-based quick testing method to test nutrients and micronutrients in soil
2. Quick solution for eNAM to effectively handle huge lots of agricultural commodities
3. Development of e-Marketplaces.
4. Price forecast system for at the time of sowing
5. Broadcasting Government's Initiatives
6. Yield estimation modeling at the village or farm level
7. Increasing Shelf Life Of Agriculture Produce
8. Use of technology to test adulteration of fresh produce
9. Availability of small agricultural implements/ micronutrients/ certified quality seeds through online/ call center interface- Custom Hiring Centers.
10. Technology to substitute the use of pesticides and insecticides to prevent pre-harvest losses
11. Enhancing Agricultural productivity in India
12. Alternate usage of Paddy Straw



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Summary

Agritech startups aid farmers increase productivity and have made a significant contribution to improving their situation. Investor interest in the agritech sector, in particular, has risen dramatically in recent years. In terms of agritech startup funding, India is now the third-largest recipient. In terms of investment, the agritech sector in India had a banner year in 2021, with agritech start-ups raising around \$500 million. Internet is playing crucial role in the development of these agri-tech services in rural areas with direct access to all schemes and information related to the agriculture. India is well positioned to adapt to changing agricultural techniques and make the shift from traditional business models to agri-tech driven creative business models. Soon we will hope few unicorns from these agritech startups in coming years. The Agritech industry has a lot of room for expansion, and industry experts are predicting enormous gains.

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