UNIVERSITY OF AGRICULTURAL SCIENCES, BANGALORE,
DEPARTMENT OF AGRICULTURAL EXTENSION,
COA, GKVK, BENGALURU-65

2020-21

Seminar I: Agritech startups

Redefining Indian agriculture

Submitted To: Seminar Teachers

Dr. B. Krishnamurthy,
Professor & Head,
Dr. S. Ganesamoorthi,
Assoc. Professor,
Dept. of Agril. Extension.

Submitted By: SHAILESH
PALB 9167, *Sr. M.Sc.*
Dept. of Agril. Extension

CONTENTS

Sl. No.	Particulars	Page No.
1.	Introduction	1
2.	Objectives	2
3.	Concepts related to startups	2-6
4.	Untapped agritech opportunity	6-7
5.	Agritech stakeholder ecosystem	7-8
6.	New emerging business opportunities in agritech	8-10
7.	Government support / Incubators /Accelerators	11-17
8.	Bottlenecks for Indian agritech startups	17-19
9.	Recommendations	19-20
10.	Agritech case studies	20-22
11.	Research studies	23
12.	Summary	24
13.	References	24
14.	Discussion	24-25
15.	Synopsis	26-27

1. Introduction

Agriculture has always been called the backbone of Indian economy, supporting the livelihoods of the majority of the population. Although India has a significant presence internationally in terms of production of key cereals, pulses, fruits, vegetables and animal products, at the same time, productivity is fairly low. Despite a conducive policy environment and strong demand pull for the sector, key challenges plaguing the sector involve smaller holding size, dismal primary and secondary processing infrastructure, a convoluted supply chain with multiple levels and intermediaries, and limited last mile delivery of services, to name a few.

India holds the record for the second-largest agricultural land in the world, with around 60% rural Indian households making their living from agriculture. The agricultural sector in India employs half of our population and we are greatly dependent on the farmers and agricultural labourers to provide us with a means of sustenance. Yet, this is one of the riskiest sectors to be employed in because it is dependent on uncontrollable factors like weather, market fluctuations and topographical conditions. Efforts are being made to give this sector and its workers a much-needed boost. And the biggest way of doing this is through advancements in agriculture technology. Modern techniques and methods will surely elevate agriculture to the next level and ease the burden on farmers. This therefore creates a huge scope for agriculture startups in the country. Transformation of agriculture to agri-business is one of the important strategies where enterprising farmers practice profitable agriculture.

Over the last decade, the sector is being streamed with the stream of educated youth, fired by the ideas, passion and innovations to launch newer kinds of technology and business models to lift the face of agriculture from primitive to hi-tech one. Agritech startups are providing relevant and innovative solutions to a number of challenges faced all across the agricultural value chain. A new wave of budding entrepreneurs and emerging startups in the country are leading the way in disrupting the age old agriculture system with innovative ideas and affordable solutions. These startups are providing missing links in the agri value chain and delivering efficient products, technologies and services to the farmers on one hand and the consumers on the other hand, From ICT apps to farm automation and from weather forecasting to drone use and from inputs retailing and equipment renting to online vegetable marketing, and from smart poultry and dairy ventures to smart agriculture and from protected cultivation to innovative food processing and packaging, its proliferation of all innovations and technology driven powerful startups set to revolutionize the food and agriculture sector.

2. Objectives

1) To know the concept of startup and current scenario of agritech startups
2) To know the government support/incubators/accelerators related to agritech startups
3) To understand the bottlenecks for agritech startups in India
4) Case studies highlighting innovative agritech solutions

3. Concepts related to startup

3.1 Startup

The Oxford Dictionary defines startup as "a newly established business" while according to Merriam-Webster, startup means "the act or an instance of setting in operation or motion" or "a fledging business enterprise". At present the word startup can be defined in several manners and according to different circumstances, but according to Investopedia, "a startup is a young company that is just beginning to develop. Startups are usually small and initially financed and operated by a handful of founders or one individual. These companies offer a product or service that is not currently being offered elsewhere in the market, or that the founders believe is being offered in an inferior manner".

The Department of Industrial Policy and Promotion (DIPP) defines a startup as an entity established

- Not prior to **ten years** with annual turnover not exceeding **INR 25 crore** in any preceding financial years
- Working towards innovation, development or improvement of products or processes or services, or if it is a scalable business model with a high potential of employment generation or wealth creation
- Provided that such entity is not formed by splitting up, or reconstruction, of a business already in existence.
- Provided further that a Startup shall be eligible for tax benefits only after it has obtained certification from the Inter-Ministerial Board, setup for such purpose.

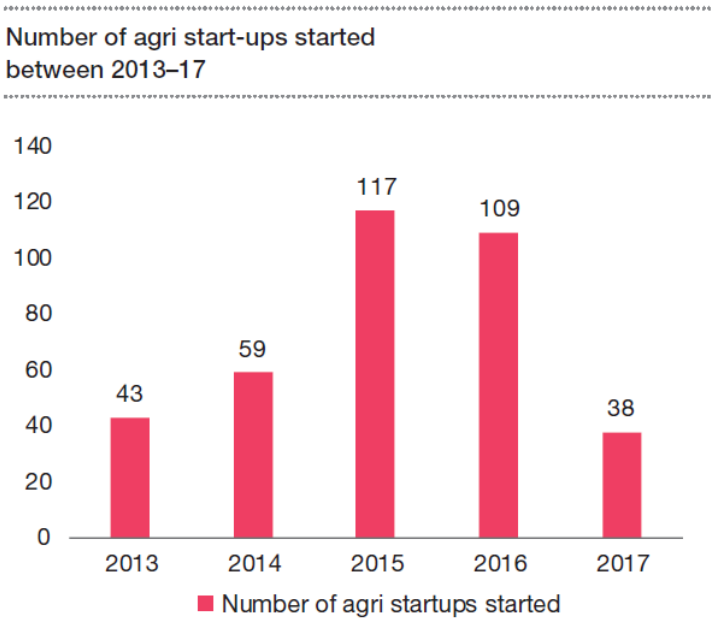
3.2 Startup development phases

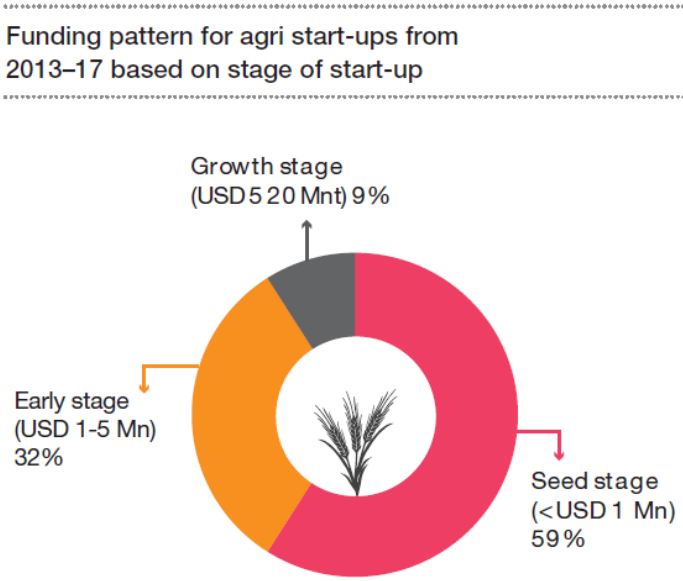
Stages	Name	Key Features of Development
Stage I	Ideation	• Entrepreneurial ambition of the founder(s) • Potential development of the product or service idea for a big enough target market • Some initial business models and ideas on how the idea would create value or make money • Presence of single person or a vague team • No confirmed roles or commitment in the team structure yet.
Stage II	Concept development	• Defining of mission and vision of the startup with initial strategy • Setting up of key milestones and goals for next few years • Formation of core team consisting of co-founders with complementary skills and ownership plan and rights • Inclusion of some additional members for the requirement specific skill sets along with ownership.
Stage III	Commitment	• Committed skills balanced founding team sharing same vision, values and attitudes • Building the MVP or Minimum Viable Product for the users to test their business idea • Signing of SHA: Shareholder Agreement among the co-founders ✓ It includes milestones that need to be achieved ✓ Commitment of time and money shared by each shareholder ✓ SHA signed for next three years with vesting terms
Stage IV	Validation	• Most important stage from the point of view of the founder(s), employees, initial customers and angel investors through initial user growth • Initial Key Performance Indicators (KPIs) identified • Founders are struggling to find the right product strategy & brand positioning that would allow them to attract potential Series A/B venture investment • Most of the startups lose their plot during this stage of business.
Stage V	Scaling up	• Focus on KPI based growth in terms of users, customers and revenues or market share in the target market • Potential to grow fast • Received series A funding for the startup • Maximum time involved in hiring resources, improvement and distribution of product to target population and implementing new or established process.

Stage VI	Establishment of startup	• Have achieved great growth that can be expected to continue • Easy to attract funding and customers now • Depending on vision, mission and goals will continue to function "like a startup" • Founder(s) or Investors may decide to exit or continue with the company

3.3 Agri startup

Start up in the field of Agriculture and its allied sector is called as Agri Startup.





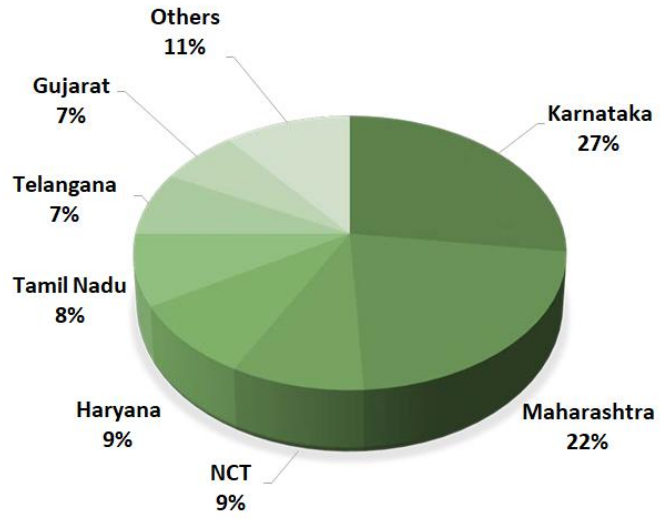
Source: Agritech in India, maxing India farm output, June 2018, NASSCOM and PwC analysis

- A total of 366 agri-based start-ups have come up from 2013 to 2017.
- More than 50% of the start-ups in the last 5 years were started in 2015 and 2016

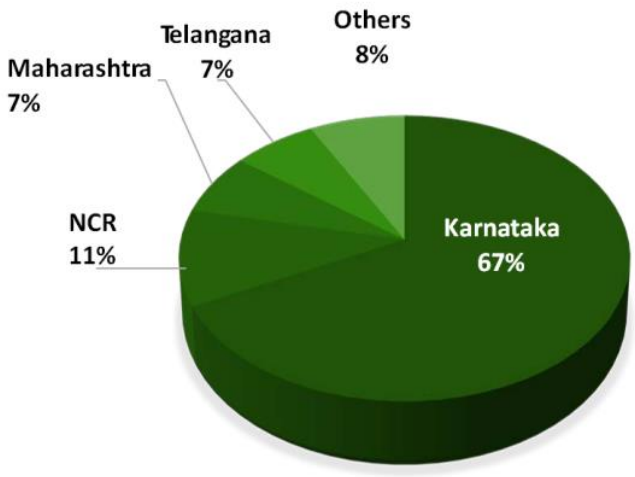
- Many agritech startups are targeting breakeven due to continued interest from investors for further rounds of funding
- 90%+ of all funding is focused on seed stage and early stage start-ups; there is an increased focus on quality and scale-up.

3.4 Agritech startup

Agritech startup is defined as an individual or segment of companies using technology in the field of agriculture leading to increase in productivity, efficiency and output. Agritech can be applied across the agricultural value chain and can be in the form of a product, a service or an application.



Key Indian states focusing on agritech startups (2013-2017)



State wise Funding (2013-2017)

Source: Agritech in India, maxing India farm output, June 2018, NASSCOM and PwC analysis

- Karnataka and Maharashtra together account for almost 50% of the total agritech startups opened in past 5 years.
- Karnataka accounts for two-third of total funding received by startups.

3.5 Agritech India Industry Summary

There are about 450 agritech startups in India, growing at the rate of 25% YoY. According to NITI Ayog Karnataka is the most innovative state for the second time. Bangalore has around 155 agritech startups and has third highest number of tech startups among the global cities. Therefore it is called as "Indian startup hub".

- ~35 startups established in 2018.
- USD ~73mn funding received in 2018.
- USD ~248mn funding received till June 2019.
- >70% of funding at Seed stage.
- >60% funding to market linkage sector.

Ninjacart, AgroStar, Stellapps, Jumbotail, Cropin are top 5 funded startups in 2018.

3.6 Agritech is make in India for the world

Globally there are 3103 agritech startups, among which 450 are present in India. Which implies every 9^{th} agritech startup in the world is from India. There is only one technology unicorn globally. With recent rise in funding, 48% Agritech CEOs believe to have next Agritech unicorn in coming 3 years. Globally funding growth is 2X as compared to 10X growth in India from 2013-14 to 2017-18. Global funds have directly invested in Agritech startups and sector focused funds. Multilaterals, such as, WEF and ADB have shown interest too. Less than five global Agritech companies ventured in India, as compared to >25 Indian Agritech companies with global presence.

4. Untapped agritech opportunity

Employment Rationalization

Agriculture sector employs 50% of India's workforce but contributes only 18% of the GDP. Solutions that enable farm automation and aggregation will rationalize and gainfully redistribute the workforce.

Example: EM3, Goldfarm

Stakeholder Empowerment

Mandis and FPOs need digitization to bring more transparency into transactions. Farmers need more sales channels. Data and market connects can empower each stakeholder.

Example: Samudra Network, Farmsurge

Streamlining Supply Chain

Post-harvest loss in India amounts to USD 13 billion. Demand driven cold chains, warehouse monitoring solutions and market linkage can significantly increase farmer incomes.

Example: Yuktix, Agrosta

Processing and Exports

India ranks among top 5 countries in food processing. By 2024, the sector will employ 9mn. Organised sector has only 60% share. Streamlining and traceability can improve farmer income and exports.

Example: Our Food, Jivabhumi

Resource Maximization

80% of India's fresh water is used in agriculture. Similar figures for China are 65% and 70% globally. Reduction in usage of water and pesticides is a significant business opportunity.

Example: Kisanraja

The Digital Infrastructure

There is an acute lack of data and insights at ground and farmer level. Along with laying the digital work, solutions that build a layer of data will transform DBT schemes, insurance and loan disbursal.

Example: farMART, Gramcover

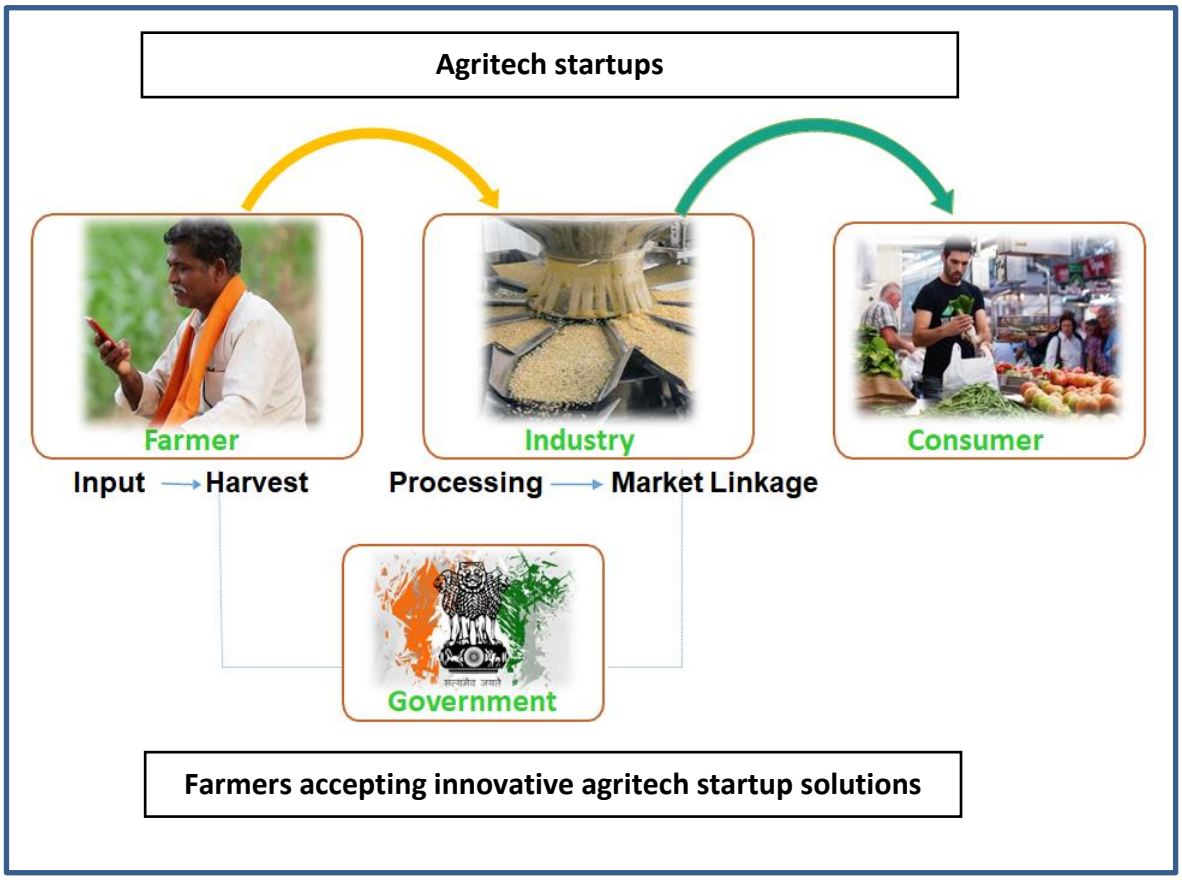
5. Agritech Stakeholder Ecosystem

❖ **Farmers**

- Deepening digital penetration with **200+ mn active users** helping farmers access to technology.
- •**1.7X increase** in average farmer income in last decade enabling farmers to trying new tech solutions.

❖ **Agritech startups**

- **~450 agritech startups** in India, growing at 25% YoY.
- Agritech start-ups received **USD 248mn in first 6 months of 2019**, ~300% more than total 2018 funding.



6. New emerging business opportunities in Agritech

6.1 Better Access to Inputs

Providing farmers better access to agricultural inputs at their doorsteps; it helps farmers to understand the best input product to increase the yield and productivity. Mobile apps, Analytics, ecommerce are some of the technological interventions under this sector.

Business Attractiveness

- Access to Quality seeds: Quality of seed accounts for 20%-25% of productivity.
- Quality Fertilizers: 70% agriculture growth depends on fertilizer quality.
- Offer door to door delivery, makes farmers more interested in this business area.

Landscape

6.2 Farming as a Service: Making services affordable to small and marginal farmers

Farming as a Service offers affordable technology solutions to farmers for efficient farming by converting fixed cost to variable cost. App based platforms are used for providing services to farmers.

Business Attractiveness

- Buying agricultural equipments requires huge money making it difficult for farmer.
- A cyclic business model, as farmers need equipment's on regular basis.
- 75% of farmers own less than 1 hectare of land hence making it difficult to own equipment's.

Landscape

6.3 Digital Agriculture: Driving transparency, traceability and real time access to information

Digital / Precision Agriculture based businesses offers innovative technology solutions for increasing crop productivity and farming process efficiency. Drones, IoT Sensors, blockchain, image sensing, analytics, machine learning are some of the technological interventions under this sector.

Business Attractiveness

- Improve yield and increases productivity.
- Leads to data generation which can be used for forecasting.
- Cost saving by offering better prediction techniques.

Landscape

6.4 Market Linkage: Improving Supply Chain

Market Linkage provides a digital platform which connects farm output with the customer; it is one of the easiest ways to take farmers products directly to the end customer. App based platform, image sensing for quality grading, IoT based storage monitoring are some of the technological interventions under this sector.

Business Attractiveness

- Directly taking farm output to Consumer.
- Huge customer traction can be seen in this business area.
- Received highest funding among all other business areas.
- Helps in reducing post-harvest losses with stand at 4% to 16% of total output.

Landscape

6.5 Financing: Innovations taking roots in farmer financing

Farmers in India struggle to get finance but agritech based financing startups help such underserved community of farmers to get loans quickly. App based platforms, analytics, data science are some of the technological interventions under this sector.

Business Attractiveness

- Raising funds, the biggest challenge of Indian farmers.
- A solution for millions, hence scalable.
- Farmers do not have good credit history which makes it difficult for them to raise funds through traditional channels.

Landscape

7. Government Support / Incubators / Accelerators

India has been very active in creating a healthy startup ecosystem, and the growth in the number of startups is increasing year on year. In fact, it is among the top five startup communities in the world. The Government of India decided to boost the startup ecosystem in the country and help India become a nation of job creators rather than job seekers. The Government through various initiatives and policies aims to empower startups to grow through innovation and design and to accelerate spreading of the startup movement. National start-up policies have started to show on-ground impact. Multiple enabling policies have been implemented to support startups, their early take off and successful operations.

GOI announced a **four point strategy** to support agriculture in India i.e., reducing cultivation costs, ensuring profitable prices, creating non-farm source, processing farm wastes. Apart from four point strategy GOI have specifically focused to support start-ups in this area through start-up India.

Startup India is a flagship initiative of the Government of India, which aims to build a strong ecosystem for nurturing innovation and start-ups in the country, to drive sustainable economic growth and generate large-scale employment opportunities.

Through this initiative, the government aims to empower start-ups to grow through innovation and design. The Startup India initiative is based on the following three pillars:

- Simplification and handholding.
- Funding support and incentives.
- Industry-academia partnership and incubation.

7.1 Incentive schemes to support start-ups in agriculture and technology

ASPIRE

Aspire has been launched by the Indian government to set up a network of technology centres, incubation centres and also to promote start-ups for innovation and entrepreneurship in rural and agriculture-based industry.

https://msme.gov.in/sites/default/files/ASPIRE_EN.pdf

NewGen Innovation and Entrepreneurship Development Centre (NewGen IEDC)

The National Science & Technology Entrepreneurship Development Board start-up scheme by Indian government will provide a limited, one-time, non-recurring financial assistance, up to a maximum of INR 25 Lakhs.

http://www.newgeniedc-edii.in/

The quantum of SFAC Venture Capital Assistance will depend on the project cost and will be the lowest of the following: >26% of the promoter's equity and >INR 50 Lakhs.

Provided support for project staff salaries, equipment, supplies and consumables, contingency expenditure, Patent filing charges, outsourcing charges, etc.

http://dst.gov.in/technology-systems-development-programme-tsdp

Science and Engineering Research Board, India

There is no upper limit (or even lower limit) for a project grant. The budget is decided based on the requirement for its successful implementation.

http://serbonline.in/SERB/emr?HomePage=New

Atal Innovation Mission (AIM) including Self-Employment and Talent Utilization (SETU) is the Government of India's endeavour to promote a culture of innovation and entrepreneurship. Its objective is to serve as a platform for the promotion of world class innovation hubs, grand challenges, start-up businesses and other self-employment activities, particularly in technology driven areas. It has two core components:

- Entrepreneurship promotion through Self-Employment and Talent Utilization (SETU)
- Innovation promotion: to provide a platform where innovative ideas are generated

AIM will provide a grant-in-aid of INR 10Cr to each Atal Incubation Centre for a maximum of five years to cover the capital and operational expenditure cost in running the centre.

Pradhan Mantri MUDRA Yojana

Pradhan Mantri MUDRA Yojana (PMMY) is a scheme launched by the Hon'ble Prime Minister on April 8, 2015 for providing loans up to 10 lakh to the non-corporate, non-farm small/micro enterprises. These loans are classified as MUDRA loans under PMMY. These loans are given by Commercial Banks, RRBs, Small Finance Banks, MFIs and NBFCs.

Under the aegis of Pradhan Mantri Mudra Yojana (PMMY), MUDRA has created products/ schemes. The interventions have been named 'Shishu', 'Kishore' and 'Tarun' to signify the stage of growth / development and funding needs of the beneficiary micro unit / entrepreneur and also provide a reference point for the next phase of graduation / growth to look forward to :

- Shishu : covering loans upto 50,000/-
- Kishor : covering loans above 50,000/- and upto 5 lakh
- Tarun : covering loans above 5 lakh and upto 10 lakh

With an objective to promote entrepreneurship among the new generation aspiring youth, it is ensured that more focus is given to Shishu Category Units and then Kishore and Tarun categories.

Within the framework and overall objective of development and growth of micro enterprises sector under Shishu, Kishore and Tarun, the products being offered by MUDRA are so designed, to meet requirements of different sectors / business activities as well as business/ entrepreneur segments.

Agriculture Grand Challenge

In order to promote innovation and entrepreneurship in agriculture, a Grand Challenge was launched. The objective of Agriculture Grand Challenge was to create opportunity for agritech startups with a commercially viable solution to solve for innovative challenges in Agriculture and to support the technology base by funding and mentoring the best fundamental concepts, while helping talented and creative innovators to pursue promising avenues at the frontier of technology. Ministry of Agriculture, Govt. of India is looking for new concepts & innovations in 12 different areas. The challenge would provide startups with access to priority infrastructure, and make Agriculture an attractive sector for the country's best brains.

How can agri startups benefit?

A joint initiative by Ministry of Agriculture and Startup India Hub, the programme is designed for budding agri entrepreneurs as well as existing agri startup founders. Early-stage startups can apply for the idea stage whereas others can apply for ready-market stage. Twelve startups from each of the early stage, and ready-market stages (24 in total) would be selected to address the 12 themes (key problems) at the programme.

The idea-stage startups will get three-month incubation support to go from idea to prototype, with hand-holding from experts of agriculture sector and real-time testing of proof

of concept. The ready-market solutions will get to be part of a three-month market access programme aimed at easy adoption of their innovation, mentoring by domain experts, and easy access to agriculture market. Apart from the 24 startups that are selected for the programme, the remaining participants will get to be part of a series of agri-master classes. These would be organised across the country to provide networking and mentoring opportunity to agritech startups.

7.2 Karnataka Startup Policy

Vision: To create a world-class startup ecosystem in the state through strategic investment and policy interventions leveraging the robust innovation climate.

Goals:

- Stimulate the growth of 20,000 technology based startups including 6,000 product startups by 2020 in Karnataka.
- Achieve creation of 6 lakh direct and 12 lakh indirect new employments in the sector.
- Mobilize Rs.2,000 Cr funding for investment in startups through Government intervention alone, by leveraging the Fund of Funds proposed to be put in place by the State Government.
- Facilitate generation of at least 25 Innovative Technology solutions with a social impact in sectors like Health care, Food Security, Clean environment and Education for all etc.

Strategies:

Fostering strong partnerships between R&D institutions and industry

- Set up a Society or Section 8 company.
- Equipments and Viability Gap funding.
- Industry-Academia connect and Project Funding.

Providing early stage/idea2poc (proof of concept) funding

- Grants up to Rs.50 L.
- Validation of Proof of Concept.
- Virtual Incubation.

Encouraging entrepreneurship in education through NAIN

- Support given to professional and post graduate colleges in tier-II and tier-III cities for setting up the incubator.
- 10 student projects funded in each partner institute.
- Mentor connects provided to student projects.

Creating incubation infrastructure through PPP

- Selection of partners will happen through RFPs or with Industry Associations.
- Infrastructure support, mentoring, legal & accounting services will be offered to incubatees.
- Partners will help implement incentives and benefits to startups.

Channelizing innovation for social impact

- Challenges will be announced every year.
- Initial and follow on funding will be given based on achievement of milestones.
- Pilots will be implemented through departments.
- Winners will be provided with incubation space on a preferential basis.

Startup funding through fund of funds

- A fund manager will be selected.
- The investment committee will consist of experts from industry academia and industry.
- The fund will focus exclusively on startups.

Promoting capacity building through exposure visits and workshops

- Join the Karnataka Startup Cell at global conferences to expand your markets.
- Meet incoming trade delegations and foreign investors with the Karnataka Startup Cell.

Providing state support in the form of incentives and concessions

- Collect reimbursement of VAT and CST for early stage startups.
- Collect reimbursements on Patent spends for both domestic and foreign filings.
- Collect reimbursement on marketing expenditure upto 30% of the cost incurred subject to 5 Lakhs per startup annually.
- 10% reservation for women in seats of partner incubators.
- Self-Certification under various enactments.

7.3 Key agritech focused Incubators and Accelerators

Centre for Innovation Incubation and Entrepreneurship (CIIE)	• CIIE is a collective of interventions in the space of innovation-driven entrepreneurship in India. • It has its genesis at the Centre for Innovation Incubation and Entrepreneurship ("Centre"), IIM Ahmedabad - an academic center focused on research in innovation and entrepreneurship. CIIE continues to support the research and learning undertaken by the Centre. • The impact of CIIE includes 500 ventures trained, incubate

	or accelerated, 3000 jobs generated, 100 startups seed funded and many more. It has launched a food and agri-business accelerator in partnership with a-IDEA - the business incubator at National Academy of Agricultural Research Management (NAARM).
a-IDEA (Association for Innovation Development of Entrepreneurship in Agriculture)	• a-IDEA (Association for Innovation Development of Entrepreneurship in Agriculture), is a Technology Business Incubator (TBI) hosted by ICAR-National Academy of Agricultural Research Management, Hyderabad (ICAR-NAARM) & Department of Science & Technology, Govt. of India (DST, GOI). • a-IDEA has been housed in the Centre for Agri-Innovation at ICAR-NAARM for fostering innovation and entrepreneurship in agriculture in India. • a-IDEA aims to help entrepreneurs ideate, incubate and accelerate their innovative early stage startups that are scalable to become competitive food and agri-business ventures through capacity building, mentoring , networking and advisory support.
International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)	• In December 2002, the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), a non-profit organization, joined forces with the Department of Science & Technology (DST), an Indian government agency, to develop an agribusiness incubator (ABI) at ICRISAT. • The incubator is supported by DST's National Science and Technology Entrepreneurship Development Board, which promotes the development and commercialization of indigenous technologies by providing financial assistance through public-private partnerships. ICRISAT launched Innovation Hub (iHub) to support agricultural tech entrepreneurs, scientists and technology experts can collaborate to innovate cutting edge ideas across the whole agriculture value chain.
Indigram Labs foundation	• Supporting high end start-ups

7.4 Other Incubators and Accelerators focused on agritech

- SIDBI Innovation& Incubation Centre (SIIC)
- Tamil Nadu Agricultural University (TNAU) / Agricultural College and Research Institute (ACRI)
- IIM Calcutta Innovation Park
- Kalinga Institute of Industrial Technology Business Incubator (KIIT-TBI)
- Startup oasis (Jaipur based incubation centre)
- NASSCOM Centre of Excellence for IoT
- UPAYA Social Ventures

7.5 Other Incubators focused on agri startups

- ICAR agri- business incubators
- PUSA krishi incubator (ICAR-IARI)
- CrAdLE (Centre for Advancing & Launching Enterprises)
- EDII Ahmedabad
- N S Raghavan Centre for Entrepreneurial Learning (NSRCEL) at IIM Bangalore
- C- CAMP (Centre for Cellular and Molecular Platforms) UAS Bangalore

8. Bottlenecks for Indian agritech startups

Selling products and technologies to farmers is widely recognised as a big challenge, and it is one area where many start-ups have not figured out a successful model. Aligning with farmers' needs and committing to improve productivity is not an easy task, as getting farmers to acquire the skills required to adopt these technologies involves a lot of effort.

Low Landholding Size

Small land holdings by farmers don't allow mechanization of the farm to be cost effective.

Return for the Investors

Agritech is a long term business which requires patience from investors before generating the return.

Talent Retention

Agritech startups and enterprises are finding it hard to retain technical talent working in this sector.

Long Gestation Period

Farmers will take time to develop full trust in agritech technologies which might affect investors' interest.

Technology Affordability

Farmers' income stills a concern in major parts of India making hard for them to afford the agriculture technology.

Skill Adaptability

Making farmer adaptive of the required skills for working on these technologies requires lot of effort.

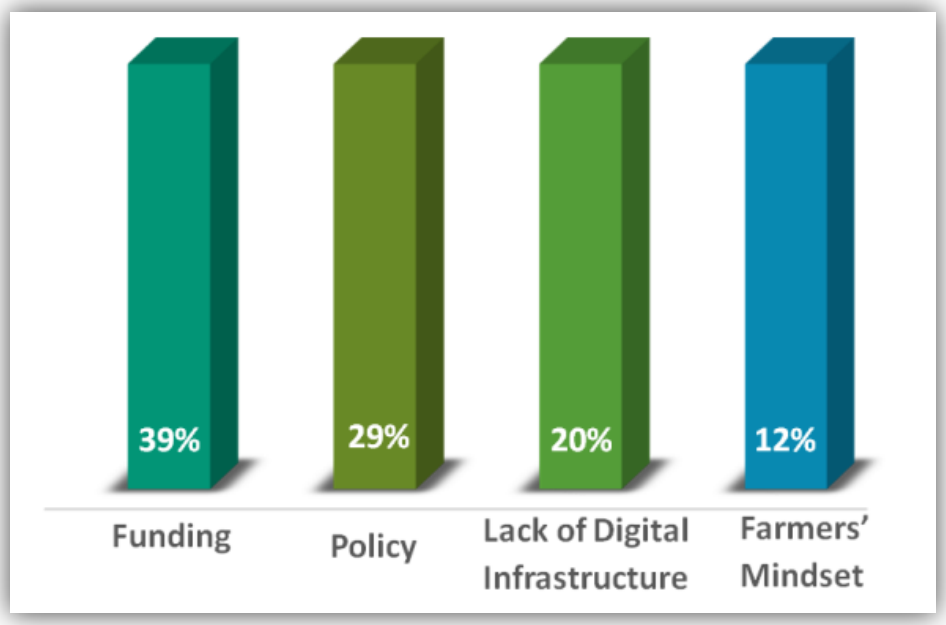
Acquisition of Agritech Companies

In India we see very less of agritech startups being acquired by large businesses which are hindering them in scaling up their levels. Global success stories like Blue River and Climate Corp. got acquired by John Deere and Monsanto respectively.

Regulatory and policy issues

Regulations are favourable, but are complex in nature. Facilitating adoption of proven technologies through subsidy is yet to gain momentum.

Key Challenges for Indian Agritech Firms



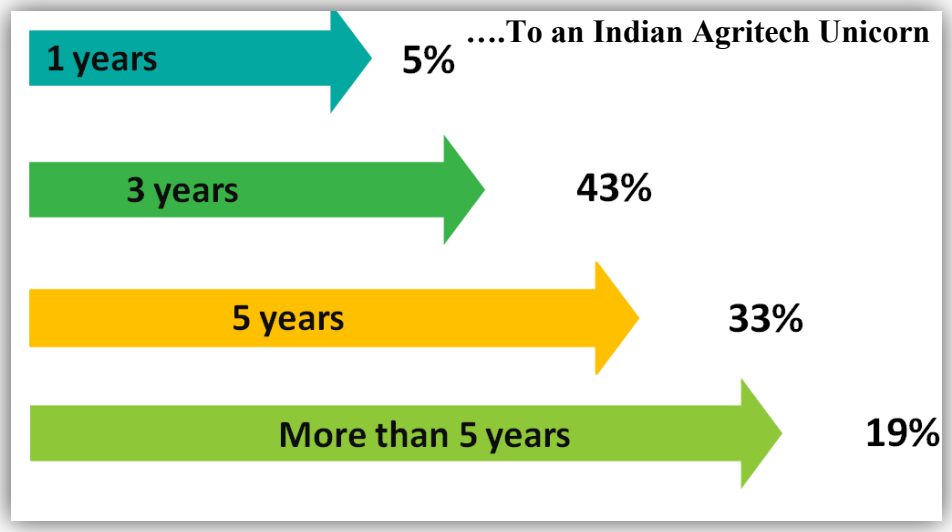
Source: NASSCOM agritech CEO Survey 2019

~40% of Agritech founders feel that raising funds is the biggest challenge

•Funding in H1 2019 is more than H1 2018 funding

•Convincing investors on customer traction remains a challenge as exits seem long drawn

•Agritech based solutions take time to scale and require a mind-set change from VCs



Source: NASSCOM agritech CEO Survey 2019

More than 50% Agritech CEO's do not expect an Indian Agritech unicorn within the next 5 years.

9. Recommendations

- Lack/Ignorance of farmers' usage about smartphones leads to marginal utilization of the startup services mainly provided on mobile based platform/application. Therefore, there is a strong need to develop mobile training programmes to educate farmers and make them capable to adapt new technological advancements especially in using smartphones.
- The startups face a lot of problems regarding the awareness and outreach of their products and services to farmers. In order to make startups successful, it is crucial to enable seamless hybridisation of relevant technology by building a promising 'new-age distribution model'. It is the need-of-hour to develop a new way for the farmer to buy products and get information as well as credit on one unified platform.
- There is a need for the government to help set up agritech-focused incubators and grants which are currently less in number. Also, academia should encourage more entrepreneurs to focus on this growing sector.
- Accelerators, incubators and mentors identified for the agritech startup ecosystem, along with the pronounced policy and schemes, need to work in tandem with the startups to provide the best technical support and reduce their gestation period.
- Banks and financial organisations also need to step up to the challenge and offer more creative models of financing for farmers, entrepreneurs, incubators, and accelerators.
- Governments should provide better incentives to startups that are coming up effective post-harvest management infrastructure such as storage, preservation, cold chain and refrigerated transportation.

- States with the presence of emerging and growing startup hubs viz. Telangana, Tamil Nadu, Maharashtra, Kerala, etc. have to come up with favourable policies and implement them soon enough to attract startups and investors similar to Karnataka which is home to majority of Agritech startups.
- Being profit based organization, startups lay their major focus on large and medium farmers. But in order to alter the scenario of the Indian agriculture it will be required of them to emphasize more on small and marginal farmer who form the majority in Indian agriculture.

10. Agritech case studies

10.1 NINJACART- India's largest fresh produce supply chain company

Founded in	2015
Headquarters	Bengaluru, Karnataka
Objective	To provide more income to farmers and less price to retailers by creating an efficient supply chain
Product Name	Ninjacart Mobile App
Technology used	B2B e-Commerce platform, Mobile platform

Core team profile

Name	Designation	Educational Qualification
Mr. Thirukumaran Nagarajan	CEO	IIM-K (PGDM, Finance and Operations); CEG (B.E., Electrical and Electronics)
Mr. Kartheeswaran Kandaswamy	COO	IIM-A (PGP, General Management); CEG (B.E. , CSE)
Mr. Vasudevan Chinnathambi	Co-Founder	SOIL (MBA); SASTRA (B.E., Biotechnology)
Mr. Sharath Loganathan	Co-Founder	IIM-K (PGDM, Marketing & Operations), Anna University (Bachelors in Mechatronics Engineering)
Mr. Ashutosh Vikram	Co-Founder	IIM-K (General Management & Strategy), BIET Jhansi (B.Tech Computer Science)

The problem

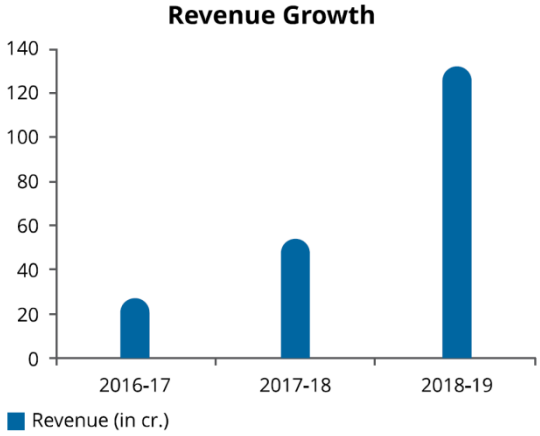
- Farmers experience price risk, information asymmetry about demand, distribution inefficiency, and receive late payments.
- Retailers face problems like higher costs, low quality and unhygienic produce, high price volatility, and the everyday hassle of going to the market.
- The traditional Supply Chain is highly inefficient, unorganized, and has a high rate of food wastage.

Our Solution

- We eliminated intermediaries by taking control of the Supply Chain by using technology and analytics.
- We built reliable, cost-effective, and high-speed logistics and infrastructure to solve for inefficiencies in the Supply Chain.
- On one end, farmers get better prices and consistent demand, and on the other end, retailers receive fresh produce at competitive prices that are delivered to their doorstep.

How it works

Active regions	Operationally present in 7 cities- Bengaluru, Delhi, Pune, Ahmedabad, Chennai, Mumbai, Hyderabad.
Impact	20,000 farmers, serves over 70,000 customers every month, movement of 1400 tonnes of perishables from farms to businesses, every day, in less than 12 hours.
Funding	$34.6 Mn (INR 250 Cr)

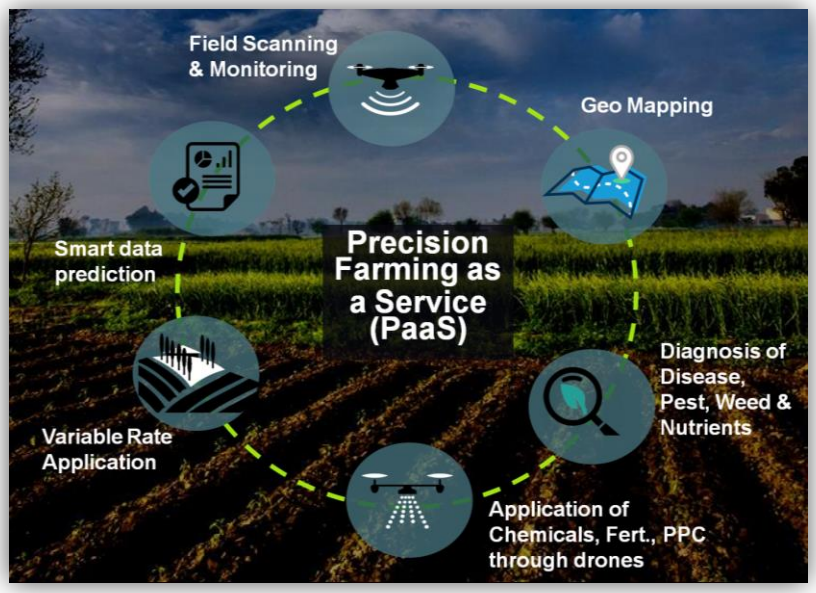


- Company had revenue of INR 27cr. in 2016-17, INR 54cr. in 2017-18 and INR 132cr. in 2018-19.
- The revenue grew at a rate of 388% between 2016 and 2019

10.2 Beegle agritech and agri products pvt. Ltd - Transforming the Future of Farming

Beegle
Transforming the Future of Farming

Founded in	2019
Founders	Havyas K. S. & Nithin Singh
Headquarters	Bengaluru, Karnataka
Product Name	Precision farming as a Service
Technology used	NDVI sensors, Drones
Other services	Hydroponics (home kit and outdoor setup) Hydroponics Training, Consultation



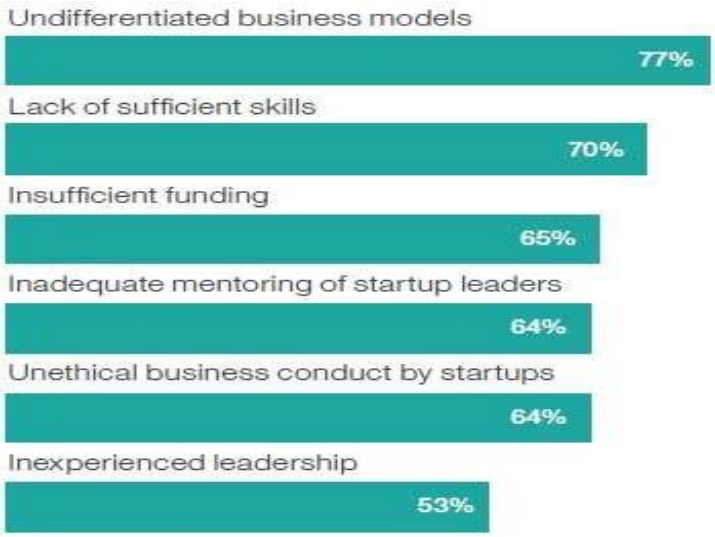
We are solving the problem of excess use of fertilizer and pesticide in farming as well as poor management of other resources throughout the agricultural process, labour issues as well as non-standard method of farming activities.

11. Research studies

Entrepreneurial India: How startups redefine India's economic growth

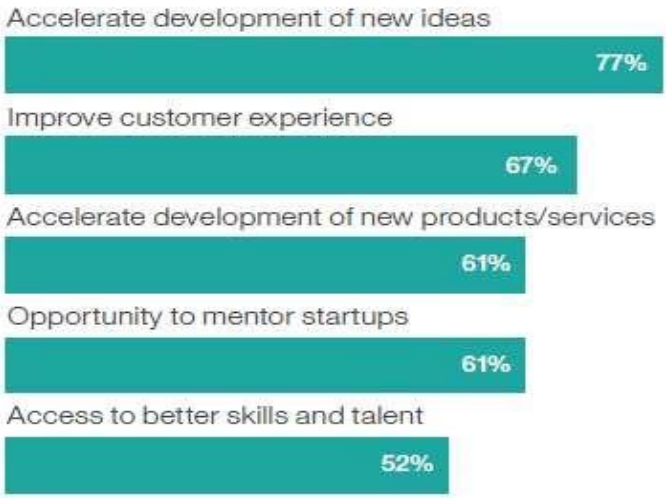
- Mehrotra, N *et al.*, (2016

Major reasons for failure of startups as identified by Venture capitalists



This study reveals that undifferentiated business models (77%), Lack of sufficient skills (70%), insufficient funding (65%), inadequate mentoring of startup leaders (64%), Unethical business conduct by startups (64%), inexperienced leadership (53%) were major reasons for failure of startups as identified by Venture capitalists.

Leaders of established companies identify the benefits of collaborating with startups



Leaders of established companies identified that accelerated development of new ideas (77%), improve customer experience (67%), accelerated development of new products/services (61%), opportunity to mentor startups (61%), access to better skills and talent (52%) are some of the benefits of collaborating with startup.

12. Summary

Over all, the ecosystem for agritech startup in the country is promising. The government through several initiatives such as the RKVY-RAFTAAR and Atal Innovation Mission are playing their part in boosting innovation and entrepreneurship in the sector. Meanwhile, large industry players are also opening up to partnering with startups. Several incubators, venture capital firms are active in India today and there is increasing footprint in terms of financing support, technical assistance, business mentorship, etc. Nonetheless, several factors remain to be addressed towards further enabling the agri tech ecosystem and unleashing the full power of available technological innovations towards improving India's agriculture growth trajectory.

References

ANONYMOUS, 2018, Agri start-ups: Innovations for boosting the future of agriculture in India. Federation of Indian Chambers of Commerce and Industry, New Delhi.

ANONYMOUS, 2018, START-UPS: Transforming India's Food Processing Economy. Federation of Indian Chambers of Commerce and Industry, New Delhi.

ANUPAM ANAND AND SARAVANAN RAJ, 2019, Agritech Startups: The Ray of Hope in Indian Agriculture, National Institute of Agricultural Extension Management.

DEBJANI GHOSH, OM ROUTRAY AND ASHISH GUPTA, 2019, Agritech in India – Emerging Trends in 2019. NASSCOM, Noida.

DEBJANI GHOSH, RAKESH KUMAR AND ASHISH GUPTA, 2018, Agritech in India – Maxing India Farm Output. NASSCOM, Noida.

VIKAS MISHRA AND RITOJA BANU, 2019, AgTIVE 2019 – Agtech innovations for viable enterprises. Confederation of India Industry, New Delhi.

Discussion

1. What kind of assistance is given by MANAGE for agri startups?

Centre for Innovation and Agripreneurship (CIA) is hosted at National Institute of Agricultural Extension Management (MANAGE). It provides a one-stop solution for creating successful ventures in agriculture & allied sectors. Our Agri Innovation Launchpad will empower to fulfil the dreams and create the next big thing in the agricultural sector for aspiring enthusiasts and entrepreneurs.

The centre's main focus is to promote the development of innovative products of Start-ups, which cater to the most disruptive problems in the agricultural sector. It aims at creating

more employment opportunities and wealth creation, thus adding to the inclusive growth of the country's GDP.

Centre had nurtured Agricultural Community with high-value Capacity Building programs that trained about 72,136 professionals, out of which 28,757 have set up their enterprises. The centre aims at taking these agripreneurs to the next level by creating high impact ventures through the incubation centre.

Incubation, Membership, Startup Accelerator, Krishi Vikas – Search for agri innovation, Impulse (Agri-business mentoring programme), RKVY-RAFTAAR, AC&ADP are some of the programmes under CIA.

2. What is the difference between start up India and stand up India schemes?

Start Up India scheme promotes new initiatives and ventures. Whereas Stand Up India Scheme is designed for promoting entrepreneurship among aspiring Women and SC/ST entrepreneurs. Stand up India is one of the core parts of Start-up India scheme in order to encourage the individuals to bring their ideas to life.

3. How many startups are incubated in UAS Bangalore?

Currently nine entrepreneurs with innovative ideas in Agriculture and allied sector have been selected under Agri. Startup programme and 3 incubatees are incubating in UAS under UAS-B – C-CAMP collaborative Agri. Innovation Center programme.

4. Who is the co-ordinator of Agri. Innovation Center, UASB?

Dr. Harinikumar, K. M is the co-ordinator of Agri. Innovation Center, UASB.

5. What is the role of agri tech startups in minimizing the impact of covid-19 on Indian agriculture?

Indian agritech ecosystem, though still at an evolution stage, played an important role in many ways working at both, consumer end and farmer end, to ensure continuity in food and agri supply chains. Governments at the central level and state level have also responded positively with multiple measures and reforms to ease farmer access to markets as well as inputs. There were many agritech startups who pivoted their models and went out of their way to help farmers, FPOs, supply chain players to keep the operations running on the ground.

Agnext (is a revolutionary Artificial Intelligence-based rapid quality testing platform for food-processing businesses, BigHaat (ensure safety, supply of the highest quality inputs), CropIn (comprehensive digital platform to educate farmers, enable them with relevant and timely information and advisories), Ecozen (solar powered cooling system designed to operate reliably in regions with a challenge of quality power supply), Krishitantra (Rapid Automated Soil Testing and Agronomy Advisory service) are some of agritech startups helped in minimizing the impact of covid-19 on Indian agricultur

UNIVERSITY OF AGRICULTURAL SCIENCES, BANGALORE
DEPARTMENT OF AGRILCULTURAL EXTENSION, BENGALURU
CoA, GKVK, BENGALURU-65

Name: SHAILESH
ID No: PALB 9167
Class: Sr. M.Sc.

Date: 29/01/2021
Time: 1.30 PM
Venue: Dwarakinath Hall

Seminar I

Agritech startups – Redefining Indian agriculture

Synopsis

New dimension of entrepreneurship is startup, which plays a key role in communicating innovation in a society. Using innovation these startups are providing simpler solutions to the problems/needs. The startups are equipped with novel ideas, are constantly understaffed, never have enough hours in a day and still possess pragmatic approach which compels them to find new ways to solve the issues. These startups with their innovation have come to the aid of stressed farmers and answering to the problems of Indian Agriculture. The new wave of entrepreneurs and startups has taken upon themselves to lead the way for redefining the agriculture sector in India. These startups want to deploy technology and improve this sector. Agritech startups are such a relevant solution across the agricultural value chain and they can be in the form of a product, a service or an application. MSME is the apex executive policy making body at Government level promoting startups across various sectors including agriculture. It's time to make agritech startups successful and propel India forward as a leader in the agri technology sector too. With this background, the present seminar is conceptualized with the following objectives;

5) To know the concept of startup and current scenario of agritech startups
6) To know the government support/incubators/accelerators related to agritech startups
7) To understand the bottlenecks for agritech startups in India
8) Case studies highlighting innovative agritech solutions

Startup

The Department of Industrial Policy and Promotion (DIPP) defines startup as an entity established Not prior to ten years with annual turnover not exceeding INR 25 crore in any preceding financial years, working towards innovation, development or improvement of products or processes or services or if it is a scalable business model with a high potential of employment generation or wealth creation provided that such entity is not formed by splitting up, or reconstruction, of a business already in existence.

Agritech startup

Agritech startup is defined as an individual or segment of companies using technology in the field of agriculture leading to increase in productivity, efficiency and output. Agritech can be applied across the agricultural value chain and can be in the form of a product, a service or an application.

Agritech path ahead (NASSCOM,2019)

Better Access to Inputs: Taking quality inputs to the farmers for better productivity

Farming as a Service: Making services affordable to small and marginal farmers

Digital Agriculture: Driving transparency, traceability and real time access to information

Market Linkage: Improving Supply Chain and taking farmers product directly to consumers

Financing: Innovations taking roots in farmer financing

Government support

GOI announced a four point strategy to support agriculture in India i.e., reducing cultivation costs, ensuring profitable prices, creating non farm source, processing farm wastes. Apart from four point strategy GOI have specifically focused to support start-ups in this area through start-up India. **Agriculture grand challenge, Atal innovation mission, New Generation Innovation and Entrepreneurship Development Centre, Make in India, SFAC Venture Capital Assistance** is some of the policy intervention of the Government of India. Karnataka also launched startup policy very early (in 2015) in the country with a vision to create world class ecosystem though strategic investment and policy interventions, leveraging the robust innovation climate.

Incubators and accelerators related to agritech startups

IIM Ahmedabad, NAARM, MANAGE, ICRISAT, Indigram Lab Foundation, IIM Calcutta Innovation Park, SIDBI Innovation & Incubation Centre (SIIC), NASSCOM Centre of Excellence for IoT, TNAU, UASB are some of the incubators and accelerators focussing on agritech startups.

Bottlenecks for Indian Agritech firms

Low land holding size, long gestation period, return for the investors, technology affordability, talent retention, skill adaptability, acquisition of agritech companies, government regulations and policies are some of the key challenges for agritech firms.

Case studies and News repors

Ninjacart is a Bangalore based largest Fresh Produce Supply Chain Company of India founded in 2015. By optimizing the supply chain and removing multiple layers of middlemen company is reducing the operational cost and transferring benefits to farmers while making produce cheaper to end customers. Currently, Supply Chain is equipped to move 1400 tonnes of perishables from farms to businesses, every day, in less than 12 hours. Company received a funding of INR 250Cr. in 2018 and revenue of 132Cr. in 2018-19

Agritech startups reap 9 – fold investment growth. Investments in agritech sector shot upto $430.6 billion till March from $45.8 billion five years ago. (Eco Times, pg 04, 12.12.20)

Conclusion:

Overall, the ecosystem for agritech startup in the country is promising. The government, through several initiatives playing their part in boosting innovation and entrepreneurship in the sector. Several incubators and venture capital firms are active increasing foot prints in terms of financial support, technical assistance, business mentorship etc. Never the less several factors remain to be addressed towards further enabling the agritech ecosystem and unleashing the full power of available technological innovations towards improving India's agriculture growth.

References:

DEBJANI GHOSH, OM ROUTRAY AND ASHISH GUPTA, 2019, Agritech in India – Emerging Trends in 2019. NASSCOM, Noida, pp:13-18.

VIKAS MISHRA AND RITOJA BANU, 2019, AgTIVE 2019 – Agtech innovations for viable enterprises. Confederation of India Industry, New Delhi.