



Status and performance of agri startup ecosystem: Insights for plantation crops

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Abstract

The spurt in startup activities is witnessed due to India's robust entrepreneurial growth driven by expanding economic opportunities, venture capital availability, incubator development, and a skilled talent pool. Agriculture substantially attracted startups to drive entrepreneurship. This study examines the performance of startup entrepreneurs by interviewing 100 of them during 2025-2026 during their visits to ICAR-CPCRI and exhibitions at different locations across the country. Most of the startups (42 %) were less than 3 years old, operating in semi-urban areas (70%) and belonged to private limited ownership (48%). They comprised predominantly of agritech sector (47%) followed by food processing (18%). Majority of the startup companies (58%) employed upto 5 employees. In service portfolio, most of the startups provide training (43%) and advisory services (58%) and in product portfolio, value added products (47%) were dominated followed by organic agriculture products (38%). More than half of the respondents (54%) used an advanced technology for better efficiency followed a superior user experience (47%). Majority of the challenges lie in acquiring early customers (61%) followed by securing funding (58%). The adoption of digital platforms and advancements in supply chain technology can further enable startups to reach urban and rural markets alike. Startup entrepreneurs have the potential to significantly impact the plantation sector and the economy at large by utilizing technology, embracing sustainable practices, and capitalizing on market demand.

Keywords: Agri startup, plantation crops, incubation, entrepreneurship

Introduction

Agriculture and allied industries are primary source of income for the vast rural areas in India. In present context, agriculture is examined as an entrepreneurial endeavour in R & D, innovation and other business facets. Its future depends on this process and every effort is directed towards harnessing existing and emerging challenges into opportunities. India's robust entrepreneurial growth is driven by economic expansion, venture capital availability, incubator development, and a skilled talent pool, fuelling the rise in startup activity from 5.3% in 2020 to 11.5% in 2022–2023 (Global Entrepreneurship Monitor, 2024). Agritech sector provides a strong pillar for building a sustainable future (Kumar et al, 2025). In recent years, there has been a surge in agritech startups which shows 'Ray of Hope' as they encompass all business activities

from production to consumption, processing and distribution to end consumers (Singh, 2021). Srinivasa *et al* (2024) reported three major trends in Indian agritech ecosystem namely increased investments in agriculture, a surge in digital literacy in Tier 2 and Tier 3 cities and the rise of *Farming-as-a-Service (FaaS)*. The number of Department for Promotion of Industry and Internal Trade (DPIIT)-recognized startups grew to over 1.59 lakh, with more than 51% originating from Tier-II and Tier-III cities. While the number of agritech startups recognized by DPIIT varies by source, as of late 2023, there were over 6,000 agriculture startups and around 2,800 specifically designated Agri-Tech startups recognized under the initiative.

Nonetheless, it continues to be largely disorganized and fragmented, featuring multiple levels of intermediaries and the middlemen

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throughout the value chain. It is becoming more and more evident that agritech startups can provide relevant and innovative solutions to the challenges faced across the agricultural value chain. It is important for startups in agriculture and allied sector to stay focused on their mission of self-reliance and sustainability, building on the successes of the past. Therefore, this study aimed to understand the current status and performance of agri startups so that further strategies can be fine-tuned to build a strong and resilient agricultural nation.

Research Methodology

The study was conducted in 2025-2026 with 100 startup entrepreneurs who already established the enterprises. They were interviewed during their visit to ICAR-CPCRI and Business meets as well as exhibitions at different locations of the country. A set of parameters were developed in consultation of experts working in the field of Plantation Crops and other facets of agriculture. They are listed as below along with explanation of chosen parameters in Table 1:

The data were gathered through personal interaction with semi-structured interview schedule and analysed using frequency and percentage.

Results and Discussion

Future of Indian agriculture lies in strong startup culture and ecosystem in the country. Large number of ideas are coming from non-agriculture background aspirants who wish to apply their ideas and capital. It is important to understand the profile of already existing entrepreneurs, their products, strategies, challenges, risks and models operated by them. This would give a lead to aspiring entrepreneurs who wish to pursue agri entrepreneurship as career.

Most of the startups (42 %) belonged to less than 3 years followed by 35 percent with more than 5 years (Table 2). This indicates the recent beginning of many startup firms. Vast majority (70 %) of the firms was established in semi-urban areas with a view to tap potential customers. Here, incentives should be spruced up in rural areas to attract more number of potential and aspiring entrepreneurs. About half of startup (48%) belonged to private limited ownership followed by 38 percent as sole proprietorship. This might attract capital for the startup.

Among the four stages of startup, three- fourth of the startup (73%) attained scaling stage. Most of the startup companies belonged to agritech sector

Table 1. Operational definition of the parameters taken for the study

S. No	Parameter	Explanation
1	Age of startup	Age denotes the date of the official registration or date on which the company began operations or number of years since its founding
2	Location of startup	It is the place of establishment of the startup
3	Type of ownership	Legal and managerial control held by the individual or group, or entities over the business including decision-making authority, financial stakes and operational responsibilities
4	Sector of the startup	Specific category of the startup whose operations pertain to agriculture or allied enterprises
5	Current stage of startup	The phase in which the startup was operating at the time of data collection
6	Annual turnover	It is the total gross revenue (or income) a business generates from its core operations such as selling goods or services over a 12-month financial year
7	Customer segmentation	The practice of selecting the target customers of the products / services offered by the startups during the survey
8	Number of employees	The number of employees is a key business metric representing the total count of individuals working for a startup including full-time, part-time, and sometimes contract staff at a specific time.
9	Portfolio of the startup	The major services and / or products offered by the startup to the end users at the time of data collection.

Table 2. Profile of startup companies

S. No	Profile of startup companies	Percentage
1	Age of the startups (years)	
	< 3	42
	3-5	23
	>5	35
2	Location	
	Rural	9
	Urban	21
	Semi-urban	70
3	Type of ownership	
	Sole proprietorship	38
	Government partnership	5
	Private limited	48
	Limited liability partnership	9
4	Stage of the startup	
	Ideation	5
	Validation	5
	Early traction	18
	Scaling	73
5	Sector of the startup	
	Agritech	47
	Food processing	18
	Agri-biotech	5
	Dairy	5
	Organic	10
	Others (Handloom, Packaging, export)	15
6	Customer segmentation*	
	Farmers	66
	Consumers	74
	Traders	45
7	Employees (Numbers)	
	Upto 5	58
	6-10	26
	>10	16

*Multiple responses

(47%) followed by food processing (18%). The startup cater the needs of multiple customers such as farmers (66%), consumers (74%) and traders (45%). More than half of the startup companies (58%) employed up to 5 employees followed by startup with 6-10 employees (26%) and more than 10 employees (16%). Since most of the startups are of recent origin, there is a gradual growth in the size of startup and thereby engage employees with less than 5 numbers. When the business volume expands, then there is a likelihood of enhancing more number of employees.

Major startup companies preferred to locate in urban or semi urban areas due to the facilities like physical infrastructure, reliable internet, connectivity, transport networks and access to co working spaces, incubators and academic institutions which are essential for the functioning and growth of startups. Most of the startups belonged to private limited ownership as they can have easy ownership transfers through the sale or acquisition of shares, restricted liability for shareholders and a reputation for credibility among the stakeholders. The dominance of startups in the scaling stage suggests that the entrepreneurs try to strengthen the existing business models, expanding their operations, customer base and market presence. The startup eco system serves a well balanced mix of end users, intermediaries and producers.

Table 3. Portfolio of the startups in agriculture

S. No	Parameters*	Percentage
1.	Service portfolio	
	Training	43
	Advisory services	58
	Digitalized services	4
	Export services	5
	E. commerce platform	5
2.	Products portfolio	
	Precision agriculture	21
	Bio inputs	21
	Value added products	47
	Organic agriculture products	38
	Mobile application	5
	Waste to value products	5
	Others (Agri commodities selling, Plant based cosmetic, eco-friendly cups)	15

*Multiple responses

The portfolio of startup firms are divided into two categories namely service portfolio and product portfolio. In service portfolio, most of the startups provide training (43%) and advisory services (58%). Since most of the ventures operate in agritech and food tech, guiding farmers and customers on new technologies has become essential (Table 3). Startup prioritize direct field support over digital expansion. In product portfolio, value added products (47%) were dominated followed by organic agriculture products (38%) and precision agriculture and bio inputs each with 21 %.

Since advisory services are prelude to convince the potential customers and awareness and knowledge buildup are essential to create interest in the products of startups, they predominantly find their place in service portfolio. If income of the farmers is to be improved from existing farm enterprises, value added products and organic products provide ample opportunities (Ponnusamy 2013). Most of the startups are strongly agriculture and farmer focused. The presence of organic products and precision tools adds to a balanced yet consumer-oriented product environment. The emerging presence of agricultural inputs, mobile applications and waste to value innovations indicates that startups are gradually diversifying towards digital agriculture and sustainable solutions.

Table 4. Economic profile of the startup in agriculture

S. No	Parameters	Percentage
1.	Capital investment (Rs.)	
	Up to 2 lakhs	12
	2 to 10 lakhs	21
	10 to 50 lakhs	59
	>50 lakhs	08
2.	Credit Sources*	
	Incubators	19
	Banks	26
	Government grants	39
	Venture capitalists	10
	Bootstrapping (Own money)	92
	Family friends	10
	Angel investors	5
3.	Funding stages	
	Pre seed funding	10
	Seed funding	78
	Seed funding B funding	12
4.	Annual income (in Rs.)	
	< 1 lakhs	20
	1-5 lakhs	60
	>5 lakhs	20

*Multiple responses

Investment capacity of startup entrepreneur is essential for sustainability of venture. In this study 59% of respondents invested an amount ranging between Rs.10 and 50 lakhs followed by 21 % between Rs. 2 to 10 lakhs (Table 4). This shows the substantial requirement of capital for the ventures.

Therefore, entrepreneurs have to source credit from variety of sources such as own money (92%), government grants (39 %), banks (26%), and incubators (19%). Family and friends least contributed. This shows the importance of own source as well as multiple external sources. Majority of them (78%) obtained funding of idea stage. Seed funding is the initial capital used to build a prototype and prove product-market fit while Series B is a later, growth-stage investment aimed at scaling an already successful business into new markets and expanding operations (12%).

Table 5. Typology and business models of startups

	Parameter	Category	Percentage*
1.	Type of startup idea	Already exists in the market	35
		Improvisation	47
		Completely new idea	19
2.	Preparation of business plan	Self	87
		Management team	13
3.	Type of business model	Business-Business (B2B)	39
		Business-Consumer (B2C)	41
		Business-Business-Consumer (B2B2C)	08
		Business-Government (B2G)	12
4.	Type of revenue model*	Subscription	05
		Commission	17
		Direct sales	88
		Premium	05
		Licensing	05
		Pay-per-use	16
		Franchise	05

*Multiple responses

In Table 5, typology and business models of startup are depicted. Most of the startup idea (47%) were related to improvement in existing business venture followed by choosing an idea that already exists in market. Only one- fifth (19%) of them took up completely new idea. Majority (87%) prepared the business plan by themselves. The dominant business models were Business-Consumer (B2C) with 41% followed by Business-Business (B2B) with 39%. Majority of them involved in direct sale of their products followed by commission (17%) and pay- per-use (16%). This indicates that startups use conventional and straightforward market approaches which limit the scalability.

The rise of e-commerce in India has greatly benefited startups by enabling direct-to-consumer (D2C) models that bypass traditional intermediaries. This approach allows startups to deliver fresh products directly from farms to consumers, ensuring quality control, pricing flexibility, and enhanced customer engagement. The ability to provide fresh products within short delivery windows has been crucial for urban consumers who prioritize convenience. E-commerce also helps startups overcome barriers like high retail space costs by leveraging subscription models and mobile apps to optimize supply chains and ensure timely deliveries. Furthermore, online platforms and social media allow startups to educate consumers, promote their products, and build brand loyalty. With India's online food and grocery market projected to reach \$18.2 billion by 2024, e-commerce offers substantial growth potential for startups (India Brand Equity Foundation [IBEF], 2021). This needs stronger innovation support in terms of design thinking activities, market gap identification and ideation workshops along with training to diversify business and revenue models into scalable options such as subscription or digital platforms.

Table 6. Source of market information for startups

1	Internet	92
2	Market survey	68
3	Business experts	62
4	Industry reports	55
5	Consultants	39

**Multiple responses*

Gathering market information is very important to sustain the business venture in the tough competition market which is also volatile. Vast majority of entrepreneurs (Table 6) used internet (92%), market survey (68%), consulting business experts (62%), reading industry reports (55%) and engaging consultants (39%). Since they used variety of sources to understand the ongoing market situation and leverage the business strategy accordingly.

Table 7. Validation of new ideas

S. No	Validation of demand for new idea before investing significant resources	Percentage
1	*Market research & trend analysis	62
2	Customer surveys & interviews	34
3	Build a Minimum Viable Product (MVP)	15
4	Create a landing page & measure interest	5
5	Conduct pre-sales or crowd funding campaigns	5
6	Competitive analysis & gap identification	39
7	Pilot Testing with a small group	44
8	Run a smoke test	5
9	Leverage social media & online communities	5
10	Seek expert & mentor feedback	5

**Multiple responses*

Majority of the startup entrepreneurs validated the new ideas (Table 7) by reading market research and trend analysis (62%) followed by pilot testing of new idea in small scale (44%), competitive analysis and gap identification (39%) and conducting customer surveys and interviews (34%). Unless the customer trend is known along with emerging market situation, the talent and money invested will go waste. Companies that began with a deep understanding of user behaviour in online learning are now applying that insight to financial literacy products, personal finance apps and digital lending platforms.

Table 8. Differentiation strategies for new idea from existing solutions in the market

S. No	Differentiation Strategies *	Percentage
1	Identify unique value proposition (UVP)	25
2	Solve an unmet need	26
3	Leverage cutting-edge technology	54
4	Offer a superior user experience	47
5	Enhance affordability and accessibility	29
6	Develop a unique business model	10
7	Focus on personalization and customization	15
8	Create a strong brand and storytelling	10
9	Ensure scalability and flexibility	5
10	Deliver exceptional customer support & engagement	20

**Multiple responses*

Table 8 shows differentiation strategies adopted by respondents for the new idea taken up by them in order to distinguish from already existing solutions in the market. More than half of the respondents (54%) used an advanced technology for better efficiency followed a superior user experience (47%), level of affordability and accessibility of new ideas (29%), solution to meet the unmet need of customers (26%) and identifying unique value proposition of new idea (25%). Without technology and capital leverage, it will take number of years to diversify to different enterprises and other sectors. By leveraging capital, it is possible to collapse learning cycles, hire the right consultants, or acquire small teams, and pilot products faster than legacy players can react. Capturing new market demands a new strategy, offering a satisfying response to the customer expectations (Ponnusamy et al, 2026). Sustainability of new ventures lies in long term strategy for expansion of the market size and penetration in untouched potential in market.

Table 9. Pre-requisites and strategies for scaling up startup ventures

A	Pre-requisite for scaling-ups	Percentage
1.	Consistent revenue growth	45
2.	Strong market demand	57
3.	Product-market fit	40
4.	Access to capital	44
5.	Scalable sales and marketing	56
6.	Reliable infrastructure	5
B	Strategies to scale- up the business	
1.	Market expansion and customer acquisition	78
2.	Technology and innovation	45
3.	Strengthening supply chain and operations	55
4.	Financial growth and funding strategies	24
5.	Brand building and customer retention	36
C	Strategies to tap into new markets	
1.	Leverage technology and digital platforms	65
2.	Focus on urban and niche consumer segments	62
3.	B2B partnerships and institutional sales	10
4.	Innovate in allied sectors	3
5.	Target export and international markets	28
6.	Incentivize farmer adoption and rural expansion	39
7.	Sustainability and climate-smart agriculture	16

The respondents realized that strong market demand (57%) and opportunities (Table 9) for increasing the sales volume and marketing (56%) followed by easy accessibility to capital (44%) would pave the way for expanding the scale up ventures. Therefore, startup entrepreneurs require strategies to expand the market opportunities (78%) and tap the customers into the product fold and involving more supply chain opportunities (55%) would help to facilitate the expansion of the startup ventures. Companies that survive and scale over a decade tend to balance short-term operations with mid-term expansion targets and long-term vision strategies. Tapping new markets required major strategies like leverage technology and digital platforms by Start-ups (65 %), focusing on urban and niche consumer segments by start-ups (62 %). State governments and elected local bodies should create ample opportunities such as road, land pooling, electricity at affordable rates and skilled manpower at their localities. Startup entrepreneurs should create strong awareness about the quality of the products and services as well as strong brand loyalty in order to retain the existing customers and attract new customers. Incentives and digital platforms should be extensively deployed to capture the market.

Table 10. Challenges and associated risks in building the startups

A	Challenges faced in transitioning idea into start-up	Percentage
1.	Validating the idea	30
2.	Building the right team	38
3.	Securing funding	58
4.	Developing an MVP	26
5.	Acquiring early customers	61
6.	Managing uncertainty	7
B	Risks associated	
1.	Climate change and environmental risks	78
2.	Market and price volatility	72
3.	Supply chain disruptions	39
4.	Financial and funding	47
5.	Policy and regulatory risks	11
6.	Technological and cyber security risks	6
7.	Labour and workforce challenges	43
8.	Consumer behaviour and health trends	28

Majority of the challenges (Table 10) lie in acquiring early customers (61%) followed by securing funding (58%), building right team (38%) and validating the idea (30 %). Market penetration in the tough competitive environment and creating niche market for the specialty products in agri sector requires critical planning and strategies. One overlooked factor in compressing the time to expertise is capital leverage. In the past, building mastery required years of bootstrapping and costly trial and error. A well-capitalized team with access to fractional experts, growth advisors and open source tools can often scale up knowledge significantly faster as compared to earlier times. Building the right team (38 %) will endure permanency in timely response to complaints and better understanding of the business environment. That kind of cross-vertical expansion isn't possible without a leadership team that understands how to take executional insights from one industry and adapt them to another, often in real time. Primary risks associated with start-ups were climate change & environmental risks and market & price volatility with 78 per cent and 72 per cent, respectively. Supply chain disruptions (39%) can happen due to these ecological risks. There is always uncertainty in securing the financial support (47%) for the new ventures. An entrepreneurs can be successful if he is able to get family support, financial support and opportunity to have previous job experience (Chahal and Ponnusamy, 2014). High cost of labour and availability of skilled manpower further pose challenges for successful venture of agri startups.

Conclusion and policy implications

It is imperative to strengthen and streamline the startup companies in agri sector. Startup owners who had experience across sectors succeed not by mastering the new field, but because they bring core execution skills that translate across domains. AI and digital tools can easily accelerate the technology development and assess the market potential in matter of few months and years unlike earlier times, taking a decade. A well-capitalized team with access to functional experts, growth advisors and open-source tools can often scale up knowledge significantly faster. The success of startups lie in how fast they can apply lessons from one domain to another. As startup builders shift

across sectors like edtech to fintech, SaaS to AI, Web2 to Web3, the ability to redeploy learnings across domains is critical. As technology becomes more composable and as industry boundaries blur, transferable skills like systems design, product-led growth and market storytelling often outweigh narrow domain mastery. Startup entrepreneurs and project teams navigating these shifts should be able to distinguish durable expertise and contextual expertise in establishing and running the business ventures successfully. These insights would pave the way for successful startup ventures in plantation sector.

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