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Emerging agri-startup ecosystem in India: Incubation, support and challenges

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Abstract

Agricultural start-ups in India are emerging as vital drivers of innovation, sustainability, and rural transformation. These ventures introduce modern technologies, data-driven solutions, and value-added services that address long-standing inefficiencies in the agrarian sector. By integrating digital tools, precision farming, and supply-chain innovations, agri-startups enhance productivity and market access for farmers. Despite their potential, these enterprises operate in environments marked by high uncertainty, limited resources, and infrastructural constraints. Startups also face challenges in securing adequate finance due to high perceived risks and low collateral. The lack of digital literacy among farmers further restricts technology adoption. Weak rural logistics, fragmented landholdings, and poor connectivity slow the scalability of solutions. Nevertheless, supportive policies, incubation programs, and growing investor interest will be helpful in gradually strengthening the ecosystem as a transformative force capable of reshaping Indian agriculture.

Keywords: Start-ups, entrepreneurship, incubation, funding, challenges, sustainable agriculture

Introduction

Start-ups are new businesses built around innovative ideas, usually started in situations with high risk and uncertainty, but with the goal of growing quickly. The main idea of a start-up is to introduce new products or services that offer real value and attract customers. Start-ups help to shape up the innovative thinking of youngsters and spark of new beginnings. Unlike traditional businesses, they thrive on creativity, risk-taking and the drive to solve problems in unique ways. At their core, start-ups turn imagination into reality, blending science, technology and entrepreneurship to build ventures that can grow rapidly. Today, start-ups are seen as a key driver of progress. They help create jobs, bring new ideas and support economic growth. Beyond earning profits, many start-ups also aim to make a positive difference by improving people's lives, promoting sustainability and supporting communities. India, now one of the world's biggest start-up hubs, shows how this movement represents ambition, strength and change. Start-ups that focus on sustainable development are especially valued because they not only aim for profit but also bring social and environmental benefits. In this way, start-ups gain both economic success and positive impact on society and the environment. The idea of sustainable innovation comes from broader concepts like environmental sustainability and sustainable development (Carrillo *et al* 2009) ^[21].

Start Ups

The Oxford Dictionary defines a startup as a newly started business, while Merriam-Webster describes it as the act of beginning something or a young business. Building on these definitions, Blank (2010) ^[18] explains that a startup is a company or team formed to discover a business model that can grow and be repeated. During this phase, new ideas are developed and transformed into successful, long-term businesses. Similarly, Spender (2014) notes that new firms convert entrepreneurial ideas into profit and Gudgin (1979) ^[24] adds that a new firm is one that has begun production for the first time. According to Department for Promotion of Industry and Internal Trade (DPIIT), Criteria for consideration as Start Up:

- Up to 10 years from the date of its incorporation.
- Incorporated as a private limited company or registered as a partnership firm or a limited liability partnership.
- Turnover should be less than INR 100 crores in any of the previous financial years
- Working towards innovation/ improvement of existing products, services and processes and should have the potential to generate employment/ create wealth.
- An entity formed by splitting up or reconstruction of an existing business shall not be considered a 'Startup'. (Anonymous 2025a) ^[8]

Table 1: Differences between Start -up and Entrepreneurship

Criteria	Entrepreneurship	Startup
Definition	Managing and growing a Business	A newly established Venture
Innovation	May innovate or improving existing idea	focus on developing new Innovative products

Risk level	Varies depending on the business stage	High risk, especially in the early stage
Growth potential	Allows steady, long-term growth	Aim for rapid growth and scalability
Funding	May use personal or external funding sources	Often rely on venture capital and crowd funding

(Anonymous 2024a) ^[5]

Need for agriculture Start-ups in India

- More than half of India's rural people depend on farming for their main income. Agri-startups can use this to help increase India's GDP.
- India's farming sector is growing fast with the help of digital technology. Startups can help bringing new ideas and solving major problems.
- Changing farming into agribusiness can help farmers earn more money and make farming more successful.
- The Agricultural share in exports has gone down from about 44% in 1960-61 to around 14% in 2020-21.
- Because of this drop and the large number of people depending on farming, there is a strong need for new ideas, innovation and entrepreneurship in agriculture.
- Agri-startups can help improve the rural economy by giving farmers better tools, technologies and services. This helps increase productivity, income, and the quality of rural life.
- The government is supporting agri-startups through programs like RKVY-RAFTAR, funding and incubation centers, showing strong support for their growth.
- (Jayan *et al* 2023, Anand, 2016 Srishailam *et al* 2022, Yadav *et al.*, 2022) ^[26, 1, 34, 38].

Different stages of start-up valuation

- **Unicorn:** Unicorn is a term used in the venture capital industry to describe a privately held startup company with a value of over \$1 billion. The term was first coined by Aileen Lee, founder of Cowboy ventures.
- **Soonicorn:** Startups having growth potential and possibility of joining a unicorn club is called soonicorn.
- **Decacorn:** Company that has attained a valuation of more than \$ 10 Bn.

- **Hectocorn:** Company that has attained a valuation of more than \$ 100 Bn. (Anonymous 2025b)

Agri start UPS

An agriculture startup is a business that uses innovation, technology and data to solve problems in farming, food production or agri-supply chains.

Current status in India and Punjab

- India today stands as the third-largest start-up ecosystem in the world after the United States and China. Within this, the agriculture sector is growing rapidly with the support of digital technologies.
- As of 30 June 2025, total 1,80,683 entities have been officially recognized as startups by the Department for Promotion of Industry and Internal Trade.
- Highest number of DPIIT recognized startups in Maharashtra which is around 13,519.
- Punjab had 1,539 DPIIT-recognized startups as of July 29, 2024, making it a notable participant in India's startup ecosystem.
- Notable startups in Punjab include Jugnoo (Chandigarh, auto -rickshaw and delivery aggregator), Ag Next (Mohali, agritech), TickTalkTo (Ludhiana, retail tech) and uTrade Solutions (Ajitgarh, fintech)
- Punjab had 52 agri-startups listed as of late July 2024, according to a PIB press release. The Punjab Agri Business Incubator (PABI) at the Punjab Agricultural University (PAU) is also a significant hub, having incubated 84 startups and facilitated 32 patents since its inception. (Anonymous 2025a) ^[9].

Table 2: State wise distribution of Agri-startups

States	No.of Agri-startups	Punjab	241
Maharashtra	3196	Uttarakhand	232
Uttar Pradesh	1533	Jharkhand	209
Karnataka	1439	Jammu & Kashmir	183
Gujarat	1353	Himachal Pradesh	152
Tamil Nadu	1303	Manipur	49
Delhi	791	Chandigarh	40
Telangana	791	Nagaland	33
Madhya Pradesh	735	Arunachal Pradesh	28
Rajasthan	685	Tripura	25
West Bengal	587	Goa	21
Haryana	583	Mizoram	21
Bihar	516	Puducherry	19
Andhra Pradesh	510	Andaman & Nicobar	15
Kerala	468	Meghalaya	15
Odisha	356	Ladakh	6
Chhattisgarh	314	Sikkim	5
Assam	307	Lakshadweep	2

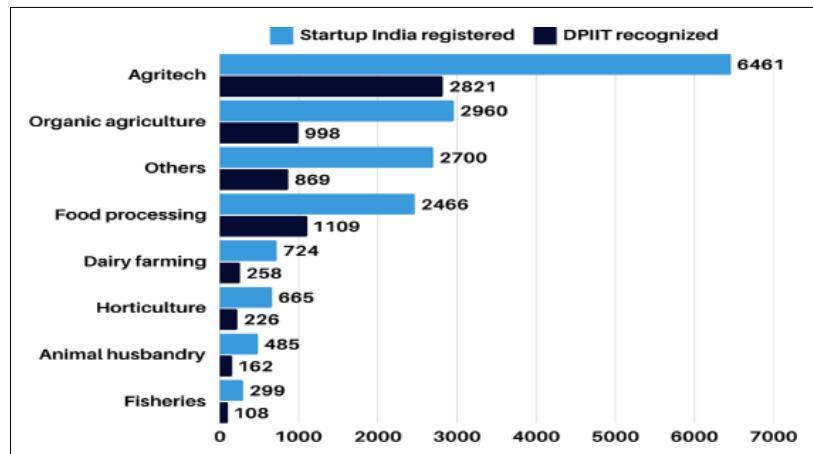
(Anonymous 2025c) ^[11].

Table no.2 shows the number of Agri-startups (agriculture-related startups) in different states and union territories of India.

- Maharashtra has the highest number of Agri-startups 3,196, showing it's a major hub for agricultural innovation.
- Other states with many Agri-startups include Uttar Pradesh (1,533), Karnataka (1,439), Gujarat (1,353) and

Tamil Nadu (1,303). These states have strong agricultural sectors and better startup ecosystems.

- States like Punjab (241) and Kerala (468) have a moderate number of Agri-startups.
- Smaller states and Union Territories such as Ladakh (6), Sikkim (5) and Lakshadweep (2) have very few Agri-startups, likely due to smaller populations and limited agricultural land.



(Anonymous 2025d) ^[11]

Fig 1: Sector wise distribution of Agri-startups

This chart shows the number of agri-startups in different sectors under two categories:

Startup India registered and DPIIT recognized

- AgriTech (39%) has the most startups, using technology like data, automation and smart tools to improve farming.
- Organic agriculture (18%) is the next biggest area, showing that more people want healthy and eco-friendly

food.

- Food processing (15%) focuses on turning raw crops into ready-to-sell products, helping farmers earn more.
- Dairy farming (4%) and horticulture (4%) have fewer startups but still have room for new ideas.
- Fisheries (2%) and animal husbandry (3%) have the least number of startups, but they could grow with better technology and sustainable methods.

Table 3: Six stages of an Agri-startup

Stage	Name	Key Features of Development
Stage I	Ideation	Entrepreneurial ambition of the founder(s) Some initial business models and ideas on how the idea would create value or make money Presence of single person or a vague team
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 complimentary 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 minimum viable product for the users to test their business idea Signing of shareholder agreement among the co-founders It includes milestones that need to be achieved Commitment of time and money shared by each shareholder SHA (shareholders' agreement) 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

(Segal 2016) ^[33]

Major focus area of Agri start-ups

1. Input Linkages: Agri-startups are improving farming by using technology to make it more efficient and sustainable.

- Help farmers get quality seeds, fertilizers and pesticides on time and at fair prices.
- Use e-commerce platforms so farmers can buy inputs online easily and safely.
- Apply AI and machine learning to study soil and crop needs, giving real-time advice on input use.
- Use blockchain to check product authenticity and prevent fake inputs.
- Offer subscription-based deliveries to ensure inputs reach farmers at the right time.
- Cut out middlemen, lowering costs and increasing transparency.
- Provide digital marketplaces for smooth and quick transactions.
- For example: AgroStar- digital platform for buying inputs and getting expert advice. And DeHaat- provides input supply, credit and market access in one platform.

2. Output Linkages

Output linkage startups help farmers sell their produce easily and earn better profits.

- Connect farmers directly to markets, consumers and retailers, removing middlemen.
- Use online marketplaces to help farmers sell products quickly and safely.
- Apply AI tools to predict prices so farmers can choose the best time to sell.
- Use blockchain for transparency and trust in the supply chain.
- Provide digital contract farming to give farmers guaranteed buyers.
- Improve logistics and delivery, reducing waste and post-harvest losses.
- Help farmers get fair prices, stable income and access to wider markets.
- For example: Ninjacart- connects farmers directly with businesses (B2B) and WayCool- uses data and smart logistics for fast, efficient distribution.

3. FinTech

FinTech startups make it easier for farmers to get loans, insurance and digital financial services.

- Improve access to credit and insurance, especially for farmers without bank accounts.
- Use AI-based tools to check creditworthiness by studying farm data instead of traditional credit history.
- Provide mobile wallets for cashless, quick and transparent payments.
- Use blockchain for secure and trustworthy credit scoring.
- Offer satellite-based crop insurance that quickly processes claims after weather or crop damage.
- Help farmers avoid high-interest informal loans and manage money safely.
- Enable farmers to invest more, expand farming and reduce financial risks.
- For example: Jai Kisan- offers digital credit solutions for farmers and Samunnati- provides financial services and market connections for small farmers.

4. Farm Mechanization

Farm mechanization startups help farmers use modern machines to make farming faster and easier.

- Provide access to tractors, harvesters and other modern equipment.
- Use rental platforms where farmers can book machines when needed instead of buying them.
- Apply AI and automation for precise planting, weeding and harvesting.
- Use IoT-enabled machines to track performance, fuel use and maintenance needs.
- Offer pay-per-use models to make machines affordable for small farmers.
- Reduce manual labor and increase productivity and efficiency.
- Use digital booking platforms to reach rural farmers easily.
- For example: Trringo - allows farmers to rent tractors through a mobile app.

5. Precision Agriculture

Precision agriculture startups use smart technology to make farming more accurate, efficient and eco-friendly.

- Use IoT sensors to track soil moisture, nutrients and health in real time.
- Apply AI tools to detect pests early and reduce pesticide use.
- Use satellite data to study crop health, weather and field conditions.
- Help farmers use water, fertilizers and pesticides wisely, cutting costs and waste.
- Support data-based decisions to improve productivity and profit.
- Reduce labor needs through automation.
- Promote sustainable farming that protects the environment and increases yields.
- For example: Fasal- uses IoT-based sensors to monitor farms and give real-time updates on soil, weather and crop needs. (Anand and Raj2024, Wan and Cui2024)

Types of funding for start UPS

Self-Funding / Bootstrapping

- Building a startup using your own money and the income earned from the business.
- It does not rely on investors or venture capitalists, so founders keep full control.
- The term comes from “pulling yourself up by your bootstraps,” which means achieving success through your own effort.
- It provides complete independence, allowing founders to make decisions without outside pressure.
- Customer-funded growth means the business grows using money from customers through pre-orders, subscriptions or advance payments.
- AgroStar - Initially began as a small self-funded venture selling farm inputs through mobile phones before receiving external funding.

Friends and Family

- Early-stage money raised from close personal connections.

- Founders get funds from friends, relatives or acquaintances to start their business.
- Often called the “friends, family and fools (FFF)” round, as it depends on trust, not formal business evaluations.
- Used mainly for early expenses like product development or marketing.
- Founders may give 5% to 20% ownership (equity) in return, which is usually less than what’s given in later funding rounds.

External Investors

Angel Investors

- Angel investors are individuals who use their own money to invest in small or new businesses.
- They usually invest in early-stage startups that are just beginning.
- They take higher risks than venture capitalists because they focus on helping new entrepreneurs rather than quick profits.
- Typically invest 20-83 lakh in a business.
- Expect around 20-25% return on their investment.
- Often act as mentors, giving business advice and connecting founders with useful contacts like lawyers, accountants and banks.
- They don’t require a Board of Directors, keeping the process simple for startups.

Venture capitalist (VC)

- A venture capitalist (VC) is a person or firm that invests in small or growing companies using money collected from investors, corporations or pension funds.
 - They do not use their own money but manage funds from others.
 - VCs usually invest in already established startups to reduce risk.
 - They invest larger amounts than angel investors around \$11.7 million (₹90+ crore).
 - Expect high returns, usually between 25% and 35%.
 - VCs are not mentors; they mainly focus on profits and business growth.
- (Anonymous 2024b)

Alternative Methods

Crowdfunding

- The term “crowdfunding” was first used in 2006 by Michael Sullivan to describe raising money online for creative or community projects.
- It means collecting small amounts of money from many people, usually through the internet, to fund a business or project.
- It is a type of crowdsourcing and alternative finance, where funds are raised without banks or traditional investors.
- After the 2008 financial crisis, banks gave fewer loans, so small businesses turned to crowdfunding as a new way to raise money.
- Popular platforms include: Kickstarter for creative projects like art, design, or technology, Indiegogo offers flexible funding options for different projects and
- GoFundMe- mainly used for personal or social causes.

Types of crowd funding

a) Rewards-Based Crowdfunding

- Supporters get rewards or perks like early access to products or special gifts.
- Best for startups, artists or product-based ventures that want to engage their audience with tangible benefits.

b) Donation-Based Crowdfunding

- People donate money without expecting anything in return.
- Commonly used for charity, medical help or community projects.

c) Equity-Based Crowdfunding

- Investors get a share (ownership) of the business in exchange for their money.
- Suitable for startups or companies that need big funding and are ready to share ownership.

d) Debt-Based Crowdfunding (Peer-to-Peer Lending)

- People lend money to a business and expect it to be repaid with interest.
- Used by businesses that want loans but prefer not to go through banks.

e) Security Token Offerings (STOs)

- Investors get digital tokens linked to real assets like company shares or profits.
 - Best for businesses that want to tokenize assets and offer investors partial ownership.
- (Calic 2018)^[20]

Loans

Loans are a type of debt financing where businesses borrow money from banks or financial institutions and repay it with interest.

Types of loans

- **Term Loans:** A fixed amount is borrowed and repaid in regular installments over a set time.
- **Working Capital Loans:** Short-term loans used for daily expenses like buying raw materials or managing inventory.
- **Overdraft Facilities:** Allows spending more than your bank balance up to a limit; interest is charged only on the extra amount used.
- **Micro Loans:** Small, easy-to-get loans ideal for new startups with little or no credit history or collateral.

Incubators

Startup incubators are organizations that help new businesses and entrepreneurs grow and succeed. They provide support like guidance from mentors, training, networking opportunities, workspace, technology and sometimes funding through investors or direct investment.

- Helps entrepreneurs who have just an idea and need to develop it into a business.
- Provides flexible, long-term and unstructured programs (can last for years).
- Rarely offers direct funding but provides resources, mentorship and workspace.

- Focuses on nurturing and refining the idea to build a strong business foundation.

Table 4: Various Agribusiness Incubators (ABI): Sponsored by RKVY-RAFTAAR

Agri incubators	Initiator
ANGRAU Poshan Incubator	ABI of ANGRAU, AP
NAAVIC	ABI of ICAR-NIVEDI
a-IDEA	NAARM, Hyderabad
Pusa Krishi Incubator	IARI, New Delhi
VIKAS R-ABI	ICAR-NRRI, Cuttack
Ambedkar Social Innovation	Department of Science and Technology
RABI(RAFTAAR-ABI)	KAU,Thrissur
ABIS-TBI (Agribusiness incubation society-Technology Business Incubators)	TNAU,Coimbatore
Krishik-ABI	UAS,Dharward
PABI	PAU,Ludhiana

(Chowdary *et al* 2023) ^[22]

Punjab Agri Business Incubator (PABI)

- Established: March 2019 at Punjab Agricultural University (PAU), Ludhiana under the RKVY-RAFTAAR scheme of the Ministry of Agriculture and Farmers Welfare, Government of India.
- Purpose: To support and guide agri-startups in agriculture and allied sectors through funding, training and mentorship.

Programs under PABI

1. Uddam (Idea Stage): Provides a grant up to 5 lakh for new startup ideas.
2. Udaan (Expansion Stage): Provides a grant up to 25 lakh for growing startups.

Process

- Startups apply to join the program.
- RIC-I (Incubation Committee) selects candidates for 2 months of training and mentoring.
- Training covers startup management, business skills, marketing, finance, IPR and government schemes.
- After training, RIC-II reviews progress and selects candidates for the final CIC (CoE Incubation Committee) round.
- The main focus areas of PABI include Functional & Healthy Foods, Food Processing, Waste to Wealth, Farm Mechanization, Bee Keeping & Honey Processing, Mushroom Cultivation, Agri Clinic Services, Organic Farming & Inputs, Precision Agriculture, Floriculture & Landscaping and Agri Supply Chain. (Anonymous 2025h) ^[16]

Start-up schemes

The Government of India has launched multiple initiatives to promote the agri-startup ecosystem by offering financial assistance, incubation support, infrastructure development and skill-building opportunities.

1. Innovation & Agri-Entrepreneurship Development Program (2018-19) under Rashtriya Krishi Vikas Yojana (RKVY) provides up to 25 lakh for product development and `5 lakh for idea-stage startups, supporting agritech

solutions, mechanization and post-harvest innovations.

2. Agriculture Infrastructure Fund (AIF) (2020) is a `1,00,000 crore corpus aimed at financing post-harvest infrastructure such as cold storage, warehouses and logistics, with a 3% interest subvention to reduce post-harvest losses and enhance farmers' income.
3. SFAC Venture Capital Assistance Scheme (1999-2000), implemented by the Small Farmers' Agribusiness Consortium (SFAC), promotes agribusiness ventures by providing financial support and encouraging public-private partnerships (PPP) to mobilize investments in sustainable agribusiness models.
4. ASPIRE (2015) scheme under the Ministry of MSME offers financial grants up to `100 lakh for Livelihood Business Incubators (LBI) and 50 lakh for Technology Business Incubators (TBI), supporting skill development and agro-based industries in rural areas.
5. AGRISURE (2024), with a ₹750 crore corpus from the Government of India, NABARD, and private investors, provides seed funding for agritech startups, promoting digital transformation, smart farming and technology-driven agricultural innovations.

Startup India Seed Fund Scheme

- The scheme "Startup India Seed Fund Scheme (SISFS)" was launched by the Department for Promotion of Industry and Internal Trade (DPIIT) on 19th April 2021
- with an outlay of INR 945 Crore to provide financial assistance to startups for Proof of Concept, prototype development, product trials, market-entry and commercialization. Eligible startups can apply for the scheme on the Startup India portal.

Objective of the Scheme

Startup India Seed Fund Scheme (SISFS) aims to provide financial assistance to startups for proof of concept, prototype development, product trials, market-entry and commercialization. This would enable these startups to graduate to a level where they will be able to raise investments from angel investors or venture capitalists or seek loans from commercial banks or financial institutions.

Funding

- Up to 20 Lakh as grant for proof of concept, prototype, or product trials (released in milestone-based installments).
- Not more than 20% of total grant to an incubator can be given as grants to startups.
- Up to 50 Lakh as investment (convertible debentures / debt / debt-linked instruments) for market entry, commercialization, or scaling.

7. Credit Guarantee Scheme for Startups (CGSS)

- Date of commencement of the Scheme: 6th October 2022
- Sponsored by - Department for Promotion of Industry and Internal Trade, Ministry of Commerce & Industry

Objective of the scheme

- **Collateral-Free Debt Funding:** The scheme aims to provide startups with debt funding that doesn't require them to provide collateral, which is a significant barrier for many early-stage companies.

- **Enhanced Credit Support:** It enhances the credit support available to startups, enabling them to access funds for various needs, including working capital and venture debt.
- **Encouraging Financial Institutions:** By providing a guarantee, the scheme de-risks lending for banks and other financial institutions, encouraging them to extend credit to startups.
- **Financing Eligible Startups:** The scheme focuses on providing financing to startups recognized by the Department for Promotion of Industry and Internal Trade (DPIIT), making it a targeted initiative to support the startup ecosystem.
- **Boosting Entrepreneurship:** Ultimately, the objective is to foster an environment that supports entrepreneurship by making capital more accessible to innovators and new-age businesses.

Funding

- The maximum amount of debt (fund-based or non-fund-based facilities) eligible for guarantee cover under the Scheme has been revised to 20 crore per borrower.
- 85% of the amount in default for loan amount up to Rs. 10 crore
- 75% of the amount in default for loan amount exceeding Rs. 10 crore
(Anonymous 2025f)

Registration for Startup India

1. Incorporate your business: Register your company as a Private Limited Company, LLP, or Partnership Firm through the Registrar of Companies (ROC).

2. Check eligibility: The business must be:

- Less than 10 years old
- Annual turnover below 100 crores
- Innovative and scalable
- Not formed by splitting an existing business

3. Collect required documents

- Incorporation Certificate
- Pitch deck, website link or video showing your idea
- Details of your innovation or product
- Patent/trademark details (if any)
- PAN card of authorized representative

4. Register on Startup India portal

- Go to www.startupindia.gov.in
- Create an account and verify your email

5. Apply for DPIIT Recognition

- Log in to your Startup India account
- Click “Apply for DPIIT Recognition”
- You’ll be redirected to the National Single Window System (NSWS)
- Add “Registration as a Startup” under Central Approvals and click Apply Now

6. Fill and submit the form

- Enter your business details and upload the required documents

- Explain how your startup is innovative and impactful
- Review and submit the application

7. Get your certificate

- DPIIT reviews your application
- If approved, you’ll get a digital Startup Recognition Certificate within 2 days, downloadable from your NSWS dashboard.

Challenges faced by agri-startups

- **Limited access to finance:** Farmers and agri-startups often struggle to get loans or investment because banks and financial institutions consider agriculture risky. Without sufficient money, they cannot purchase new technologies, expand operations, or experiment with innovations.
- **Low digital literacy:** Many farmers are not familiar with smartphones, apps, sensors, or internet-based tools. This lack of technical knowledge makes it difficult for them to use digital farming solutions effectively, even when technology is available.
- **Poor infrastructure:** Rural areas often suffer from weak internet networks, unreliable electricity, poor transportation, and inadequate storage or cold chain facilities. These gaps reduce the efficiency and success of agri-tech solutions and make it hard for startups to operate smoothly.
- **Fragmented land holdings:** Most farms in India are small and scattered. This makes it challenging to introduce large-scale mechanisation, precision farming tools, or automation technologies that work best on bigger, consolidated farms.
- **Data challenges:** Agri-tech solutions depend on accurate data such as soil health, weather, crop diseases, and market prices. But such data is often missing, unreliable, or outdated, leading to poor decision-making and reduced effectiveness of technologies.
- **Regulatory barriers:** Government rules, approvals, and policies are often complex, unclear, or frequently changing. This creates confusion for startups, slows down innovation, increases compliance costs, and delays product rollouts.
- **Market access issues:** Even when farmers grow better-quality crops with the help of technology, they may still struggle to reach buyers, get fair prices, or access large markets. Weak marketing channels and middlemen reduce their profits and discourage tech adoption.
- **Adoption resistance:** Farmers who have followed traditional methods for generations often hesitate to try new technologies due to fear of risk, unfamiliarity, lack of trust, or negative past experiences. This slows down the spread of agri-tech innovations.
- **Investor scepticism:** Investors often avoid agri-startups because agriculture is highly unpredictable weather changes, pests, price fluctuations, and long cropping cycles make returns uncertain and slow. This reduces the flow of investment into the sector.
- **Limited mentorship and ecosystem support:** Many agri-startups lack access to expert guidance, incubation centres, research institutions, and strong support networks. Without proper mentorship, it becomes

difficult for them to refine ideas, scale operations, or overcome challenges.

- **Weak business models / lack of commercial viability:** Some agri-startups fail because their business ideas are not well-planned or do not address real farmer problems. Poor teamwork, unclear focus, and rigid startup structures further weaken their operations, making them less sustainable in the long run.

Conclusion

Agri-startups are transforming farming in India through innovation, technology and entrepreneurship. They help farmers easily access credit, insurance, markets and modern equipment, making agricultural operations more efficient. With strong financial and mentoring support from government schemes and incubators, these startups are creating new income opportunities while reducing risks for small farmers. By bridging the gap between traditional agriculture and modern agribusiness, agri-startups are making Indian agriculture smarter, more sustainable and profitable.

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