

**ATMA NIRBHARTA THROUGH AGRIPRENEURSHIP****Overview**

Agriculture remains one of the key sectors of the Indian economy accounting for 18-20% share in the Gross Domestic Product (GDP). Approximately 70% of the rural population depends on agriculture and its allied sectors for livelihood but poor infrastructural facilities in rural areas and better job opportunities in the urban areas are resulting in growing rural-urban migration. The urban population has grown from 27.81% in 2001 to 31.16% in 2011 registering an increase of 91.1 million persons in urban population, the highest registered increase.

To mitigate agricultural burden and to arrest rural-urban migration, agripreneurship can be one solution. Agripreneurship means entrepreneurship in agriculture and its allied sectors by adopting new and innovative methods, processes, and techniques to ensure better output and remuneration. It can be the harbinger of progressive change in the rural economy. It spans across various sub-sectors like food processing, fisheries, tissue culture, apiculture, seed processing, smart agri-tech provisioning, soil testing, vermi-compost etc.

Rapid integration in global supply chains and associated compliances required in maintaining ecological balance has resulted in growing demand for entrepreneurs in agriculture. Thus, an agripreneur-

1. Bears the risks arising out of vagaries of nature, market, and consumer preferences.
2. Proves his/her mettle by keeping abreast of all developments and making use of information at the right time, relying on innovative solutions, and using state-of-the-art technology.

Benefits of agripreneurship-

1. Minimizes losses involving perishable commodities.
2. Enhances consumer benefits.
3. Attains price discovery effectively.
4. Tool for women empowerment.
5. Provides remunerative for job opportunities.
6. Uses local resources.
7. Helps decrease post-harvest losses.
8. Reduces push factor for rural urban migration.

**Policies and Programmes**

Various ministries and Government departments promote agripreneurship through different policies, schemes, and programmes with the objective of skilling people in the rural set-up, promoting entrepreneurship and providing an enabling environment leading to creation of self-employment. They are-

1. **Rashtriya Krishi Vikas Yojana - Remunerative Approaches for Agriculture and Allied Sector Rejuvenation (RKVY-RAFTAAR):**
  - a) Aims at-
    - ✓ Making farming a remunerative economic activity.
    - ✓ Providing financial support.
    - ✓ Nurturing the incubation ecosystem by strengthening farmer's efforts risk mitigation.
    - ✓ Focusing on development and creating of pre- and post-harvest infrastructure.
    - ✓ Promoting agripreneurship and innovations.
  - b) It includes agripreneurship orientation with a stipend for the entrepreneur, seed stage funding and funding for incubates.
2. **PM Formalization of Micro Food Processing Enterprise Scheme:**
  - a) Launched by the Ministry of Food and Agriculture with an outlay of Rs. 10,000 crores.
  - b) Provides financial, technical, and business support for upgradation of existing micro food processing enterprises.

- c) Aims at:
  - ✓ Enhancing the competitiveness of existing individual microenterprises in the unorganized segment of food processing industry.
  - ✓ Promoting sector formalization.

### 3. **Atma Nirbhar Bharat Package:**

- a) An Agriculture Infrastructure Fund launched in 2020.
- b) Provides medium to long term credit facility for investment in creation of post-harvest management infrastructure and community farming assets.
- c) Entails a three percent interest subvention from the Government and credit guarantee fee by Credit Guarantee Fund Trust for Micro and Small Enterprises up to Rs. 2 crores.
- d) Sanctioned projects cover warehouses, assaying units, primary processing units, custom hiring centers, cold storage, and cold chain projects etc.
- e) It also consists of Udyam registration portal designed to help MSMEs emerge out of the ill-effects of Covid-19 pandemic. MSMEs with Rs.50 crores investment and Rs. 250 crores turn over can register on this website and avail benefits of priority sector lending by banks and various programmes and schemes of Ministry of MSME.

### 4. **Gramodyog Vikas Yojana:**

- a) By Ministry of MSME.
- b) Aims at reviving traditional and inherent skills of rural artisans in village industries.
- c) Specially focuses on Agro Based and Food Processing Industry like oil industry, aromatic oil, honey and beekeeping etc

5. **Collateral Guarantee Scheme:** Provides collateral free loans for MSME entrepreneurs

6. **Self-Reliant India Fund:** Focuses on providing equity infusion to MSME entrepreneurs

7. **Special Credit Linked Capital Subsidy Scheme (SCLCSS):** Promotes setting up of enterprises by aspiring entrepreneurs and capacity building of existing entrepreneurs from Scheduled Castes and Scheduled Tribes (SC/ST).

8. **Idea Hackathon:** Aims at supporting untapped creativity and making innovation affordable.

### **Way Forward**

There is an urgent need for promoting entrepreneurial culture and creating awareness among rural population and providing them with area-specific technical training supplemented by adequate infrastructural facilities to help them develop technical competence of potential entrepreneurs. For this, a converging approach is required amongst initiatives taken by various ministries and departments of Central Government with those of State Governments. It will help make the agripreneurs self-reliant and the country atma-nirbhar.

### **SKILLS REQUIRED FOR AGRI-ENTREPRENUERSHIP**

Development and survival of the rural economy are significantly impacted by agricultural entrepreneurship as it encourages farmers of all sizes to adopt entrepreneurial agriculture. But the development of an entrepreneur is a long process of imbuing a person with entrepreneurial abilities such as desirable knowledge, advanced technical, financial, marketing, and managerial expertise as well as fostering an entrepreneurial mindset.

### **Agri-Entrepreneurship**

It is synonymous with agricultural entrepreneurship and refers to the establishment of agricultural and allied businesses. It could contribute to both social and economic development including job creation, poverty reduction, improved nutrition and health, increased food security and improving rural economy.

### **Opportunities in Agri-Entrepreneurship:**

Agriculture offers several opportunities for entrepreneurship and increased micro-financing, lax government regulations, access to cutting-edge technology, guidance, and workshops on Agri and related fields are

encouraging people to work for themselves. Thus, boosting the outlook for agri-entrepreneurship in areas like dairying, sericulture, goat and sheep husbandry, farm forestry etc. The potential agri-entrepreneurship areas are:

1. **Agro-Produce Processing Units:** Only agriculture produce is processed here and nothing new. Example- mills for grinding grains (rice, wheat), pulses etc.
2. **Agro-Produce Manufacturing Facilities:** Completely new goods are manufactured here using agricultural products as primary raw material. Example- bakeries, sugar factories etc.
3. **Agro-Input Manufacturing Facilities:** Items produced here are either for mechanizing agriculture or expanding manufacturing facilities. Example- fertilizer production units.
4. **Agro-Service Centre's:** Include stores and repair facilities for farm equipment, implement and machinery.
5. **Miscellaneous Areas:** Include establishment of apiaries, feed processing facilities, seed processing facilities, goat rearing etc.

### Entrepreneurship Factors

- Market, methods, team, and company influence the entrepreneurial success.
- Entrepreneurial motivations can be categorized as “push” and “pull” factors.
  - ✓ **Push Factors-** include lack of income, work dissatisfaction, need for flexible timetable.
  - ✓ **Pull Factors-** include independence, dream, desire for wealth and power and self-efficacy.
- Factors influencing entrepreneurship:
  - ✓ **Economic Environment-** Capital, labour, raw materials, market, and infrastructure influence the growth of entrepreneurship.
  - ✓ **Social Factors:** Include family background, education, society attitude and political support.
  - ✓ **Psychological Factors:** Include motives, need for achievement, status, and respect.
  - ✓ **Education**

### Core Competencies and Skills

1. **Need for Achievement-** They should have a strong drive to succeed in their business and life.
2. **Visualization-** They should envision the future of their enterprise based on market demands, socio-economic environment, and technology environment.
3. **Technical Expertise-** They should be fully aware about all the technical aspects of their enterprise whether it is in terms of technology, operations, finances, or market dynamics.
4. **Innovativeness-** They should be constantly looking for fresh opportunities to expand their company and come up with new ideas through imagining solutions to issues.
5. **Independency-** They should create their own laws and destiny instead of working according to the guidelines.
6. **Risk Bearing Ability-** They should be ready to accept future uncertainties while reducing risks by preparation, skill development and research.
7. **Leadership Ability-** They should have good communication skills, decision making, good planning, organizing and motivational skills.
8. **Human Relations Skills-** They should get along well with their customers to gain their trust and maintain strong ties with employees.
9. **Diligent-** They should be hard working and dedicated towards achieving success.
10. **Self Confidence-** They should have faith in their abilities.
11. **Flexibility-** They need to be adaptable to shifting markets, trends, technology, laws, and regulatory frameworks, as well as shifting economic conditions.

**Skills Required By Agri-Entrepreneur:**



Figure 1 Source: Kurukshetra October 2022 Edition

**Skill Development Initiatives**

1. Various institutes like the National Institute of Micro, Small and Medium Enterprise (NIMSME), Hyderabad; Indian Institute of Entrepreneurship (IIE), Guwahati; National Skill Development Corporation, National Skill Development Agency and National Skill Development Fund under Ministry of Skill Development and Entrepreneurship have been engaged in training, consultancy, research, etc. to promote entrepreneurship and skill development.
2. NABARD has been partnering the Government in implementing various schemes like New Agricultural Marketing Infrastructure (AMI), Agri Clinics and Agri Business Centres Scheme (ACABC) etc.
3. Innovation and Agri-Entrepreneurship Development under Rashtriya Krishi Vikas Yojana to promote agri-entrepreneurship and agri-business by providing financial support and nurturing the incubation system.
4. Initiative for Development of Entrepreneurs in Agriculture (IDEA) under (NEDFL Schemes) to assist in establishing and promoting agri-business ventures in north-east region.

**Way Forward**

To transform subsistence activities into profitable business ventures, equipping and aspiring agri-entrepreneurs with skills like marketing efficiency, production ability, financial management need to adapt to a changing economy and market. They should not only be the consumers and users of new technologies but also active contributors in their design, testing, modification, and introduction into farming system.

**ECONOMIC DEVELOPMENT**

Applying the thought and practice of entrepreneurship in agricultural field generates wide range of economic benefits like-

- Increased productivity and wealth
- Creation of new business ventures
- New jobs
- Innovative products and services
- Rural development

As per the economic survey 2021-22, agriculture and allied sector proved to be the most resilient to COVID-19 effects as it registered a growth of 3.6% in 2020-21 which increased to 3.9% in 2021-22. This shows that agriculture is likely to remain a priority both for policy makers and businesses in the coming future. Thus,

agriprenurship is not only an opportunity but also a necessity for improving the production and profitability in agriculture and allied sectors.

### Financial Support-

1. Commercial and Regional Rural Banks have a tremendous amount of experience in funding agribusiness projects.
2. Public and private/corporate managers have transformed scientific results and discoveries into tangible programmes and action policies.
3. Combined initiatives by RBI, NABARD, Cooperatives, Panchayats, Non-Governmental Organizations, and media are spreading awareness and information and improving consumer access.
4. Bilateral, regional, and trade agreements have paved way for reduced tariff and non-tariff barriers to cross-border agricultural flow and increased financial market transparency resulting in increased capital flow especially in the form of FDI.
5. National Spot Exchange Limited (NSE) is offering tailored solutions to agricultural producers, processors, exporters, importers, buyers, and other commodity stakeholders.
6. E-Seva Kendra of the Grameen Sanchar Society (GRASSO) offers Agri-related services such as market access, price of agricultural products, cold storage facilities and labour and job opportunities.
7. Agricultural Marketing Information System (AGMARKNET), an internet-based information system seeks to provide a “single window” service appealing to various information demands.
8. The Agricultural and Processed Food Products Export Development Authority (APEDA), an independent authority under Ministry of Commerce serves as a link between Indian Producers and global markets and provides financial assistance through programmes aimed at promoting and developing agricultural exports.
9. E-choupals by Indian Tobacco Company’s has been a hit in agricultural marketing.
10. National Horticulture Mission launched in 2005 also focuses on diversifying agriculture marketing.
11. Agricultural Technology Management Agency (ATMA) uses the services of Agriprenurs at district levels to provide value added extension services to farmers through PPP (public-private partnership) model.
12. Farmers markets by State governments like Uzhavar Santhai (Tamil Nadu), Rythu Bazaars (Andhra Pradesh) and Apna Mandi (Punjab).

### Schemes and Programmes-

1. **Agriclinic and Agribusiness Centre Scheme-** Launched by Ministry of Agriculture with NABARD aims to tap expertise in agri-graduates and provides concessional loans, subsidy, and start-up training to graduates in agriculture and its allied subjects to make them agriprenurs.
2. **Dairy Entrepreneurship Development Scheme-** Aims at setting-up modern dairy farms for production on commercial scale, generate self-employment and provide infrastructure, especially in unorganized sector.
3. **National Livestock Mission-Entrepreneurship Development and Employment Generation (EDEG) –** Designed to cover all the activities required to ensure quantitative and qualitative improvement in livestock production systems and capacity building of stakeholders.

### Challenges-

1. **Low-Literacy Level-** Root cause for majority of challenges.
2. **Low-Productivity-** Due to uncertain monsoon, poor land fertility and poor seed quality.
3. **Unable to Access Modern Infrastructure-** Poor and marginal farmers are unable to access modern infrastructure for better productivity and ease of work.
4. **Lack of Entrepreneurial Ability-** Farmers don’t have much entrepreneurial ability to set-up and manage business models and face intense opposition from large-sized groups and concrete marketers.

5. **Management Issues-** Farmers face issues like lack of technological knowledge, legal formalities, quality control etc.

#### **Solutions-**

1. Providing easy finance to rural entrepreneurs at concessional rates and easy repayment terms.
2. Minimizing burdensome loan sanctioning procedure.
3. Prioritizing proper supply of scarce raw materials.
4. Providing subsidy on products manufactured by rural entrepreneurs to make them cost effective and remunerative.
5. Providing adequate training facilities to economically weaker entrepreneurs under programmes like Prime Minister Rozgar Yojana (PMRY).
6. Encouraging and assisting rural entrepreneurs to set-up marketing cooperatives.

#### **Contractual Marketing-**

It gives stakeholders in the value chain the opportunity to work with enterprises that could help them increase their reach and acquire more clients.

#### **Digital Marketing-**

It helps create strong digital footprint necessary for agripreneurs and compete against massive farming cooperatives.

#### **Conclusion**

The agriculture sector has a large potential to add to the national income while simultaneously ensuring direct employment and income to numerically larger and susceptible sections of society. There is a great scope for entrepreneurship in agriculture and the potentiality can be mobilized only by effective management of agricultural elements.

### **AGRI START-UPS: TRANSFORMING AGRIPRENEURSHIP**

The expansion of entrepreneurship in agriculture in terms of reach and impact has given rise to a renewed interest of young entrepreneurs in Agri start-ups especially after 2014. With special focus on Agri-marketing and use of technology in agriculture by the Government, the number of Agri-startups which were 43 in 2013 has swollen up to 1300 by April 2022. These start-ups don't only provide goods and services to the farmers but also create a bonding with them. Extension services are part and parcel of their business strategy.

Access to internet and use of smartphones has played a vital role in facilitating rural youth to explore their cultivation practices. Also, increasing income levels, expanding middle-class base, changing food habits, and increasing focus on health and wellness has created a large-scale demand for quality Agri products and promises a premium pricing for such products. Use of technology in all fields ranging from pre-sowing preparations to efficient marketing of crops has created a huge gap in demand and supply of technology and modern tools in rural India and is creating ample opportunities for businesses in agri related activities triggering a rush of both talent and funds in agri-business. According to a report by Bain & Company, India ranks third in terms of receiving funds for agritech start-ups. These agri startups have emerged into five categories-

1. Market linkage and supply chain
2. Farm inputs
3. Precision agriculture and farm management
4. Farming as a service (FaaS)
5. Financial Services

### Impact of Technology:

Agri startups work with technology at the core of their philosophy. They have based their business models around state-of-the-art technologies like artificial intelligence (AI), machine learning (ML) and internet of things (IOT). Some of these technologies and their impact are:

- **Vertical Farming:**
  - ✓ It facilitates farmers to cultivate 4-5 times more crops on a single piece of land.
  - ✓ This not only results in increased income with a limited portion of land but also saves up to 90% of water consumption.
  - ✓ Hydroponics, aquaponics and aeroponics are also part of this technology where necessary nutrients are supplied directly from water or air.
  - ✓ This technology allows people to grow vegetables on their terraces or in balconies.
  - ✓ Urban Kisaan, Urban Green Fate (UGF) Farms, 365DFarms are some startups offering unique solutions using this technology.
- **AI Farming and Precision Farming:**
  - ✓ Used for increasing crop yield, control pests, monitor soil.
  - ✓ Helps use the resources including land, water, labour, etc. to optimum level for decreasing the cost and increasing the production.  
Cropin, Fasal, Intello labs etc. are some startups helping farmers in getting weather forecasts beforehand based on real-time data to plan.
- **Robotics and Drone Technology:**
  - ✓ Lack of awareness among farmers about using right amount of input at right time and lack of manpower is a major problem.
  - ✓ Using pesticides manually in open atmosphere is hazardous for farmers health and results in serious respiratory problems.
  - ✓ These pesticides and fertilizers are hazardous for soil health and ground water too.
  - ✓ Using robotics and drone technology in agriculture may save us from these hazards and increase efficiency.
  - ✓ TartanSense, Blue River Technology etc. are some startups working in this field.

### Agri Fintech Platform

- Farmers need funds for purchasing seeds, tilling, irrigation, buying fertilizers and pesticides, crop storage, pay transportation and warehouse rents.
- They often get trapped in the vicious loan cycles by local moneylenders while arranging funds as the banks demand proper documentation.
- According to RBI, only 41% farmers are covered by public/private banks. Agrifintech platforms play an important role in filling this gap.
- Samunnati, Jai Kisan, FarMart etc. are some fintech agri startups.
- They provide value chain finance, market linkages and crop insurance and help farmers by suggesting various farming aspects.

### Organic Farming

- Lakhs of individual farmers are already following organic cultivation but only on individual basis.
- To escalate it to mass-scale, well-structured industrial mechanism must be developed to ensure authentic quality of bio-fertilizers, bio-pesticides, vermi-compost etc. on affordable rates to crores of farmers.
- UGF Farms, Pindfresh, Urban Kisan etc. are some startups working to popularize organic farming with their innovative solutions.

### Livestock Farming Technology

- Dairy, poultry, fishery, shrimp farming etc. are called allied sectors which are not agri but are agri based and are done on smaller scales to increase income levels.
- Startups like Milkbasket, Stellapps etc. are helping farmers setup businesses apart from creating infrastructure for them and providing solutions ranging from monitoring livestock health to waste reduction and transformation of waste into useful products.

### ARTIFICIAL INTELLIGENCE IN AGRIPRENEURSHIP

Agriculture remains one of the world's most pressing problems in today's world. Increasing population has led to an increasing demand for food. It is believed that 70% more food would be required to be produced to meet this growing demand. Thus, there is a need to find solutions to sustainably raise agricultural output, strengthen international food supply system, cut down on food waste and feed hungry and malnourished. There is a need of technological intervention for sustainable agricultural techniques and food system. Technological advances enable countries to generate higher quality of food and higher yields and significantly reduce the need for both chemicals and trade.

AI machines can provide farmers information related to soil quality, sowing time, herbicide application and anticipate insect outbreaks. AI can result in farming revolution. In recent years, technology related to AI like machine learning, robots and computer vision has been integrated into business models of many agri-tech companies.

#### Benefits of Using AI:

1. Reduces cost of serving smallholder farmers across agriculture ecosystem.
2. Improve efficient and sustainable use of resources.
3. Overcome market symmetries that prevent farmers from accessing regional and global value chains.
4. Corresponds to situations like decreasing manual labour, limited agronomic land and gap between food production and population.
5. Increases productivity, quality and results in accelerated crop delivery.

#### Difficulties Associated with AI Application:

1. Uneven distribution of modern technology due to geographical, social, and political reasons.
2. Transfer of AI-based machines and algorithms from control experiments to real agricultural environment requires more studies, research, and ability to handle large sets of data and interpretation.
3. Concerns over security of devices used to collect data and its privacy.

#### Applications of IoT in Agriculture

- Analyze data like weather records, soil reports, new studies, rainfall, bug infestation, drone and camera photographs etc. and boost productivity.
- Using high resolution information during soil testing.
- Maximizing yield by combining hardware solutions with software and robots and applying right amount of nourishment to each plant.

#### Agri Tech Startups

- **DeHaat:**
  - It is an online platform that assists farmers with difficulties like implementation of AI enabled solutions to improve supply chain efficiency and production effectiveness in agricultural sector.
  - It offers complete services and solutions to agricultural sector and is operational in Bihar, UP, Odisha and West Bengal.

- **See Tree:**

- Launched in 2017 to provide farmers with vital data for managing and optimizing tree health.
- It has created AI systems to create health of each tree, finding failing trees and healthy tree groups.
- It evaluates impact of farming approaches and provides actionable data on their effectiveness.

- **CropIn:**

- India based Agri-tech startup providing future ready farming solutions.
- It provides agribusinesses with decision making tools that promote consistency, reliability and sustainability.
- It is digitizing every farm and data managing the whole ecosystem by providing capabilities for live-reporting, analysis, interpretation, and insights.

### Precision Farming

- The utilization of precise quantities at appropriate times helps cut down on waste and reducing environmental effect.
- Implementing it successfully doesn't find rapid solution but it evolves over time.

### Conclusion

Although AI has huge potential, but majority of Indian farmers have tiny landholdings as a result of which they can't afford purchasing technologies and other necessities. This might present a significant challenge in adopting technology. Therefore, it must be relevant, inexpensive, accessible, attainable, and sustainable.

## AGRIPRENEURSHIP AND FARM PROSPERITY

Agripreneurship plays various roles in the growth and development of national economy. It increases the income level and employment opportunities in rural as well as urban areas. It helps induce productivity gains of smallholder farmers while integrating them into local, national, and international markets. It is not only an opportunity but a necessity for improving agricultural productivity and profitability.

### Scope of Agripreneurship

- Dairying, sericulture, goat and rabbit rearing, floriculture, fisheries, shrimp farming, vegetable cultivation etc. are some choices for entrepreneurs to start business in.
- Other opportunities include setting up agro-produce processing units, agro-produce manufacturing units, agro-inputs manufacturing units and agro service centers.
- Areas like biopesticides, soil amendments, biofertilizers, vermicompost etc. offer several opportunities to small entrepreneurs at village level.

### Rise of Agri-startups

In the last couple of years, India has seen a rise in the number of agritech start-ups that are not only making technology more accessible but helping Indian farmers. Few of them are:

1. **Ninjacart**- It solves fresh agricultural produce supply chain problem for farmers and retailers.
2. **WayCool**- It uses technology to control end-to-end agriculture supply chain right from farming inputs to last mile distribution to help the farmers sell their produce through multiple distribution channels.
3. **AgroStar**- It helps farmers by providing real-time advice from experts on crop management and yield boosting.
4. **DeHaat**- Provides services like access to agricultural inputs like seeds and fertilizers at affordable prices, personalized assistance, soil testing, weather reports etc.
5. **EM3 AgriServices**- Helps small farmers buy expensive farming technology to rent specialization machines to boost productivity at cheaper costs.

### Women in Agripreneurship

- Agriculture consists of 70% women farmers who act as primary food producers and dedicate maximum time to agriculture, but their work goes unrecognized.
- Women agripreneurship is a way to channelize and empower them.
- It can make them self-sufficient, economically stable, independent, and socio-culturally more active.
- This can be done by organizing them into cooperatives, self help groups (SHGs), providing them land ownership, attracting them towards MSMEs and policies to make agriculture remunerative.
- Training should be provided to women entrepreneurs about diverse agricultural opportunities.
- They should be acquainted with major opportunities in agriculture, livestock, fisheries sector.
- According to Dr. Anil Kumar, Director ICAR-CIWA (Indian Council of Agricultural Research- Central Institute for Women in Agriculture) “Strategic implementation of gender sensitive entrepreneurial models can improve women participation in diversified farming with integrated approach and post-harvest activities making them atma nirbhar”.

### Role of Agripreneurs and Farmer Prosperity

The managerial, technical, and innovative skills of entrepreneurship applied in agriculture helps in:

1. **Productivity Gains**- It induces productivity gains for smallholder farmers and integrates them into local, national, and international markets.
2. **Reducing Food Costs**- It reduces food costs, supply uncertainties and improves diets of rural and urban poor.
3. **Generating Growth**- It generates growth, increases, and diversifies income and provides entrepreneurial opportunities in both rural and urban areas.

### Need of Agripreneurship

1. To generate innovative solutions for some of the critical agricultural issues such as precision farming techniques to increase productivity.
2. To minimize input costs by incorporating data driven decision making and streamlining efficiency in farm supply chain.
3. To reduce crop wastage through new entrepreneurial ventures that can improve supply chain infrastructure and bring in innovative storage facilities.

### Way Forward

- Agripreneurs could adopt some successful tech ventures like integrated Remote Sensing (provides biogeophysical data for agricultural crop monitoring and agromet advisory services), Geographic Information System (GIS), IoT.
- Such measures can help in monitoring crop health, automating irrigation systems etc.
- Applying analytics can help improve farm productivity, minimize farm wastage, and thereby increase farmers income.
- Agripreneurship thus transforms agriculture into an attractive and profitable venture and can be tapped via effective management of agri elements such as soil, seed, water and market needs.

### **ORGANIC FARMING**

Food grain production has increased to 308.6 million tonnes in 2020-21 from 50.82 million tonnes in 1950-51. Green revolution and other research and development in the field of crop cultivation has played an important role in this regard. But indiscriminate and excessive use of chemicals and fertilizers coupled with insecticides and pesticides are spoiling the soil and jeopardizing the future of coming generations. Thus, to provide better health to humans, animals and finally to entire ecosystem, integrated management of agriculture is required.

Working in this direction, the Government of India has introduced Organic Farming Policy as it not only adequately addresses issues of soil, ecology and human health but gives impetus to sustainable agriculture.

**Organic Farming Policy:**

1. It aims to promote technically sound, economically viable, environmentally non-degrading and socially acceptable use of natural resources for farming.
2. It seeks to actualize the area and crop potential for organic farming, sustainable soil fertility, conserving bio resources, strengthening rural economy, promoting value addition, accelerating agri-business growth, and securing fair living standard for farmers and agricultural workers and their families.

**Evidence Based Research on the Practices of Organic Farming and Outcomes-**

The study was conducted by the Indian Council of Agricultural Research (ICAR) through the Institute of Farming system Research (IIFSR), Meerut, UP. They studied the impact of organic approach, integrated approach, and inorganic approach on yield, soil, and food quality. Following were the outcomes-

1. Organic approach gave highest net returns of 64%, inorganic approach gave 25% return and integrated approach gave 11% return.
2. Five year mean net returns with organic approach are higher than inorganic approach in 67% cropping systems.
3. Long term trends revealed organic approach had better returns than inorganic one.
4. Organic farming increases soil health and fertility, improves sustainability index and increases carbon sequestration.
5. Organic farming gives higher yield.
6. Lower cost of inputs in organic farming.

The findings made it clear that organic/natural farming is far better than inorganic farming as input cost is less and they are locally and naturally available.

**Programmes and Policies for Organic Farming:**

**1. Paramparagat Krishi Vikas Yojana (PKVY):**

- a. Centrally sponsored scheme implemented in cluster fashion in size of 1000 ha in plain areas and 500 ha in hilly areas for better facilitation and marketing of organic produces.
- b. All farmers are eligible but within a group a farmer can avail benefit up to a maximum of 2 ha and the limit of assistance is Rs. 50,000 per ha.
- c. Broad components of scheme:
  - ✓ Implementation, handholding, capacity building and certification.
  - ✓ Participatory Guarantee System Certification
  - ✓ Incentive to farmers.
  - ✓ Value addition, marketing, and publicity.

**2. Bharatiya Prakritik Krishi Paddhati (BPKP):**

- a. Designed to enhance farmers profitability, access to quality food and restoration of soil fertility and farmland ecosystem as well as employment and contribute to rural development.

<b>Box-1</b>	
<b>Objectives of the Organic Farming Policy, 2005</b>	
•	Maintenance of soil fertility by encouraging and enhancing the biological cycle within farming systems involving micro-organisms, soil flora and fauna, plants and animals
•	Identification of areas and crops suitable for organic farming
•	Development of organic package of practices
•	Setting up of model organic farms for getting seed material for organic cultivation.
•	Assurance of production and supply of quality organic input
•	Adoption of biological methods for pest and disease control
•	Adoption of biological and mechanical methods for weed management
•	Harnessing of traditional and indigenous knowledge relating to organic farming
•	Creation of awareness among farmers towards organic agriculture
•	Development of domestic market for organic produce
•	Improvement in farmers' income through quality produce
•	Generation of rural employment opportunities
•	Simplification of certification system and recognition of adequate certification agencies, especially for domestic market
•	Promotion of group certification
•	Maintaining a diversity of plant and animal species as a basis for ecological balance and economic stability
•	Improvement in conditions of livestock that allow them to perform all aspects of their innate behaviour
•	Development of regulatory mechanism for various organic inputs and produce.

*Source: Organic Farming Policy, 2005, Ministry of Agriculture, Department of Agriculture and Cooperation, p.2*

Three Approaches	Six Methods
Organic approach (ORG)	Organic method (OF), with 100 percent of the nutrients from organic sources and complete organic management
	Organic innovative method (OIN), with 75 percent of the nutrients from organic sources + innovative inputs 25 percent [any two of cow urine (10 percent), panchgavya, plant growth-promoting rhizobacteria and vermiwash (10 percent)]
Integrated approach (INT)	Integrated method (IN75) - with 75 percent organic + 25 percent inorganic nutrients and management
	Integrated method (IN50) - with 50 percent organic + 50 percent inorganic nutrients and management
Inorganic approach (INO)	Inorganic method (IOF), with 100 percent inorganic nutrients and management
	State recommended (SR) method or farmers package (choice given to centres)

*Source: Presentation made by Abhay Kumar Singh, Centre for Science and Environment on the theme "Evidence(2004-20) on holistic Benefits of Organic and natural Farming in India" in a webinar organised by AGRASRI, Tirupatt on February 02, 2022.*

- b. It aims at promoting traditional indigenous practices, which give freedom to farmers from externally purchased inputs.
  - c. Focuses on on-farm biomass recycling with major stress on bio-mass mulching, use of cow-dung-urine formulation and exclusion of all synthetic chemical inputs either directly or indirectly.
  - d. Provides financial assistance of Rs. 12,200 per ha for three years for cluster formation, capacity building and handholding by trained professionals.
  - e. Implemented only in eight states due to lack of awareness and interest among farmers.
  - f. Schemes like Pradhan Mantri Krishi Sinchai Yojana (PMKSY), Paramparagat Krishi Vikas Yojana (PKVY), National Project on Soil and Health Fertility, Rainfed Area Development and Climate Change etc. have been subsumed under Rashtriya Krishi Vikas Yojana for FY 2022-23.
- 3. Mission Organic Value Chain Development for Northeastern Region (MOVCDNER):**
- a. Central sector scheme with an outlay of Rs. 400 crores.
  - b. Organic farming has progressed better in Northeastern states.
  - c. Out of the total funds available, 90% was spent indicating better outcomes according to annual report 2020-21 of Ministry of Agriculture and Farmers Welfare (MoA&FW).
- 4. Integrated Nutrition Management (INM) and Organic Farming:**
- a. Provides financial assistance for mechanization, promotion of bio-fertilizer testing laboratories, support of research and establishing teaching institutes.
- 5. DAY-NRLM and Organic Farming:**
- a. Implemented with women farmers of self-help groups (SHGs) under DAY-NRLM (Deendayal Antyodaya Yojana- National Rural Livelihoods Mission).
  - b. It has strengthened women livelihood.
  - c. Promotion of producer's groups & enterprises has been initiated under value chain development.

### Way Forward

Food grains are essential for the growing population in the country. Banking completely on organic/natural farming is not an appropriate solution. Therefore, following suggestions have been offered in this regard-

- Building awareness about the benefits of organic farming among different stakeholders.
- Continuous training, capacity building and handholding support to farmers.

### **PROMOTING WOMEN AGRIPRENEURSHIP**

The number of startups has grown manifold since the launch of Startup India initiative by Government of India in 2016. But the number of women participating in entrepreneurship activities has been relatively less when compared to their male counterparts. India has one of the lowest female participation in workforce globally ranking 120 from among 131 countries in the Development Report, 2018 by World Bank. Therefore, there is an urgent need to promote women entrepreneurship in general and women agripreneurship in particular for integrated development of country.

Like every other sector, scope for women agripreneurship has been growing and noticing an upward growth trend. At present, India has 14% women agri-business owners. Various estimates and surveys have suggested that more than 1/3<sup>rd</sup> of total agri/rural start-ups are being managed by women and are setting new benchmarks for viable and profitable business enterprise. Studies suggest that women can start new agri-business catering to an entirely different market segment when compared to their male counterparts. They are significantly contributing for improved socio-economic growth, sustainable and holistic development of rural areas.

**Scope and Prospects of Promoting Women Entrepreneurship**

1. Concerted efforts and institutional support mechanism, apart from access to quality training, funding opportunities, marketing networks, leveraging technology through e-commerce platforms, etc. are required for promoting women entrepreneurs.
2. Women are expected to dominate workforce and leadership positions in India in the upcoming few decades. Therefore, supporting women agripreneurs may help improve India’s future by 2030.
3. Women are the future of India’s progress and development since they possess multi-tasking skills, are focused, empathetic and inclusive leaders while managing any business enterprise.
4. Enhanced availability of institutional micro-finance, enabling regulations by Central/State governments, ease of access to high tech solutions, training and workshops etc. have transformed the outlook of agripreneurship industry with special focus on women agripreneurship ventures.

**Public Policy Initiatives**

Government of India (GOI) has initiated various schemes and programmes for creating livelihood for women, empowering them, providing them better living standard and their inclusive development. These schemes and initiatives have boosted the confidence of women agripreneurs and their holistic approach towards life, self-reliance, socio-economic empowerment, and self-actualization. This will result in:

- Attaining localized and regional development as women agripreneurship is primarily rural based.
- Reducing rural-urban migration.
- Improve economic status of women and community.
- Infrastructure development by creating situ employment opportunities for others.
- Reduce social discords/evils and overall boost socio-economic wellbeing by adopting new production systems.

S. No.	Agriculture & Allied Activities /Sectors	Products/Output
1	Fruits and Vegetables	Pickles, Salad, Fruits Export, Canned Fruits, Sauce, Juice, Dry fruits, Nuts
2	Cereals and Pulses	Gram Flour, Corn Flour, Wheat Flour, Bajara Flour, Maida, Dal
3	Mushroom Cultivation	Fresh Mushroom, Retail Mushroom, Export Mushroom, Dried Mushroom, Medicines
4	Dairy Products	Yogurt, Saturated Butter, Butter, Ice cream, Milk, Buttermilk, Ghee
5	Bee Keeping (Apiculture)	Honey, Wax, Medicine, Pollen, Cosmetics, Pharmaceutical
6	Floriculture	Religious offering flowers, Festive Flowers, Ornamental Plants

*Areas/Scope for Women Entrepreneurship*

Some of the schemes launched by GOI are-

**1. Institutionalized Initiatives for Promoting Agripreneurship:**

- a. Designed by National Institute of Agricultural Extension Management (MANAGE) Hyderabad with its “Agri-Clinics and Agri-Business Centers Scheme” to boost financial and institutional support for agri-graduates/ diploma holders.
- b. Aimed at promoting and fastracking prevailing processes of agri-extension activities.
- c. Empowers transfer of technology in agri-based enterprise ecosystem by building integrated agri-input supply and encouraging marketing of agri-based enterprise products/services.
- d. Under this scheme, large number of women agripreneurs have been able to manage and agri-based technical/consultancy extension services to farming community.

**2. Promoting Local Agripreneurs and Agri-Business Incubators (ABIs):**

- a. Emphasizes upon innovative practices and use of technology in agri-based and allied agri-sectors to nurture the agri-business enterprises and create large-scale employment, ensuring social/economic equity and inclusive growth.
- b. Example- “Organic Sikkim” has been successfully making agri-farmers earn 20% higher income by removing middlemen and discovering new markets for their agri-products through organic retail stores predominantly managed by women.

**3. Rashtriya Krishi Vikas Yojana (RKVY):**

- a. Aimed at promoting agripreneurship and innovative agri-enterprises by extending technical and financial support and enabling localized/regional incubation ecosystem through State Agricultural Universities and ICAR research institutions.
- b. A 60-day training is provided under this scheme through 29 agri-business incubation (ABIs) centers across India, thus contributing to growth of agripreneurship in general and women agripreneurship in particular.
- c. These enterprises have been able to enhance income generation activities and address unemployment issue in local/rural ecosystem resulting in growth of farming community and creating growth opportunities for women agripreneurs.

**4. NABARD Promoted Agri-Entrepreneurship Initiatives:**

- a. Manages variety of agribusinesses and women agripreneurs in partnership with NGOs, CSR (Corporate Social Responsibility) projects of corporates and large organizations.

**5. Micro Finance Institutions (MFIs):**

- a. Commenced in Karnataka along with MYRADA (an NGO) has promoted and nurtured thousands of micro, small, and medium women agripreneurs.
- b. These are impacting the transformation of millions of rural women through “Diversity, Equity and Inclusion” principle.

**WeACT(Women Entrepreneurs Access Connect Transform):**

- It is a national level network of women entrepreneurs, where interventions undertaken are executed in collaboration with Entrepreneurship Development Institute of India (EDII), Ahmedabad and Accenture Pvt. Ltd. with many other partners.
- Institutionalized capacity building, integrated market linkages and digital support systems under this scheme have enabled women enterprises to become profitable and sustainable.

**Issues and Challenges**

1. Dual responsibility of work and home.
2. Serious threats from established corporate players.
3. Lack of knowledge/market awareness.
4. Lack of knowledge in branding, management, accounting.
5. Lack of information source, skill sets and training.
6. Fear of failure.
7. Low risk-taking capacity.
8. Infrastructure challenges like storage, warehousing, electricity, credit facility and finance etc.
9. Exploitation by money lenders in absence of institutional credit facility.

**Way Forward**

- Policies by central and state governments and enhanced access to training/educational programs and digital media and ease of credit access etc. have given a stronger boost to the growth of startup culture and have enabled entrepreneurial ecosystem where women entrepreneurs are not only actively supporting the economy but are also contributing to global entrepreneurial ecosystem.
- These women entrepreneurs have shown strong willpower, skills, risk taking attitude and appetite for hard work with grit and determination to succeed.
- Campaigns like “Startup India” have been constantly enhancing the morale and enthusiasm of women and are helping create their identity and make them financially independent.
- Thus, agripreneurship helps women achieve inclusive growth, empowerment and gender equality.