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**Agri-Entrepreneurship and Startups in Tripura, India: Challenges, Opportunities, and Policy Insights**

**Abstract**

Tripura, a state in Northeast India, holds immense potential for fostering agri-entrepreneurship and startups due to its abundant natural resources, diverse agro-climatic zones, and strategic location. With a predominantly agrarian economy, there is scope for modernization through innovative startups in agriculture and allied sectors such as horticulture, fisheries, and agro-processing. However, challenges like inadequate infrastructure, financial constraints, and limited market linkages persist. This paper delves into the current state of agriculture in Tripura, explores the potential for agri-entrepreneurship and Startups, analyzes challenges, and provides policy recommendations to encourage entrepreneurial and Startups ventures for sustainable rural development.

*Keywords*: Agri-entrepreneurship, Startups, Horticulture, Sustainable Development

1. **Introduction**

Agri-entrepreneurship is emerging as a vital mechanism for addressing the challenges of low agricultural income and underemployment in rural areas. It integrates innovative practices, technological interventions, and value addition to transform agriculture from subsistence to a market-oriented enterprise (FAO, 2022). In India, the agriculture sector accounts for nearly 18% of GDP and employs 60% of the workforce (Government of India, 2021). Northeast India, including Tripura, present a unique opportunity for entrepreneurship in agriculture due to its diverse biodiversity, organic farming potential, and niche products like spices, fruits, and bamboo. Tripura, with 27% of its geographical area under cultivation, predominantly practices subsistence farming. The state is rich in natural resources and has significant potential in horticulture, floriculture, and medicinal plants. Agri-entrepreneurship can play a crucial role in promoting rural income, self-reliance, and sustainability. However, achieving this requires overcoming significant challenges, including lack of infrastructure, limited institutional credit, and weak policy frameworks (ICAR, 2020). Agripreneurs, often farmers themselves, take the lead in adopting modern technologies, value-addition techniques, and business strategies to enhance their income and overall livelihoods. India’s economic development efforts have been directed towards achieving sustainability across social, economic, and environmental dimensions. As the country grapples with the challenges of rural unemployment, food security, and climate change, agripreneurship emerges as a potential solution that aligns with these goals (Arumugam & Manida, 2023; Singh et al., 2022; Sharma & Sharma, 2022; Raza et al., 2024).

1. **Methodology:** This systematic review study was conducted from 2024- 2025, examines the opportunities, challenges, and policy interventions for promoting agri-entrepreneurship and startups in Tripura, focusing on recent developments and emerging trends in the region. The research design follows a qualitative methodology, utilizing a comprehensive literature review approach. Secondary sources of information were performed, alongside an analysis of government reports from the ICAR, NABARD, FAO, and the Ministry of Agriculture. The review was structured into four key thematic categories: agricultural trends, entrepreneurial challenges, emerging opportunities, and policy interventions. The review highlights the pivotal role of targeted policy interventions and strategic investments in infrastructure, market linkages, and financial mechanisms in driving the growth of agri-based startups. Further research is recommended to explore the long-term impact of these policy initiatives and to address the contextual challenges specific to the region, such as climatic conditions, land use patterns, and local entrepreneurial dynamics.
2. **Current Status of Agriculture in Tripura**

Agriculture remains the basis of Tripura's economy, with approximately 70% of its population relying on it for their livelihood. The state's agricultural landscape is defined by small and fragmented landholdings, subsistence farming practices, and a growing emphasis on horticulture and organic farming. This part presents a comprehensive overview of the current agricultural scenario in Tripura, exploring key aspects such as cropping patterns, agricultural practices, emerging trends, and challenges, supported by credible references and citations.

*1. Land Use and Agricultural Landholding Patterns*

Tripura spans 10,491.69 square kilometers, with approximately 27.5% of the land under agricultural use (Government of Tripura, 2021). The state has predominantly hilly terrain, leading to small and fragmented landholdings. The average landholding size is just 0.56 hectares, making it one of the smallest in the country (ICAR, 2022). The challenge of managing these small parcels of land limits agricultural productivity and intensification efforts.

*2. Cropping Patterns*

Tripura’s agricultural sector is diverse, influenced by its agro-climatic conditions and the availability of water resources. Rice remains the dominant crop, covering approximately 91% of the state’s cultivated area (Department of Agriculture, Tripura, 2021). Horticulture is a rapidly growing sector in Tripura, with crops like pineapple, jackfruit, oranges, and cashews making a significant impact. Pineapple from Tripura has earned a Geographical Indication (GI) tag, highlighting its unique quality and increasing its marketability both nationally and internationally (North East Today, 2024). Tripura also cultivates substantial quantities of spices, particularly ginger and turmeric, which are in high demand in local and international markets. The state's tea industry is also noteworthy, with over 7,000 hectares of land dedicated to tea cultivation (Tripura Tea Development Corporation, 2022).

*3. Irrigation and Water Management*

Agriculture in Tripura is heavily dependent on rainfall, which averages 2,200 mm annually. However, irrigation infrastructure remains limited, with only about 40% of the net sown area benefiting from irrigation systems, primarily consisting of shallow tube wells and ponds (FAO, 2022). To address water scarcity issues and improve irrigation efficiency, the government is implementing schemes like Pradhan Mantri Krishi Sinchayee Yojana (PMKSY), which aim to increase irrigation coverage and enhance water-use efficiency.

*4. Organic Farming*

Tripura is making notable progress in organic farming, especially through government-backed initiatives like the Mission Organic Value Chain Development for North Eastern Region (MOVCDNER). As of 2021, over 10,000 hectares have been converted to organic farming, particularly for crops such as ginger, turmeric, and horticultural produce (Government of Tripura, 2021). Organic farming not only promotes environmental sustainability but also helps farmers access niche markets, both domestic and international.

*5. Livestock and Fisheries*

Livestock and fisheries play a crucial role in Tripura's rural economy, contributing to the state's agricultural diversity. Tripura is self-sufficient in milk production and has a growing livestock sector. Key livestock species include cattle, pigs, and poultry, with government schemes under the National Livestock Mission (NLM) providing financial assistance for infrastructure development and genetic improvement.

Tripura has an annual fish production of approximately 94,000 metric tonnes. The state is largely self-sufficient in fish production, supported by the Blue Revolution Scheme, which focuses on expanding fish farming, improving infrastructure, and ensuring sustainable practices (ICAR, 2022).

*6. Farm Mechanization*

Farm mechanization in Tripura has been slow due to the small size of landholdings, the topographical challenges of hilly areas, and limited awareness among farmers. The government, through schemes such as the Sub-Mission on Agricultural Mechanization (SMAM), is promoting farm mechanization by providing subsidized machinery and establishing Custom Hiring Centers (CHCs) to make equipment accessible to smallholder farmers. While there has been some progress, the widespread adoption of mechanization remains a challenge due to financial constraints and the need for skill development (Nath & Dey, 2015).

*7. Role of Agricultural Institutions*

Institutions such as Krishi Vigyan Kendras (KVKs), T-SAMETI and the ICAR-RC for NEH Region, Tripura Centre are vital in disseminating modern agricultural practices and providing training to farmers. These institutions focus on promoting innovative techniques in areas like mushroom cultivation, integrated farming, and value addition. The National Bank for Agriculture and Rural Development (NABARD) has also played an essential role by providing credit and financial support to farmers, boosting their adoption of improved technologies (NABARD, 2022).

*8. Emerging Trends in Agriculture*

The state is experiencing an increase in agri-based startups, with a focus on value addition, organic farming, and agro-tourism. This trend is fueled by government initiatives that support entrepreneurial ventures in agriculture, providing financial aid and skill development. With the rise of digital tools, farmers in Tripura are increasingly adopting mobile applications for real-time agricultural advice, price monitoring, and market linkages. This is enhancing their access to information and helping them make more informed decisions. To combat the adverse effects of climate change, farmers in Tripura are increasingly shifting towards climate-resilient crops and agroforestry systems . These include drought-resistant varieties of rice, vegetables, and the adoption of water-conserving irrigation methods. (Sarkar *et al.* 2022).

*9. Challenges Facing Agriculture*

Despite its potential, agriculture in Tripura faces several challenges low agricultural productivity especially for rice and other staple crops, remain below the national average due to outdated farming practices, poor soil quality, and limited access to modern inputs. The state faces challenges in terms of poor infrastructure, which hampers market access for agricultural products. This leads to issues like price volatility and reduced income for farmers. The practice of shifting cultivation (Jhum) in hilly areas continues to cause soil erosion and fertility depletion, further exacerbating challenges related to land use (Tripura State Planning Board, 2020).

1. **Challenges to Agri-Entrepreneurship**

*1. Financial Constraints*

Access to institutional credit is a major challenge for small and marginal farmers in Tripura. Many rely on informal credit sources with high-interest rates, which limits the scalability of their ventures (NABARD, 2022).

*2. Infrastructural Deficiencies*

The lack of cold storage facilities, processing units, and efficient transportation networks leads to significant post-harvest losses, especially in perishable crops like pineapple and jackfruit (Patel & Gupta, 2023).

*3. Policy and Administrative Gaps*

Despite various government schemes, a lack of coordination between stakeholders often hinders their effective implementation. Farmers face difficulties in accessing subsidies, training, and advisory services (Startup India, 2022).

*4. Market Linkages*

Weak integration with national and global markets restricts farmers’ ability to get fair prices for their produce. Middlemen dominate the supply chain, reducing profit margins for producers (World Bank, 2021).

1. **Emerging Opportunities for Agri-Startups**

The agricultural sector in Tripura presents a unique opportunity for agri-startups due to its favorable agro-climatic conditions, government initiatives, and increasing demand for sustainable agricultural practices. Startups in agriculture can significantly contribute to the growth of the sector by introducing innovative solutions and capturing emerging market trends. This section explores the potential opportunities in the region, focusing on organic farming, agro-processing, agri-tech, and other emerging sectors.

*1. Organic Farming and Certification*

Tripura's organic farming sector has shown significant growth due to favorable climate conditions and support from government schemes like the Mission Organic Value Chain Development for North Eastern Region (MOVCDNER). The state’s agricultural products such as pineapple, turmeric, and ginger are well-suited for organic farming. There is growing domestic and international demand for organic produce, providing agri-startups with opportunities in organic cultivation and certification. Cluster–based approach may be beneficial for the re-source–poor small and marginal farmers to take advantage of adopting organic farming for doubling the farmers income in the region (Singh *et al.* 2021). Agri-startups can venture into the cultivation of organic fruits, vegetables, and spices. Tripura’s climate is conducive to the growth of crops like turmeric, ginger, pineapple, and jackfruit, all of which have high demand in organic markets (Tripura Organic Mission, 2020). Startups can provide organic certification consultancy, helping farmers meet organic standards, which would enhance the marketability of their products.

 *2. Agro-processing and Value Addition*

Agro-processing involves the transformation of raw agricultural produce into value-added products. For Tripura, this sector holds significant potential, especially in the processing of fruits, vegetables, and spices, which are abundant but often underutilized. Processing and packaging products such as juices, jams, and dried fruits can help startups tap into local and international markets. With crops like pineapple and jackfruit in abundance, there is considerable scope for processing these into value-added products (MIDH, 2018, Das and Prakash 2011). Given the prominence of turmeric, ginger, and other spices in Tripura, startups can engage in spice powder production and packaging for export markets, catering to the rising demand for organic and specialty spices (Soni et al., 2022). With Tripura's flourishing tea industry, there is scope for value-added products like tea blends, herbal teas, and premium tea packaging. Such initiatives can enhance the marketability of local tea varieties, especially in niche markets (Islam et al. 2022, Das, 2020).

*3. Agri-Tech and Digital Platforms*

The rise of technology in agriculture, also known as agri-tech, is opening up new avenues for agri-startups in Tripura. From precision farming to digital marketplaces, technology plays a key role in transforming agricultural practices and improving productivity (Baidya, 2017, Chaudhari, 2022). Startups can develop or adopt digital solutions like sensor-based irrigation systems, drones for crop monitoring, and satellite technology for precision farming. These innovations can help farmers in Tripura improve crop yields while optimizing the use of resources like water and fertilizers. Platforms like eNAM (National Agriculture Market) have shown that digital market linkages can reduce intermediaries and provide better prices for farmers. Startups in Tripura can create digital platforms tailored to local agricultural products, helping farmers directly connect with buyers. Developing mobile applications that provide real-time weather forecasts, pest control solutions, and market price information can empower Tripura’s farmers. These platforms can bridge the knowledge gap between farmers and markets (Nath *et al.,* 2022).

*4. Sustainable Agriculture and Climate-Smart Practices*

With the impacts of climate change increasingly evident, there is a growing need for sustainable agricultural practices. Agri-startups can play a crucial role in promoting climate-resilient farming methods, enhancing soil health, and conserving water resources. Tripura faces water scarcity issues in certain regions, making efficient water use critical. Startups can provide water-efficient irrigation systems such as drip and sprinkler irrigation, or develop rainwater harvesting systems to reduce water wastage. Introducing agroforestry systems—combining tree planting with crop cultivation—can boost soil fertility, prevent erosion, and create diverse income streams for farmers. Startups can help farmers adopt such systems and provide technical expertise (Sarkar et al. 2022). Agri-startups can produce and supply organic fertilizers, compost, and bio-pesticides. These products promote soil health while reducing reliance on chemical inputs, benefiting both farmers and the environment

*5. Mushroom Cultivation*

Mushroom cultivation is a growing sector in Tripura, with significant potential for commercialization. Varieties like oyster mushrooms and milky mushrooms thrive in the state’s climate, and their high value makes them an attractive option for small-scale farmers. There is a demand for quality mushroom spawn, and agri-startups can tap into this market by producing and supplying spawn to local farmers. Startups can establish mushroom farming units and provide training to farmers on proper cultivation techniques. They can also help farmers increase their income by promoting value-added mushroom products such as dried mushrooms and mushroom powders (Maolkeki Foundation 2020).

*6. Aquaculture and Fisheries*

Tripura has a long tradition of fishing, and the state's rivers, ponds, and reservoirs offer vast potential for expanding the aquaculture sector. Government schemes like the Blue Revolution and National Fisheries Development Board (NFDB) support this sector's growth (Natale et al., 2013; Rather et al., 2011). Agri-startups can invest in integrated fish farming, which involves growing fish alongside other aquatic species like prawn. This can increase productivity and reduce risks associated with single-species farming. Startups can engage in fish processing, producing products such as fillets, fish curry pastes, and dried fish, which cater to both local and international markets. There is potential for startups to develop eco-friendly practices in fish farming, which optimize water use and reduce environmental impact (Majumder and Balange, 2023)

*7. Agri-Tourism*

Agri-tourism is a relatively new sector in Tripura, offering unique opportunities for agri-startups to promote the region’s rich agricultural heritage while generating supplementary income for farmers. Agri-startups can organize farm tours that allow visitors to experience organic farming, traditional cultivation practices, and local culture. Providing farm stays, where tourists can live on farms and participate in daily farming activities, is another avenue for agri-tourism businesses (Dutta et al., 2018).There are also potential start-ups in the field of agriculture which can be linked with tourism industry for product and market development (Kb *et al.* 2022).

1. **Government Policies and Initiatives**

The growth of agri-entrepreneurship in Tripura has been facilitated by various government policies and initiatives at both the central and state levels. These policies aim to modernize agriculture, foster entrepreneurship, and support startups in agriculture and allied sectors. Below is an expanded discussion with appropriate references and citations.

*1. Startup India Initiative*

The Startup India initiative provides a framework for fostering innovation and entrepreneurship in various sectors, including agriculture. Key features include tax benefits, mentorship programs, and funding through the Rs. 10,000 crore Fund of Funds (Startup India, 2022).In Tripura different government agency encourages agricultural startups by offering additional support, particularly in food processing and value addition for crops like pineapple and jackfruit. Agribusiness sector in NER needs more organized entrepreneurial initiative to suffice the demands of growing middle-class consumers and improve rural employment generation, augment farm income and raise revenue through intensified participation in export trade (Kadirvel *et al.* 2024)

*2. Pradhan Mantri Krishi Sinchayee Yojana (PMKSY)*

This scheme focuses on enhancing irrigation coverage and water-use efficiency. It is vital for regions like Tripura, where rainfed agriculture predominates (Government of Tripura, 2021). PMKSY promotes micro-irrigation systems, such as drip and sprinkler irrigation, especially for horticultural crops like turmeric and ginger.

*3. Mission Organic Value Chain Development for North Eastern Region (MOVCDNER)*

Launched to promote organic farming in the Northeast, this initiative provides financial and technical support for transitioning to organic agriculture. Farmers in Tripura are adopting organic practices under this scheme (ICAR, 2020). Entrepreneurs are leveraging this program to market organic products, including spices and vegetables, both domestically and internationally.

*4. National Bamboo Mission (NBM)*

The NBM is particularly relevant to Tripura, where bamboo is a major resource. It supports bamboo-based startups by providing subsidies and technical training (Tripura State Planning Board, 2020). Entrepreneurs in the Tripura state are creating value-added products like furniture, handicrafts, and biochar from bamboo.

*5. Rashtriya Krishi Vikas Yojana (RKVY) – RAFTAAR*

This scheme supports innovation and entrepreneurship in agriculture by providing financial assistance to startups. It has been pivotal in developing agri-businesses in Tripura (NABARD, 2022). Startups in fish farming, high-value crop production, and agro-processing have benefited significantly.

*6. Pradhan Mantri Formalization of Micro Food Processing Enterprises (PMFME)*

This scheme aims to enhance the competitiveness of micro-food processing enterprises. It provides training, credit-linked subsidies, and branding support (World Bank, 2021). Entrepreneurs in Tripura use this program for processing jackfruit, pineapple, and cashew nuts, enhancing their value and marketability.

*7. One District, One Product (ODOP)*

Under the ODOP initiative, each district is encouraged to focus on one key product for development and branding (Startup India, 2022). The government has prioritized pineapple and jackfruit for processing and export, providing technical and marketing assistance to entrepreneurs.

*8. Skill Development Programs*

The Skill India Mission and state-level programs provide training in agri-business management and modern farming practices. KVK, T-SAMETI, , ICAR & Department of agriculture Govt. of Tripura continuously providing different Training on integrated farming, post-harvest management, and agro-technology to empowered youth and farmers for entrepreneurship development.

*9. Fisheries and Livestock Promotion*

Schemes like the Blue Revolution and National Livestock Mission focus on improving productivity and profitability in fisheries and animal husbandry. Fish farming and dairy startups in Tripura are flourishing with government support, contributing significantly to rural livelihoods (SIPARD, 2022).

*10. Tripura Industrial Investment Promotion Incentive Scheme (TIIPIS)*

This state-specific scheme provides subsidies for capital investment, interest, and taxes to startups (Government of Tripura, 2021). TIIPIS supports agri-entrepreneurs in setting up units in rural and tribal areas, enhancing regional equity.

*11. Digital Initiatives*

The introduction of eNAM (National Agricultural Market) and mobile apps under the Digital India initiative has improved access to market information and direct selling opportunities for farmers. These platforms have empowered farmers to make informed decisions, ensuring fair prices for their produce.

*12. Sub-Mission on Agricultural Mechanization (SMAM)*

This mission promotes farm mechanization through Custom Hiring Centers (CHCs) and subsidies for farm machinery (FAO, 2022). Entrepreneurs are setting up CHCs, enabling smallholders to access affordable mechanization services.

*13. KVK Support and Extension Services*

Krishi Vigyan Kendras (KVKs) in Tripura are instrumental in providing technical guidance, demonstrations, and training for aspiring entrepreneurs.

1. **Conclusion**

The agricultural sector in Tripura presents a promising opportunity for the growth of agri-entrepreneurship, driven by the state’s unique agro-climatic conditions, rich biodiversity, and an emerging focus on organic farming. Despite facing several challenges, such as limited access to finance, lack of infrastructure, and inadequate market linkages, there are significant opportunities to promote agri-startups and empower local farmers. The government of Tripura, along with other stakeholders, must take proactive measures to create a conducive environment for agri-entrepreneurship by improving infrastructure, providing financial support, and promoting innovations in the agricultural sector. Fostering collaboration between farmers, research institutions, and agri-businesses will be essential for introducing and scaling new technologies, such as precision farming, to boost productivity and sustainability. Additionally, creating platforms for capacity building, knowledge sharing, and networking will help young entrepreneurs develop the skills necessary for running successful ventures. Promoting agro-processing and value-added agriculture can play a crucial role in enhancing the economic contribution of agriculture while providing new employment opportunities. As Tripura moves forward, it is essential for both public and private sectors to work together, facilitating greater access to markets, improving digital infrastructure, and financial products customized to the needs of agri-entrepreneurs. With the right strategies and coordinated efforts, Tripura has the potential to emerge as a leader in agri-entrepreneurship, fostering innovation, economic growth, and a sustainable agricultural future.

**H .Recommendations for Promoting Agri-Entrepreneurship**

To effectively nurture agri-entrepreneurship in Tripura, a multifaceted approach is necessary, involving the strengthening of infrastructure, market access, and financial support. One of the key priorities should be the development of rural infrastructure, such as improved roads, cold storage units, and agro-processing facilities. This will ensure reduced post-harvest losses, enhance supply chain efficiency, and offer better access to markets. The government should continue to incentivize organic farming by providing financial support for organic inputs, certification processes, and promoting awareness programs that highlight the benefits of organic produce. Agri-startups in the state must also be encouraged to collaborate with research institutions to implement cutting-edge agricultural technologies, such as precision farming, which can significantly boost both productivity and environmental sustainability. Financial institutions should create specific loan schemes and insurance packages that cater to the unique needs of agri-startups, addressing financial barriers that often hinder the growth of new ventures. Capacity building programs, training in entrepreneurship, business management, and the adoption of modern technologies, will play a pivotal role in empowering local farmers and aspiring entrepreneurs. Additionally, promoting agro-processing and value-added ventures can help Tripura diversify its agricultural exports, generate employment, and contribute to economic growth. Furthermore, fostering collaborations between public and private sectors, as well as promoting digital platforms for marketing and e-commerce, will open up new opportunities for local agri-entrepreneurs to connect with broader markets, both domestically and internationally. Through these efforts, Tripura can create a robust agri-entrepreneurship ecosystem that supports long-term growth and sustainability in its agricultural sector.

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