



Effective Role of Youth in Today's Agriculture: Building the Next Generation of Agripreneurs

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Youth play a vital role in modern agriculture by bringing innovation, technology, entrepreneurship and new ideas into farming. They can use smart farming, drones, precision agriculture, digital marketing, AI and modern machinery to improve productivity and reduce costs. Youth can become agripreneurs by starting businesses in areas such as food processing, value addition, organic farming, agri-inputs, dairy, poultry, fisheries, horticulture and agricultural services. They also help create employment, increase farmers' income and strengthen rural economies. With proper skill development, training, finance, government support and access to technology, young people can transform agriculture from traditional farming into a profitable, innovative and sustainable enterprise. Youth are not just the future of agriculture—they are the key drivers of its transformation today.

Key words: Agripreneurship, Youth empowerment, Employment generation, Rural development, Market linkage, Sustainable agriculture.

Introduction

Rural youth have a vital role in transforming agriculture into an energetic, lucrative, and technologically driven enterprise. Agriculture, as practiced today, faces increasing challenges like climate variability, low soil fertility, high costs of inputs, and unpredictable markets that demand innovative and sustainable ways of doing business. Agripreneurship or entrepreneurship in agriculture opens up new avenues for improving livelihoods, adding value, and developing enterprises among rural youth. At the same time, rapid developments in agricultural technologies like drones, IoT-based sensors, mobile advisory platforms, precision farming practices, and improved farm machinery are restructuring modern agriculture. These innovations further enable productivity, resource efficiency, and smart decision-making. Involvement of rural youth in these emerging domains will definitely facilitate rural development, generate more employment, enhance farm profitability, and ensure sustainable agricultural growth. Agriculture plays the major role in Indian economy, providing food, employment, and raw materials for industries. This sector face many issues like climate changes, labour shortages, declining farm income, and most importantly aging of farmers.

Agriculture has long been the foundation of human civilization and remains one of the most important sectors of the global economy. In India, it provides livelihood to nearly half of the population and plays a vital role in ensuring food security, employment generation, and rural development. However, the agricultural sector is currently facing several challenges, including climate change, declining farm profitability, labour shortages, shrinking landholdings, and rapid technological advancements. Addressing these challenges requires innovative solutions and active participation from the younger generation. Youth possess the energy, creativity, technical knowledge, and entrepreneurial mindset needed to transform agriculture into a modern, profitable, and sustainable sector. Unlike traditional farming methods, today's young people are adopting advanced technologies such as artificial intelligence (AI), drones, precision

farming, digital agriculture, and smart irrigation systems to improve productivity and resource efficiency. They are also exploring opportunities in food processing, value addition, agricultural marketing, agri-startups, and agribusiness management. The emergence of agripreneurship has created new opportunities for young people to view agriculture not only as a means of livelihood but also as a dynamic business enterprise. By integrating innovation, technology, and sound business practices, young agripreneurs contribute to increased agricultural productivity, employment generation, rural economic development, and environmental sustainability. Their active involvement is essential for achieving the Sustainable Development Goals (SDGs), particularly those related to zero hunger, poverty reduction, and sustainable economic growth (FAO, 2022). This article explores the effective role of youth in today's agriculture, highlighting their contribution to agripreneurship, technological innovation, sustainable farming.

Agripreneurs

Agripreneurs are entrepreneurs who establish and manage agricultural enterprises by combining scientific farming practices with business management skills. The term agripreneur is derived from the words "agriculture" and "entrepreneur." An agripreneur recognizes opportunities in agriculture, invests resources, adopts innovative technologies, takes calculated risks, and develops profitable ventures while contributing to rural development and food security. Unlike traditional farmers, who primarily focus on crop cultivation, agripreneurs view agriculture as a complete value chain that includes production, processing, storage, packaging, transportation, branding, marketing, and export. They continuously seek new ways to improve productivity, reduce production costs, increase product quality, and meet changing consumer demands. Their objective is not only to earn profits but also to create employment opportunities, promote sustainable farming, and improve farmers' livelihoods. Agripreneurs operate in a wide range of agricultural sectors, including crop production, horticulture, floriculture, plantation crops, livestock farming, dairy farming, poultry, fisheries, beekeeping, mushroom cultivation, organic farming, protected cultivation, hydroponics, seed production, agricultural machinery services, food processing, agri-tourism, agricultural consultancy, digital agriculture, precision farming, and agri-input supply. Many young agripreneurs are also establishing innovative startups that provide services such as drone-based crop monitoring, smart irrigation systems, soil testing, weather advisory, farm mechanization, and online marketing platforms for farmers. Young agripreneurs play a significant role in transforming agriculture into a modern and technology-driven sector. They use digital tools, artificial intelligence, the Internet of Things (IoT), Geographic Information Systems (GIS), mobile applications, and e-commerce platforms to improve agricultural productivity and market access. Their innovative approach helps reduce post-harvest losses, increase farmers' income, encourage climate-smart agriculture, and strengthen rural economies. The Government of India and several financial institutions actively encourage agripreneurship through schemes such as Startup India, Agri-Clinics and Agri-Business Centres (ACABC), Rashtriya Krishi Vikas Yojana (RKVY-RAFTAAR), PM Formalisation of Micro Food Processing Enterprises (PMFME), and NABARD entrepreneurship development programmes. These initiatives provide financial assistance, technical training, incubation support, skill development, and market linkages, enabling more young people to establish successful agricultural enterprises. Thus, agripreneurs are the driving force behind the modernization of agriculture. By integrating innovation, technology, sustainability, and entrepreneurship, they contribute significantly to agricultural productivity, employment generation, food security, and the overall economic development of the nation (FAO, 2022; NABARD, 2022; Government of India, 2023).

Role of Youth in Modern Agriculture

Youth serve as a key driving force in the modernization and sustainable development of agriculture. With higher levels of education, technological awareness, and innovative thinking, young people are transforming traditional farming into a more productive, profitable, and technology-driven sector. Their active participation is essential to meet the growing demand

for food, improve farmers' livelihoods, and ensure environmental sustainability. According to the Food and Agriculture Organization (FAO, 2022), empowering youth in agriculture is critical for achieving global food security and sustainable rural development. One of the most important roles of youth is the adoption of modern agricultural technologies. Young farmers are more inclined to use advanced tools such as drones, artificial intelligence (AI), the Internet of Things (IoT), GPS, Geographic Information Systems (GIS), sensors, and precision farming techniques. These technologies support efficient use of water, fertilizers, and pesticides while enhancing crop productivity and reducing production costs. Youth also play a significant role in promoting digital agriculture. They utilize smartphones, mobile applications, online advisory services, weather forecasting systems, digital payment platforms, and e-commerce websites to access agricultural information and market their products directly to consumers. Digital technologies enable farmers to make informed decisions, improve market access, and increase farm income (Government of India, 2023).

Innovation and entrepreneurship represent another major contribution of youth in modern agriculture. Many young individuals are establishing agri-startups in areas such as food processing, organic farming, dairy farming, fisheries, mushroom cultivation, hydroponics, protected cultivation, seed production, and agri-tourism. These enterprises generate employment opportunities, strengthen rural economies, and promote value addition in agriculture. Young farmers also contribute to sustainable and climate-smart agriculture by adopting environmentally responsible practices such as organic farming, natural farming, integrated nutrient management, integrated pest management, rainwater harvesting, renewable energy use, and efficient irrigation systems. These approaches help conserve natural resources, reduce environmental pollution, and enhance long-term agricultural productivity. Furthermore, youth play an important role in leadership and rural development by organizing farmer training programs, promoting Farmer Producer Organizations (FPOs), encouraging scientific farming practices, and raising awareness about government schemes. Their leadership helps motivate other farmers to adopt modern technologies and innovative business models.

In addition, young people strengthen agricultural marketing through branding, packaging, quality certification, and online sales. By directly connecting producers with consumers, they help reduce the role of intermediaries and ensure better price realization for farmers. Overall, the active involvement of youth in modern agriculture is transforming the sector into a more productive, profitable, innovative, and sustainable industry. Their energy, creativity, technical expertise, and entrepreneurial mindset are essential for developing the next generation of agripreneurs and ensuring food security, rural prosperity, and national economic growth.

Employment Generation Through Agripreneurs :

The adoption of modern technologies has transformed agriculture into a more productive, efficient, and sustainable sector. Young farmers and agripreneurs are leading this transformation by integrating advanced technologies into farming practices. Their willingness to embrace innovation has improved crop productivity, reduced production costs, enhanced resource-use efficiency, and increased farm profitability. According to the Food and Agriculture Organization (FAO, 2022), modern technologies are essential for ensuring food security and sustainable agricultural development. One of the most important technological advancements is precision agriculture, which uses GPS, Geographic Information Systems (GIS), remote sensing, drones, sensors, and satellite imagery to monitor crop growth, soil conditions, and water availability. Precision farming enables farmers to apply fertilizers, pesticides, and irrigation only where needed, reducing waste and improving crop yields.

The use of Artificial Intelligence (AI) and the Internet of Things (IoT) has further revolutionized agriculture. AI helps farmers predict pest and disease outbreaks, estimate crop yields, and make data-driven decisions, while IoT devices continuously monitor soil moisture, temperature, humidity, and nutrient levels. These technologies enable timely interventions that improve productivity and conserve natural resources. Farm mechanization is another significant advancement. Modern machinery such as tractors, power tillers, seed drills,

transplanters, combine harvesters, and drone sprayers reduce labour requirements, save time, and improve the efficiency of agricultural operations. Mechanization also addresses labour shortages and increases the overall profitability of farming. Protected cultivation techniques such as greenhouses, shade-net houses, polyhouses, and hydroponics allow farmers to grow high-value crops under controlled environmental conditions. These methods increase production throughout the year, improve crop quality, and reduce the impact of adverse weather conditions.

Digital technologies have also become an integral part of modern agriculture. Mobile applications, weather forecasting services, online advisory platforms, soil testing services, and e-commerce websites provide farmers with timely information on weather, market prices, crop management, and government schemes. These digital tools improve decision-making, strengthen market access, and increase farmers' incomes. Modern irrigation technologies such as drip irrigation, sprinkler irrigation, automated irrigation systems, and solar-powered pumps improve water-use efficiency and support sustainable water management. These technologies are particularly important in regions facing water scarcity and changing climatic conditions. Despite these advantages, the adoption of modern technologies faces challenges such as high initial investment, lack of technical knowledge, limited access to credit, inadequate rural infrastructure, and insufficient training. Addressing these challenges through government support, extension services, financial assistance, and capacity-building programmes will encourage greater technology adoption among young farmers.

Adoption of Modern Technologies in Agriculture

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Conclusion

Agriculture is undergoing a rapid transformation, and the active participation of youth is essential for its future growth and sustainability. Young people, with their education, innovative ideas, technological skills, and entrepreneurial mindset, are changing agriculture from a traditional occupation into a modern and profitable enterprise. Through agripreneurship, they are creating employment opportunities, promoting value addition, adopting digital and precision farming technologies, strengthening food processing industries, and improving agricultural marketing systems.

Rural youth, in particular, play a significant role in enhancing agricultural productivity, ensuring food security, reducing rural unemployment, and supporting sustainable development. Their involvement in climate-smart agriculture, modern farm management, and agri-startups contributes to increased farm income and the overall development of rural communities. Government initiatives, financial institutions, and educational organizations further encourage young people to become successful agripreneurs by providing training, financial assistance, and technological support.

Although challenges such as limited access to finance, climate change, small landholdings, and market uncertainties still exist, these can be overcome through proper policy support, skill development, innovation, and strong institutional assistance. Investing in rural youth and promoting agripreneurship will not only strengthen the agricultural sector but also generate employment, improve farmers' livelihoods, and accelerate national economic growth. Therefore, empowering the next generation of agripreneurs is essential for building a resilient, competitive, and sustainable agricultural system. With continuous innovation, digital transformation, and supportive government policies, today's youth will become the leaders of tomorrow's agriculture, ensuring prosperity for farmers and food security for future generations.

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