

Role of Agriculture Education as Anchoring Indian Food Security

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Agricultural education plays a critical role in boosting food security in India by addressing various challenges and equipping individuals with the necessary knowledge and skills. Here are several ways in which agriculture education contributes to enhancing food security in India: Bearing in mind that agriculture has a much greater impact on reducing poverty and improving food security than the other sectors of the economy and considering differences in the potential for agricultural production across countries. The aim of this paper is to identify relationships between the malnutrition scale and selected characteristics describing the agricultural sector within identified clusters of developing countries. Attempts have already been made to recognize groups of countries categorized according to measures of food security. It is shown that different research issues resulting in different sets of measures used in the classification can lead to different typologies and hence different conclusions. Focuses mainly on food availability issues, utilizing consumption, production and trade measures. They stressed that trade policies influence world food availability, as well as food production and food imports at the national level. The indicators used in the study include those describing food availability, access and utilization, *i.e.*, food production per capita, the ratio of total exports to food imports, calorie intake per capita, protein intake per capita and non-agricultural population, while the authors address the key question. They identify groups of countries with similarities in their food security profiles covering the results of agricultural activity and consumption levels rather than agricultural-based reasons for food insecurity.

Certain facts of world hunger problems

Alimentation a global population of about 10 billion people by 2050 would necessitate a drastic shift in how food is produced, processed, exchanged, and eaten (<https://www.fao.org/food-systems/en/>). Improvements at global, regional and local food

systems is needed to feed the expanded population and so that decent employment and livelihoods of producers and actors is ensured. Recent developments in Indian agriculture indicate a stagnant or declining factor productivity causing a concern for scientists and planners. Among many factors causing this decline, natural resource degradation, slow pace of new innovations and human resource not matching with the challenges, are important.

Current Status Agricultural Education in India

Agricultural education modelled on the lines of US Land-Grant system introduced during early 60s along with other Green Revolution programmes has evolved considerably in terms of improved infrastructure, trained faculty, course structure, content and hands on practical training *etc.*, but still struggling to meet the expectations of the fast-changing technology of agriculture. Agricultural Education in India is supported and regulated by the Indian Council of Agricultural Research (ICAR) and is imparted largely through State Agricultural Universities (70), and few Deemed to be Universities (4), Central Agricultural Universities (3), Central Universities with Agriculture Faculty (4). Recently private sector institutions have also entered this arena. The intake capacity of students, which was less than 5,000 in 1960, has now gone up to 64,485 (<https://education.icar.gov.in/>). With about 350 constituent colleges, these AUs enrol, on annual basis, about 40,781 students at UG level, over 13,798 at Masters' level and 4,992 in PhD programmes. In addition to this, there are many private affiliated colleges are enrolling thousands of students annual.

Agricultural education plays a crucial role in the Indian food industry by contributing to the development and sustainability of the agricultural sector. In Madhya Pradesh School of Agriculture, Sanjeev Agrawal Global Education (SAGE) University, Bhopal, play a key role in area of agricultural education. Here are some key aspects of

the role of agricultural education in the Indian economy.

Skill Development

Agricultural education equips individuals with the necessary skills and knowledge to engage in modern and sustainable farming practices. This includes crop management, pest control, water conservation, and the use of advanced technologies in agriculture.



Source: smart gaon development foundation

Technological Integration

The students learn about training includes the proper operation and maintenance of modern agricultural machinery and equipment. Agricultural education introduces the use of technology, such as GPS and sensors, for precision farming to optimize resource use. Organic farming practices individual are educated on organic farming principles and practices, including certification processes. Techniques for producing organic fertilizers are taught to promote sustainable and environmentally friendly farming. Agricultural education includes market-oriented training, teaching individuals to analyse market trends and consumer preferences. Students learn business planning, financial management, and marketing strategies to start and run successful agricultural enterprises.

Research and Innovation

Agricultural education introduces research methodologies, enabling individuals to conduct experiments and contribute to agricultural research. Stay updated on emerging technologies and innovations in agriculture to remain competitive and

sustainable. Agricultural education emphasizes environmentally sustainable farming practices, promoting biodiversity, and reducing the ecological footprint.

Entrepreneurship Development

Agricultural education fosters entrepreneurship by providing aspiring farmers and Agripreneurship with the knowledge and skills needed to establish and manage successful agricultural businesses. This can lead to the creation of new ventures and job opportunities within the food industry. Courses in agriculture education can include modules on business planning, financial management, and marketing strategies tailored to the agricultural sector. This prepares individuals to create viable business plans for their ventures. There are few ideas which helps to set up the successful agribusiness. Environmental sustainability implements practices that promote environmental sustainability, such as conservation tillage, cover cropping, and organic farming methods.

Business Planning

Develop a comprehensive business plan outlining your goals, target market, production strategies, and financial projections. Identify key performance indicators (KPIs) to measure the success of your agribusiness.

Crop Selection and Diversification

Choose crops based on market demand, climate suitability, and your expertise. Consider diversifying your crops to spread risk and take advantage of different market opportunities. Soil is an important factor. Soil & water management implement sustainable soil management practices to maintain soil fertility. Conduct soil tests regularly to assess nutrient levels and adjust fertilizer applications accordingly. Efficiently manage water resources through irrigation systems and water conservation practices. Monitor and control water usage to optimize crop production and reduce waste.

Integrated Pest Management (IPM)

Implement IPM practices to control pests and diseases while minimizing the use of chemical inputs. Regularly scout fields for signs of pests and diseases

and take appropriate measures. In view of technology adoption embrace modern agricultural technologies such as precision farming, drones, and automated equipment. Use farm management software to monitor and analyze data related to crop performance, expenses, and revenue.



Source: Cropaia Integrated pest management

Market Research and Marketing

Stay informed about market trends and consumer preferences. Develop effective marketing strategies to promote your products, such as participating in farmers' markets, establishing partnerships with local businesses, or creating an online presence.

Adoption of Modern Technologies

The Indian food industry can benefit significantly from the adoption of modern agricultural technologies. Agricultural education helps farmers understand and implement cutting-edge technologies such as precision farming, biotechnology, and data-driven agriculture, leading to increased efficiency and productivity. Agriculture education programs can facilitate access to resources such as finance, subsidies, and government support. Entrepreneurs need to know how to navigate these systems and leverage available resources to start and grow their businesses.

Sustainable Agriculture Practices

With increasing concerns about environmental sustainability, agricultural education promotes practices that are environmentally friendly. This includes organic farming, conservation agriculture, and the efficient use of natural resources. Sustainable practices contribute to the long-term viability of the food industry. Emphasizing sustainable agriculture practices is increasingly important. Education in sustainable farming methods, organic farming, and environmentally friendly approaches not only

contributes to responsible entrepreneurship but also aligns with consumer preferences.

Quality and Safety Standards

Agricultural education emphasizes the importance of adhering to quality and safety standards in food production. This is crucial for meeting domestic and international regulations, ensuring food safety, and maintaining the reputation of Indian agricultural products in the global market.

Market Orientation

Agricultural education helps farmers understand market dynamics and consumer preferences. This knowledge enables them to make informed decisions about crop selection, production volumes, and marketing strategies, ultimately contributing to a more market-oriented and competitive food industry. Agricultural education provides farmers with knowledge about market dynamics, including supply and demand, pricing mechanisms, and factors influencing market trends. This understanding helps farmers make informed decisions about what crops or livestock to produce. Farmers with a market-oriented education are trained in market research. They learn how to identify market opportunities, assess consumer preferences, and analyze competitors. This knowledge enables them to tailor their production to meet consumer demands. Farmers learn about the entire agricultural value chain, from production to processing and distribution. This holistic understanding helps them identify areas where they can add value to their products, such as through processing or direct marketing, to capture more of the value chain benefits.

In summary, the role of agricultural education in anchoring Indian food security is multi-faceted, encompassing knowledge transfer, skill development, research, sustainable practices, extension services, entrepreneurship, policy advocacy, and diversification. A well-educated and skilled workforce in agriculture is essential for addressing the challenges of food production and ensuring a stable and secure food supply for the growing population.

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