

# Role of Agriculture Education in Indian Education System

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## ABSTRACT

Agricultural education plays a significant role in boosting economy and speeding up the development process. It can create a landmark in achieving food security and sustainability. Human recourses need to be developed properly and untapped agricultural potential can be tapped by educating people about this green jewel called agriculture. Sensitization of people with awareness programs, training sessions and camps can help in improving the statistics of education required for exclusive growth of this sector. The biggest challenge faced by this sector at present is lack of education and guidance. Education does not mean just teaching, it is a way of sustainability. People who are involved in agriculture should be equipped with all the requisite skill sets to ensure maximum productivity from this sector. Farmers use technology to make advances in producing more food for a growing world. Biotechnology in agriculture is the manipulation of a living organism to improve the quality of human life through advances in crop and animal production. Many universities have come up to reorganize and strengthen the system of agricultural and allied education in India

**Keywords:** Technology, agricultural education, Agricultural economy, development etc.

## Agricultural Education

India is the agricultural economy based country. Agriculture and its allied activities act as main source of livelihood for more than 80% population of rural areas. It provides employment and enterprises to approximately 52% of labor. Its share to Gross Domestic product (GDP) is between 14 to 15%. At the time of Independence, India faced scarcity of food grain. India achieved impressive growth in agricultural field since 1966. India today is self-sufficient in most of the food grain despite population increase. The food production of nation increased from 51 million tons in 1950 to about record 273.38 million tons in 2016-17. This growth in itself shows a remarkable reaching in the history of global agriculture. India has achieved remarkable

growth in agriculture, milk, fish, oilseeds, fruits and vegetables growing to green, white, blue and yellow revolutions. All these revolutions have brought prosperity for the farmers. Many factors are accountable for these achievement viz possible government Programmes and policies, receptivity of the farmers and also establishment of higher agricultural education institutions.

In order to sustain, diversify and realize the potential and capabilities of agriculture fields, it is necessary to develop ICTs skilled human resources. Agricultural

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human resource development is a continuous process undertaken by agricultural universities and their research centres. Agricultural universities impart education in the various disciplines of agriculture viz., Agriculture, Agricultural Engineering, Forestry, Horticulture, Veterinary and Animal Husbandry, Dairy Science, Food Technology, Fisheries Science, Agriculture Information Technology, Agril Business Management etc. It acquires agricultural education at the level of diploma, degree, masters and doctoral level from different agricultural universities and institutions.

The history of agricultural education in India can be traced back to medieval period when study of agriculture was included in the curricula of Nalanda and Takshashila Universities as an important subject. However, formalized courses in agricultural education began only at the beginning of 20th Century when six agricultural colleges were established at Kanpur, Lyalpur (now in Pakistan), Coimbatore and Nagpur in 1905, at Pune in 1907 and at Sabour in 1908 under the General Universities. After the independence, the Government of India initiated an extensive planning process. To ensure orderly growth, the Indian Council of Agricultural Research (ICAR), which is the apex body for coordinating, guiding, and managing research and education in agriculture in the entire country, took the lead and drafted the first Model Act for Agricultural Universities in India in 1966 and encouraged the setting up of exclusive State Agricultural Universities for research, extension and education support. The first Agriculture University in the country was set up in 1960 at Pantnagar (now in Uttarakhand), which paved the way for establishment of agricultural universities in other states. At present, there are 73 Agricultural Universities (AUs) including five deemed-to-be universities, two Central Agricultural Universities and four Central Universities with agriculture faculty. The intake capacity of students, which was less than 5,000 in 1960, has now gone up to 40,000. With about 350 constituent colleges, these AUs enroll, on annual basis, about 25,000 students at UG level, over 15,000 at Masters' level and Ph.D. programmes. In addition to this, there are many private affiliated colleges enrolling thousands of students annually. There are about 23,000 scientists for teaching, research and extension

under the present ICAR-Agricultural Universities (AUs) system. Degree courses in 11 UG disciplines and 93 disciplines at PG level are offered with an emphasis on learning through hands on practice sessions. About 52% students admitted are from rural background and 36% are girls.

### **Growth and evolution of agricultural education in India**

The evolution and growth of agricultural education in India has been gradual but significant. The practices that were used in ancient times were well protected and documented. In spite of that there was no system of formal education in those times. The first agricultural college was established at Coimbatore. The first half of twentieth century saw the new light of agricultural education in India. The country felt the need of agricultural research and education which lead to the establishment of Imperial Agricultural Research Institute (IARI) at Pusa. It was granted deemed status by UGC to foster education among youth. It began the era of higher agricultural education in India. Some other colleges were also established in different parts of the country. These institutions helped to foster teaching, research and extension in nation. They cater to the needs of rural Indian problems and keep on researching and developing agriculture. In addition to this, the major factor in achieving growth was by introducing research programs. The increase in food production has helped the country be self-sufficient and counter the swelling population demands. Despite of this, increasing poverty, food insecurity, malnutrition and illiteracy pose a threat to the population as a whole. In Uttar Pradesh, first SAU (State Agricultural University) was established and it was followed by others. At present there are about 70 universities imparting agricultural education in India. In spite of these institutions and research programs, educational programmes and institutions face wide criticism for being unable to equip agriculturists and farmers with quality tools that can help them produce adequate food, generate revenue and employment opportunities.

### **Challenges and issues of Agricultural Education in India**

The biggest challenge for agricultural education

in India nowadays is to seek out suitable human resources which will help to attain sustainable goals. The institutions and universities imparting agricultural education are manufacturing students with limited or no exposure of field work. They lack knowledge domain or technological advancements. The curricula has got to be revamped which will help in solving practical problems. There should be a fine balance between teaching and research to assist solve the issues of poor research and teaching process. With the introduction of economic liberalization and WTO reforms, agricultural education demands makeshift policies and re-orientation programs. Special focus should run on agriculture and its allied sectors to nurture positive growth within the economy, using obsolete techniques may be a barrier to attain sustainable goals. Another challenge in agricultural education is absence of national policies that regulate trainings and education. The funds kept aside for imparting agricultural trainings and education is seeing a pointy decline which makes it difficult to form top quality research and training. The inadequate funding provided by government for agriculture is reflected within the pace of development seen within the wake of modernization.

### **Emerging challenges in Agriculture sector**

Presently, agriculture faces many challenges such as (i) Low productivity (averaging to 60% of world average), (ii) decreasing profitability in farming, (iii) rising quality competitiveness under the pressure of globalisation, (iv) poor linkage of farms with the market, (v) Low knowledge of input agriculture, (vi) wide gap between lab and land experiments, (vii) low level of mechanization and value addition (viii) Supply Chain Management and Product Lifecycle Management, (ix) Lack of qualified manpower to address the new and emerging challenges and deliver at grassroots level, (x) mounting threat to sustainability arising from depleting quality of natural resources, biotic and abiotic stresses and inefficient use of agro-inputs and (xi) poorly coordinated natural disaster management system.

To properly address these challenges, competent human resource in sufficiently large numbers would be required in the near future. To achieve this, a renewed thrust for higher agriculture education is necessary with enhanced financial support to the

ICAR- AU system. Estimates suggest that by the year 2020, more than 16,000 scientific manpower would be required to cater to the needs of R&D in the country. At present, there is substantial gap of 50% or more between demand and supply of manpower in agriculture and allied sciences sector. The projections indicate that by 2020, the annual out turn required for Undergraduate and above would be about 54,000 as against the present annual out turn of around 40,000. This means that sincere efforts are required to attract more number of students towards Higher Agricultural Education. There is a vast scope for young graduates to undertake agriculture as their profession which is directly or indirectly contributing to the economic and social development of the country.

Recently, Indian Council of Agriculture Research (ICAR) has recognized degree of B.Sc. Agri in different State Agriculture Universities of the country as Professional Degree. Nine courses have been granted the recognition of 'Professional Degrees' namely, Agriculture, Horticulture, Agriculture Engineering, Sericulture, Forestry, Food Technology, Biotechnology, Home or Community Science, Food Nutrition and Dietetics. With these courses now being professional, specialised requirements can be imparted as Indian agriculture is increasingly in need of micro-level attention. Fifth Deans Committee report gave terms of reference, considering contemporary challenges for employability of passing out graduates and to adopt a holistic approach for quality assurance in agricultural education. The Committee has restructured course curricula and have reoriented the system to develop needed skills and entrepreneurial mindset among the graduates to take up self-employment, contribute to enhanced rural livelihood and food security, sustainability of agriculture and be propeller for agricultural transformation.

The professional degree status provide lot of benefits for students such as enhanced rate of fellowship from DBT and other such agencies. More students and their parents prefer to study in agriculture stream The higher educational scenario in present times is influenced by forces of globalization, emergences of new areas of specialization such as intellectual property rights (IPRs) and World Trade Organization (WTO) and General Agreement on Trade in Services

(GATS) related areas, cutting edge new beneficial technologies like biotechnology, nanotechnology etc. Agricultural graduates on completion of their studies must possess knowledge about all such new techniques. They must be able to handle the new challenges posed by globalized environment. The most important thing is that agricultural education should address the requirement of major stake holder i.e. Indian farmer.

### **Career Scope of Agricultural Science & Technology**

India is a leading global leader in agriculture and a major part of the Indian economy is driven by agriculture. Over 52% of the rural households depend on agriculture for their employment. India is one of the largest producers of vegetables, fruits and flowers in the world. Also, India is the largest producer of milk, second-largest of sugar, leading producer of coconut and spices. India is one of the largest exporters of agricultural commodities such as spices, flowers, mushrooms, oilseeds, milk, rice, food grains and other vegetables. Society needs food, and hence, agriculture will always be a lucrative career option. Indian government is also backing up the agriculture sector very strongly which was clearly reflected from the budget 2016-17. Even the 2017-18 Union Budget is expected to pitch for more reforms in agriculture marketing and increased funds for insurance and irrigation schemes. Agriculture credit has been raised to a record Rs. 10 Lakh Crores. Besides Government, private bodies and foreign investors are also showing great interest in the Indian agricultural industry. As per the official reports of the Department of Industrial Policy and Promotion (DIPP), Indian agricultural sector has attracted Foreign Direct Investment (FDI) equity inflow of about USD 2.8 billion from April 2000 to March 2016 (Source: Govt. Of India). Therefore, future is definitely bright to pursue a career in Agriculture.

Agricultural science involves research and development on production, processing, productivity of crops and end products for consumers. Major activities include improving quality and quantity of farming, improving crop yield, minimizing labour, conservation of soil and water and pest control. Agriculture sector is not only about scientific research and development. It provides roles for students

with business backgrounds as well. The traditional career opportunities are there in Government departments, research and education, nationalized banks, agri-inputs industry and Government and Policy making Agencies. The emerging sectors include Agribusiness, food processing, financial sector, retailing, rural Marketing, international trade, rural credit and insurance, warehousing & commodities, NGOs and KPOs. Almost half of all the professionals within the agricultural sector have got business related roles. The key areas of MBA in Agri-Business are Agricultural Marketing, Agricultural Pricing, Agricultural Law, Agricultural Trading & Merchandising, Agricultural Economics, Agricultural Data Analysis and Farm Management. The non-scientific roles include marketing, technical sales, merchandising, economists, accountants, finance managers, commodity traders, communication & education (social services).

Indian agricultural sector is facing some serious challenges as well. The challenges mean there are more than enough opportunities. Many Agri-Tech Social Enterprises in India providing jobs such as DuPont India, Rallies India Ltd, Nuziveedu Seeds Ltd, Lemken India Agro Equipment Pvt Ltd, Advanta Ltd, Monsanto India, Poabs Organic Estates, National Agro Industry, Godrej Agrovet Ltd, Rasi Seeds. Several startups and entrepreneurs are coming up within the agricultural sector. The four Major Areas of AgriTech Startup are disease and pest control, timely irrigation and soil health, aerial survey to detect anomalies, and packaging and transportation. Hence, persons from science and/or business background, want to do something good for the society, and have got the entrepreneurial creature, then agricultural sector is for them.

### **Career opportunities in agriculture Fields**

Career opportunities in the field of agriculture are : Agricultural Research, Agribusiness, Agro Industry, Agricultural Education, Agricultural Journalism, Services in Agriculture, Banking, Farming, Conservation, Agricultural Engineering, Management, Sericulture Candidates studying B.Sc (Ag.) / B.Tech. Course or Post graduate level courses in M.Sc / M.Tech degree in different discipline like agronomy, soil science, horticulture, plant physiology, agricultural economics, agricultural

statistics, agricultural chemistry, animal husbandry and dairy. Plant genetics & Breeding, Animal Genetics & Breeding, farming system management and agricultural marketing management or BE Agricultural Engineering Courses have good career opportunities in Agriculture Sector. To procure a PHD degree for getting a good agriculture job a candidate can study in (ICAR) Indian Agricultural Research Institute, New Delhi, Indian Veterinary Research Institute, Izatnagar, National Dairy Research Institute, Karnal and Central Institute of Fisheries Education, Mumbai. These colleges each year conduct entrance examination separately for Ph.D. degree in different discipline of Plant sciences, Veterinary sciences. Agriculture is not only production-based, but encompass range such as quality assurance, research scientists, sales representatives, it is felt that agricultural industry is more stable when compared to other industries with rewarding careers.

### **Reforms to Increase employment opportunities**

India's varied climatic as well as soil conditions help it grow a wide range of fruits, vegetables and other horticulture products. By framing policies for enabling small-scale food processing units - which can process these agri-produces (preferably at the farm-gate) - to mushroom in the country. Agricultural science professionals play a vital role towards maintaining food supply of the society.

- ♦ The government can generate employment opportunities for rural youth in non-farm activity and boost their productivity.
- ♦ Support services such as technical assistance, irrigation and distribution of water resources, credit, marketing and storage facilities shall be provided.
- ♦ Due recognition to rural women to enhance their capabilities in agricultural production

### **Reasons to choose agriculture as profession**

1. Startup business will help entrepreneurs and rural poor.
2. Agricultural in developing world has become vibrant with effective innovations.
3. The trend of youth choosing agriculture is growing.

Agriculture is the good way that can tackle the issue of youth unemployment which is all over the world as Agriculture has shown its readiness to facilitate the youth-preneurship.

### **Modernizing Higher Agricultural Education System in India to Meet the Challenges of 21<sup>st</sup> Century**

Agricultural population of India grew by a whopping 50 per cent between 1980 and 2011, the highest for any country during this period. The normally urban tinted media has also for once turned its attention to the problems afflicting India's agriculture sector, and distress of farmers who are disproportionately dependent for their livelihood on nature's benevolence. Higher education in India in general is facing several crises related to governance, resources, and ethics. The agricultural sector is getting more complex due to globalization, impact of climate change, entry of corporate sector in agricultural value chain, diversification of agriculture towards high value commodities, expanding demand for processed food, and need for post-harvest technology. Agricultural education is less preferred option for students. Based on the merit list of all India entrance competitive By 1947 India had 17 colleges of agriculture with annual enrollment of about 1500 students. These included the colleges at Coimbatore, Nagpur, Kanpur, and Pusa. After Independence, the Indian University Education Commission was appointed and was headed by Dr. S. Radhakrishnan. In its report submitted in 1949, the commission urged that the country needed a continuous flow of scientific workers as well as leaders in all fields including agriculture. Brightest students go for medicine, engineering, law, business, etc., only those who do not get admission anywhere, end up in agriculture. Of course there are exceptions. Effectual needs to be taken to attract bright students in the field of agriculture. Technology has enabled everything around and about us but somewhere the lack of interest of technologists in agriculture has been a setback.

### **CONCLUSION**

There is a high demand at least for the seeable future for students with a degree in agricultural programs. Major domains within the agricultural sector include

agribusiness, R&D organizations, public and private agencies, government and policy making agencies, and private consulting companies. Agricultural science involves research and development on production, processing, productivity of crops and end products for consumers.

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