

## **Agricultural Education**

India is an agricultural country. Agriculture and its allied activities act as main source of livelihood for more than 80% population of rural India. It provides employment to approximately 52% of labour. Its contribution to Gross Domestic product (GDP) is between 14 to 15%. At the time of Independence, India faced food grain shortage. India achieved spectacular growth in agriculture sector since 1966. India today is self sufficient in most of the food grain despite population increase. The food grain production of India increased from 51 million tons in 1950 to about record 273.38 million tons in 2016-17. This growth in itself represents a remarkable achievement in the history of world agriculture. India has achieved significant growth in agriculture, milk, fish, oilseeds, fruits and vegetables owing to green, white, blue and yellow revolutions. All these revolutions have brought prosperity for the farmers. Many factors are responsible for these achievement viz conducive government policies, receptivity of the farmers and also establishment of higher agricultural education institutions.

In order to sustain, diversify and realize the potential of agriculture sectors, it is necessary to develop skilled human resources. Agricultural human resource development is a continuous process undertaken by agricultural universities. 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, Agri Business Management etc. It imparts education at the level of diploma, degree, masters and doctoral level.

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, formalised courses in agricultural education began only at the beginning of 20<sup>th</sup> 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.

### **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 recognised 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.

## **Career Opportunities in Agriculture Science & Technology**

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.