

## Revitalising Higher Agriculture Education System in India

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ARTICLE ID: 40

### Introduction

Education is the ability to meet life's situation. It is very important for the progress of Individual and society. It is through Education that man develops his thinking and reasoning, problem solving and creativity, intelligence and aptitude, positive sentiments and skills and good values and attitudes. Education in agricultural sciences started in 1877 with the establishment of an agriculture college at Saidapet in erstwhile Madras state, and later three veterinary colleges at Bombay (1886), Calcutta (1893) and Madras (1903).

Higher agricultural education in India is strengthened and streamlined centrally by the Indian Council of Agricultural Research (ICAR) and is imparted through State Agricultural Universities (63), Deemed to be Universities (05), Central Agricultural Universities (03), Central Universities with Agriculture Faculty (04) and a few other institutions under private and public sectors besides this private agriculture universities are supported by various government universities and University Grant Commission (UGC). These along with 106 institutes within the ICAR, 721 Krishi Vigyan Kendras (Agriculture Science Centres), and 69 All India Coordinated Research Projects (AICRP) make India's National Agricultural Research and Education System (NARES) the largest in the world.

### Challenges of Indian agriculture education systems

Despite significant contributions made by the ICAR and AUs towards the growth of agricultural sector, the existing Indian higher agricultural education is fraught with challenges, the country is still home to almost one-fourth of the world's hungry and poor. Over 40% of world's undernourished children are our own children. The huge income and livelihood inequities between the farmers and non-farmers. The above could partly be attributed disconnect between education, research, and extension; limited internalization of

relevant international trends and developments; and the indifference of youth to the following shortcomings:

- Inadequate academic rigor, and contextualization of the emerging challenges and opportunities; erosion of basic sciences from agriculture course curriculum; poor quality and insufficient academic staff (faculty positions remaining unfilled); widening towards agriculture.
- Disconnect between agricultural education and employment; lack of adequate skills, entrepreneurship and experiential learning; and poor employability of agriculture graduates.
- Extensive inbreeding, and low access of agricultural education to rural students, especially to the tribal and socially-deprived communities.
- Inadequate investment and declining financial resources in agricultural universities/colleges; the opening of new institutions without matching resources and norms
- Poor system of evaluation, monitoring, impact assessment, accountability, and incentives; limited digitalization; and inefficient governance<sup>[1]</sup>.

### **Formation of multi-disciplinary research Intensive Higher education Institutions**

The New National Agricultural Education Policy must be aligned with the National Education Policy 2020, which is based on five pillars, viz., access, equity, quality, affordability, and accountability. The contemplated changes include transforming the institutional structure to new a form of multi-disciplinary research-intensive Higher Education Institutions (HEIs), course curricula, academic structure of degree/diploma/certificate system, credit banking system, partnerships among HEIs, universities, industry and other stakeholders, while continuing the focus on agriculture on the lines of medical education, thus delivering high-quality higher education in the agriculture-food system, with equity and inclusion. Recommendations:

1. The preparation of professionals in agriculture and veterinary sciences through programmes integrated with general education should be increased sharply.
2. The NEP 2020 underpins that the design of agricultural education will shift towards developing professionals with the ability to understand and use local knowledge, traditional knowledge, and emerging technologies while being cognizant of critical



issues such as declining land productivity, climate change, food sufficiency for our growing population, etc.

3. Institutions offering agricultural education must benefit the local community directly; one approach could be to set up Agricultural Technology Parks to promote technology incubation and dissemination and promote sustainable methodologies<sup>[2]</sup>.

### **Moving from land grant to world grant agricultural university system**

In the spirit of Reform, Perform and Transform, and recognizing that local and global are no longer independent, the NAAS (National Academy of Agricultural Sciences) underpinned that India's Agricultural University System should change from Land Grant to World Grant system, as happened in many Land Grant Universities in the USA<sup>[3]</sup>. The new curricula, courses and contents should keep evolving, dynamically encompassing the new global initiatives, such as Global Green Economy; Knowledge Economy; Digital Economy, Global Zero Hunger Challenge, etc. Reiterating the role of agriculture and social sciences as pivotal agents of change, it is suggested that Agriculture, Arts, and Humanities (A), be amalgamated with Science, Technology, Engineering, and Mathematics (STEM), thus transforming STEM into STEAM. Recommendation:

1. The NARES should assess manpower needs of the fast transforming, knowledge-intensive agriculture to make the necessary adjustment in curricula and skill development, emphasizing experiential learning and exposure to national and international issues.
2. More technological interventions are likely in the disciplines of ICT, digitalization, biotechnology, nanotechnology, agro-processing, Artificial Intelligence (AI), precision agriculture, and systems simulation which should be explored<sup>[2]</sup>.

### **Quality assurance in agricultural education**

Quality assurance in higher agricultural education, pursued by ICAR/DARE/SAUs, involves accreditation, framing of minimum standards for higher education, academic regulations, personnel policies, review of course curricula and delivery systems, support for creating/strengthening infrastructure and facilities, improvement of faculty competence and admission of students through All India Examination. Recommendations:

1. The ICAR's Fifth Deans' Committee Report 2016 has restructured the course curricula to underpin relevant practical skills, entrepreneurial aptitude, self-

employment, leadership qualities and confidence among graduates, and attracting and retaining youth in agriculture.

2. In compliance with the Student READY programme launched in 2015, depicted below, the Fifth Deans' Committee<sup>[3]</sup> has designed a one-year programme in all the UG disciplines comprising (i) Experiential Learning, including International Experiential Learning wherever feasible; (ii) Rural Agriculture Work Experience; (iii) In-Plant Training/ Industrial Attachment; (iv) Hands-on Training (HOT) / Skill Development Training; (v) Students Projects, and (vi) the Agricultural Science Pursuit for Inspired Research Excellence (ASPIRE) programme.
3. As regards the gender sensitivity, between 2014-15 and 2019-20, the number of female applicants increased by 7% each in UG and PG and 11% in PhD.
4. R.S. Paroda Committee (2019)<sup>[4]</sup> on attracting and retaining youth in agriculture has highlighted the following aspects:
  - National Mission on Youth in Agriculture
  - Youth - Agriculture Nexus
  - Plough-to-Plate Initiative
  - “Youth as a Farmer” to “Youth as a Value Chain Developer”
  - Institutionalization of Incentive and Award/Reward System
  - Successful Entrepreneurs as Role Models for Youth
  - Agri-Youth Innovation Corpus Fund
  - Creation of Department of Youth in Agriculture
  - ICT Knowledge Enabled Youth.

## Conclusion

India has come long ways from being a “developing nation” to being called an “emerged nation”. The excellence achieved in the fields of Information Technology and Space Research and other fields has brought international prestige to the country. In the field of agriculture, the nation has become self-sufficient and exporter of some crops. India is not short of funds or talent. With aggressive but sensible political will and commitment, India can achieve excellence in higher agricultural education comparable to any world class universities. India had done it in the past and can do it again.

## References

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- [<sup>2</sup>]Government of India, 2020. National Education Policy 2020. Ministry of Human Resource Development, Government of India, New Delhi, 65p.
- [<sup>3</sup>]NAAS, 2014. Proceedings of the 11th Agricultural Science Congress: Transforming Agricultural Education for Reshaping India's Future (ed. Singh, R.B.), National Academy of Agricultural Sciences, New Delhi, 724p.
- [<sup>4</sup>]Fifth Deans' Committee Report, 2017. Agricultural Education Division, Indian Council of Agricultural Research, New Delhi, 807p.
- [<sup>5</sup>]R.S. Paroda Committee, 2019. Report on Policies and Action Plan for a Secure and Sustainable Agriculture, submitted to the Principal Scientific Adviser to the Government of India.