

## Revamping of doctoral education in agricultural sciences in India

*Aditya Sinha, Roshan Nayak and Raj Narain Singh*

Central and State Agricultural Universities, including institutions affiliated to the Indian Council of Agricultural Research (ICAR), are responsible for offering Doctoral education in Agriculture and allied subjects in India. Graduates with doctoral degrees are deemed to be fully equipped to contribute to their chosen career fields in teaching, research and extension. The University Grants Commission's (UGC) latest move asking universities to start considering the research period in Ph D programmes as equivalent to teaching experience has been perceived differently by academicians. The rationale for such a move by the UGC still needs to be fully reviewed. However, an initial argument could be made that it is an effort primarily to facilitate filling up of vacant faculty positions across India's agricultural universities and higher educational institutions. As a common standard practice, these universities and institutions require a faculty candidate to have at least two years of teaching experience in order to be considered for the faculty position.

The move by the UGC certainly opens up a can of worms. Should prior teaching experience be a requirement for Ph D degree holders to engage in teaching student in universities? If prior teaching experience is to be a prerequisite, to what extent have higher educational institutions offering Ph D degrees successfully incorporated student teaching into doctoral programme curricula? In substituting research experience with teaching experience, the higher educational institutions appear to compromise the quality of teacher training that doctoral students are supposed to receive during their doctoral programmes.

To make this move more effective, the UGC should introduce provisions of Teaching and Research Assistantships for doctoral students. Such assistantship provisions are already in existence in the finest agricultural universities across the globe. The assistantships will permit students to engage in research activities and gain hands-on experience with student teaching. A typical Teaching Assistantship should be designed to provide doctoral students with an overall teaching

experience ranging from curriculum development to course assessments under the guidance of academic advisors and supervisors. The Research Assistantship provision would pave the way for the engagement of doctoral students' in doctoral and faculty-supported research projects. Additionally, faculty and students should be trained to evaluate graduate and undergraduate course curricula to accommodate the current and emerging needs of project stakeholders and extension and industry clients. Students' commitment to teaching and research through assistantships will ensure their contribution towards achieving the goals of institutional and academic excellence.

The concept of Teaching and Research Assistantships would be a two-pronged support system – first to instil teaching and research skills in students pursuing post-doctoral academic careers and secondly to provide them with financial support to fund their education during the doctoral programme. The fellowship opportunity provided by ICAR under Netaji Subhas ICAR-International Fellowship for pursuing doctoral degrees in agriculture and allied sciences for Indian candidates for study abroad is inadequate to cover the tuition and living expenses. The university can make provisions to pay the doctoral students for the work imparted through the assistantships rather than just providing mere scholarships. The role of assistantship supervisors would mainly be to nurture student learning through active engagement. The incorporation of such provisions to the current standard practices may not be smooth. One starting point could be the revision of the existing government and private agency supported fellowship programmes for doctoral students. The integration of the idea of assistantship to fellowship programmes would likely prepare the doctoral students to perform their academic teaching and research assignments efficiently.

In the subsequent paragraphs, we have briefly touched upon a few practices that higher educational institutions could adopt for better student teaching experience. In addition to the inclusion of assistantship provisions, student teaching

should be emphasized in doctoral programme curricula. However, the diversity among students pursuing agriculture degrees and the variability within the subjects of agriculture and allied subjects pose challenges for inexperienced faculty members. Faculty capacity development in aligning student teaching to assistantship responsibilities and best teaching practice strategies to engage students in an active learning process will be important for the quality of the doctoral programmes. At the same time, the integration of technologies into course delivery is another important aspect of modern-day student teaching. To develop better scientific temperament among students, institutions should consider setting up an internet-based arXiv-like self-authoring archive for the doctoral students<sup>1</sup>. It would help aspiring teachers to post and design their best lesson plans, share ideas for classroom demonstrations and descriptions of laboratory experiments, and other teacher-to-teacher communication accessible from anywhere. It would not only become a valuable teaching resource but would also help in providing an ideal self-tutor to the students for improved self-learning experience.

For effective integration of teaching components to current practices, there should also be student and faculty exchange programmes with premier agricultural universities abroad. Although student-exchange programmes to send students to institutions abroad are already in existence, another recommendation would be to increase opportunities in different disciplines, for example, the Ministry of Human Resource Development fellowships programme. Formulation of policies making assistantship opportunities available to doctoral students from diverse backgrounds and allowing them to engage in interdisciplinary research would promote cross-cultural alliances. The exchange programme will help in providing an excellent measure of personal flexibility and the ability to reach and adopt alternate and multi-faceted approaches to student teaching and learning. The introduction of Teaching and Research Assistantships,

as a common practice in the exchange programme participating institution systems, will further complement the flexibility and success of the programme.

The flow of Indian students pursuing graduate degrees abroad has increased considerably in the past decade in relation to agricultural and allied subjects. It is important to attract those students to pursue teaching and research careers in India. The rigidity surrounding the acceptance and recruitment criteria of the returning students is discouraging. The discipline-specific specialized degrees offered in foreign universities should be recognized for teaching and research positions in Indian universities. The Association of Indian universities should be more flexible in granting academic equivalency based on the course curriculum and academic training from accredited foreign educational institutions. In addition, a separate division in the ICAR to certify the degrees and transcripts at

their own level would be a welcoming step.

Recognizing the immediate need to fill the vacant faculty positions with qualified candidates, the subsequent response from the UGC has definitely created a concern. A compromise would question the credibility of our academic programmes and institutions. Agricultural universities and institutions are committed to providing quality education to students. To fulfil the commitments, timely evaluation of standard practices and subsequent reforms are quite necessary. In this piece, our intention was to introduce a few steps that could be taken by the responsible agencies for the successful implementation of UGC's recommendations. Structural reform in the doctoral programme curricula, incorporation of assistantship provisions, flexibility in degree and course equivalency evaluation, and student and faculty exchange programmes are some of the steps that

would be valuable in offering quality teaching and research experience to doctoral students. We recognize that there are certainly other potential measures to discuss and implement that we have certainly missed highlighting here. A discussion on this issue is definitely a step forward.

---

1. Herndon, J. M., *Curr. Sci.*, 2005, **89**, 425.

---

*Aditya Sinha\** is in the Department of Extension Education, Bihar Agricultural University, Sabour (Bhagalpur) 813 210, India; *Roshan Nayak* is in the University of California Agriculture and Natural Resources, 2801 Second Street, Davis, CA 95618, USA; *Raj Narain Singh* is in the Bihar Agricultural University, Sabour (Bhagalpur) 813 210, India.  
\*e-mail: inc.aditya@gmail.com

---