

## **Student Internships as a Critical Part of Plant-Breeding Education**

Prepared by NAPB/PBCC Committee on Public-Private Collaborations

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### **Committee Charge:**

Promote collaborative models of graduate education in plant breeding, for example through internships at private companies, governmental agencies, and non-governmental organizations, and increase support for graduate assistantships.

### **Background:**

Internships are seen as a realistic and desirable tool to increase private – public collaboration. For undergraduate students, internships in industry provide hands-on exposure to plant breeding, and give students an opportunity to gain valuable experience in practical breeding programs. For graduate students there is a similar need to gain experience in applied breeding programs especially with potential future employers (private and public). In addition, internships are invaluable for graduate students to understand the context of their education and to expose them to the range of opportunities that are available. However, the timing of graduate student internships is critical so as to not be in conflict with busy field (usually summer) activities. There are opportunities to avoid this conflict, for example internships in winter nurseries or in crops with different peak work periods. We recommend the development of a “best practice protocol” agreed upon by private and public entities to ensure a high quality experience to students and to stimulate promotion of internships by universities, industry, and federal agencies undertaking plant breeding research. If successful, more internships will enhance student education and increase the pool of students interested in plant breeding, either as plant breeders or as collaborative scientists with plant breeders.

### **Best Practice Protocol for Student Internships:**

1. The internship should provide a meaningful experience in applied plant breeding or fields related to applied plant breeding (for example, disease or pest evaluations, germplasm evaluation, integration of technology, managing plant breeding programs, intellectual property issues, or the economic/business/governmental models for investing in plant breeding).
2. The internship should not interfere with the student’s thesis research. For field-based applied breeding programs with obvious peak seasons of work, the internship should avoid conflicting with these time periods until after critical research data are collected. This avoidance can be accomplished by scheduling the internship during the off season or during relatively slow periods in the main season; for example an internship might occur between planting and flowering for some crops or for students in North America, the internship might be in the southern hemisphere or Hawaii. Another option would be to either designate specific periods in the graduate program for internships.
3. The length of the internship should be from a week to a few months with a preference for longer than a month.
4. The internship could be funded by a federal granting agency as an integral component of the grant, through private or public partnerships with funding provided to the degree granting institution, or funded directly by the internship sponsor. Depending on

university requirements, it may be beneficial that funding of the internship be administered through the university to avoid interruptions in student enrollment, salary, and benefits. In this case, internship partners will need to address any concerns with having “non-employees” work at their locations as interns, such as safety training and confidentiality agreements. If an intern takes a leave of absence from the university and is paid by the sponsor, concerns with health insurance, intellectual property restrictions, etc., should be addressed.

5. The intern is expected to write a report that will be shared with the University Advisor and the Mentor at the Company or Agency. It is expected that non-disclosure agreements may be required, but at least some parts of the internship should include aspects that can be freely shared with the public, especially colleagues and classmates.

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