

Agricultural Science Facing an Educational Crisis

► **Background:** The US network of Land Grant Universities, experiment stations, cooperative extension, USDA-ARS research centers, and diagnostic laboratories constitutes the backbone of US efforts to ensure an ample supply of safe and nutritious foods. However, the historic strength of this network is at risk. Recent data obtained by APS committees and published in the journal *Plant Disease* (*Plant Dis.* 93: 1238-1251 and *Plant Dis.* 93: 1228-1237) document an emerging crisis in the ability of Land Grant Universities to educate the workforce needed to maintain the competitive position of US agriculture.

In March 2009, with NSF and USDA funding, the APS hosted a national workshop that brought together representatives of nine scientific societies, five Federal agencies and seven private-sector companies with interest in the agricultural plant sciences. The workshop sought to evoke national discussion of the emerging educational and workforce crisis in the applied plant sciences. A summary of the workshop is available at http://www.apsnet.org/online/proceedings/Education_Workshop/.

The APS workshop revealed an interconnected chain of events contributing to this crisis:

1. A decline in the number of undergraduate students interested in agricultural science majors,
2. A corresponding reduction in university faculty investments in the agricultural sciences,
3. A resulting net loss of agricultural science faculty as retirements out-strip reinvestments, with the losses most notably reducing faculty positions engaged in field/translational research,
4. A consequent decline in the ability of graduate programs to offer students experiences in field/translational research, and
5. A growing reliance upon highly competitive national grants for student support, pushing students and faculty to focus on narrow grant objectives to the exclusion of broadening experiences,

► **Problem:** As a result of the last two of these trends, Ph.D. graduates today are more narrowly trained than at any time in the history of Land Grant Colleges of Agriculture. This educational specialization is contrary to the needs of US agriculture as articulated in a 2009 NAS report (*Transforming Agricultural Education for a Changing World*) and in a 2009 report of the Association of Public and Land-Grant Universities (*Human Capacity Development: The road to global competitiveness and leadership in food, agriculture, natural resources, and related sciences*). The underlying theses of both these reports is (1) that agricultural science needs to be elevated in the eyes of the public and included among the STEM disciplines, and (2) that today's agricultural science students need broad training to be properly prepared for the workplace and our global economy. These themes emerged also in the APS workshop and led directly to the formation of a national coalition of industry and scientific societies focused on securing funding for educational programs.

► **Solution:** The APS endorses the recommendations of the NAS and APLU reports which focus on undergraduates. However, the APS believes that graduate students are crucial for future scientific advancements and a sustainable workforce. To advance their education, APS requests:

- Increases in grant funding for research training in the plant sciences.
- Increase the number of NSF and USDA fellowships for agricultural plant sciences.
- Provide at least \$1 million for plant sciences fellowships as part of the NIFA Higher Education Challenge Grants Program.

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