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Feature
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Leadership Summit to Effect Change in Teaching and Learning: Undergraduate Education in Agriculture

Adam P. Fagen,* Robin Schoen,† and Jay B. Labov‡

*Board on Life Sciences, †Board on Agriculture and Natural Resources, and ‡Center for Education, National Research Council, Washington, DC 20001

On October 3–5, 2006, more than 300 leaders from the nation's food and agricultural systems convened at the National Academy of Sciences in Washington, DC, to discuss the current status and future of undergraduate education in agriculture. This "Leadership Summit to Effect Change in Teaching and Learning"[1] was a first step in what is planned to be an ongoing conversation that is likely to transform undergraduate education in agriculture and hopefully lead to a cultural change in the way that students, faculty, and universities view agriculture in the context of scientific areas of study. It should be of interest to readers of *CBE—Life Sciences Education* for two important reasons: 1) a significant component of the disciplines that comprise agriculture are the life sciences, and 2) the process now being followed for the introspection and transformation of agriculture education may have application in a wide variety of fields, including the life sciences. The summit was organized by a National Academies committee that will be authoring a consensus report recommending action to reinvigorate undergraduate education in agriculture. The committee is chaired by James L. Oblinger, Chancellor of North Carolina State University, and includes additional senior administrators and faculty from academia, senior management from industry, representation from senior leaders in nonprofit organizations, and other stakeholders. The committee has significant expertise in agriculture and its related disciplines as well as in science education.[2,3]

Most participants in the summit came from land-grant universities as part of four-person institutional teams that were asked to include individuals from inside and outside of the college or department of agricultural sciences at their institution. These teams included university presidents, chancellors, and provosts; deans and associate provosts for undergraduate education; agriculture deans and associate deans; department chairs and faculty from agriculture, life sciences, education, and other departments; directors of centers for teaching and learning; graduate and undergraduate students; and others. The food and agriculture industries were represented by agribusiness CEOs, research and development directors, and human resource professionals. Individuals from scientific and professional societies, federal regulatory agencies, and higher-education groups were also represented.

The summit[4] began with a call to action with perspectives from industry (Gary Rodkin, CEO of ConAgra Foods, Omaha, NE) and academia (Michael Martin, president of New Mexico State University, Las Cruces). C. Eugene Allen, former provost at the University of Minnesota, reflected on the past and future of undergraduate education in agriculture as someone who was involved with the last National Academies convocation on this topic that was held in 1992.[5] Dr. Allen noted the similarities between the issues discussed at that earlier conference nearly 15 years ago and what was to be considered at this symposium. Participants discussed the goals of an education in agriculture before adjourning to a poster session with contributions from many summit participants.

The Honorable Mike Johanns, U.S. Secretary of Agriculture, spoke to summit participants about the qualities needed in the next generation of graduates trained in the

[1] The website for this conference can be accessed at http://nationalacademies.org/summit (last accessed December 11, 2006).
[2] A complete list of committee members and their institutional affiliations is available at http://dels.nas.edu/banr/summit/committee.shtml (last accessed December 11, 2006).
[3] The leadership summit and the forthcoming associated report were organized under the auspices of the National Academies' Board on Agriculture and Natural Resources with the encouragement of the National Association of State Universities and Land-Grant Colleges. The project is sponsored by the U.S. Department of Agriculture, W. K. Kellogg Foundation, National Science Foundation, U.S. Environmental Protection Agency, Farm Foundation, and American Farm Bureau Foundation for Agriculture.
[4] The agenda, speakers' presentations and biographies, background papers, topics for breakout sessions, and poster abstracts are all available through links at http://dels.nas.edu/banr/summit/materials.shtml (last accessed December 11, 2006).
[5] *Agriculture and the Undergraduate* (National Research Council, 1992) may be read online in its entirety at http://www.nap.edu/catalog/1986.html (last accessed December 11, 2006).
[6] If you wish to receive notification when this volume is published, please contact summit@nas.edu.

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Address correspondence to: Jay B. Labov (jlabov@nas.edu).

agricultural sciences, including technical skills, the ability to apply fundamental knowledge to novel circumstances, and a capacity for group problem solving. The participants then heard from a panel of experts on modes of human learning and the implications and applications for agriculture classrooms, with presentations about how people learn (M. Suzanne Donovan from the Strategic Education Research Partnership Institute, Washington, DC), re-envisioning classrooms as learning laboratories (Robin Wright, professor and associate dean at the University of Minnesota), institutional change in teaching and learning (Jose Mestre, professor of physics and educational psychology at the University of Illinois at Urbana-Champaign), and the convergence of culture and pedagogy (Wynetta Lee, associate vice president at California State University, Monterey Bay).

Participants also heard from five speakers from agriculture-related disciplines—including rural development, regulatory affairs, medicine, and nutrition—on the mutual intersections of these fields with agriculture. During subsequent breakout discussions, institutional teams worked with each other to explore the opportunities and commonalities among disciplines that support the agricultural sciences and the institutional and other barriers that restrict the ability to work across departments and across colleges within an institution. Not surprisingly, the barriers that were identified as compromising quality undergraduate education in the agricultural sciences are similar to those that have been identified in other disciplines and in other contexts.

Concurrent sessions on a number of topics and sample programs enabled deeper consideration of specific issues related to strengthening undergraduate education in agriculture and making it more relevant to the realities of the workplace. These topics included the following:

- developing academic-industry partnerships through internships and cooperative education;
- building academic programs in cooperation with industry;
- establishing partnerships with grass-roots organizations;
- developing articulation agreements between community colleges and four-year institutions;
- establishing professional science master degree programs to provide specialized skills training;
- building faculty development programs and faculty networks;
- offering students an international perspective through study abroad and other experiences outside of the United States as well as globalizing the science classroom at home; and
- valuing teaching for tenure consideration.

After a presentation by an invited speaker, participants in each concurrent session had the opportunity to explore general themes and how the messages identified by the speakers might be extended to other institutions and other contexts. All of the ideas and challenges identified during these and other breakout sessions will be considered by the committee as it constructs its report. In addition, many of the points raised during breakout discussions were presented to all summit participants in follow-up plenary sessions.

At the end of the summit, participants met in their specific stakeholder communities for a final breakout session in which they sought to identify action items and next steps.

One goal of the summit was to encourage discussion and action on individual campuses even before release of the National Academies report on this symposium. There is evidence that this is already happening. For example, a group of administrators at colleges of agriculture is already planning a follow-up meeting for June 2007 that will be hosted by Texas A&M University.

Over the next few months, the study committee will consider the many challenges and ideas discussed at the summit as well as data about the current status of undergraduate education in the agricultural sciences that were collected elsewhere to prepare a report that will make recommendations to universities, industry, government agencies, professional societies, and other stakeholders on ways to improve undergraduate education in agriculture. The committee's report is currently in preparation and is anticipated to be released in the second half of 2007.[6]

It is likely that many of the messages in the report will have relevance far beyond the world of agriculture education. In fact, many of the issues that were raised at the summit—from tenure policies to engaging students to facilitating interdisciplinary learning and teaching—are similar to the issues in many other fields and are likely familiar to many readers.

We also hope the wider life science community can benefit from the experience of the agriculture community. An enthusiastic commitment to improving the effectiveness of the educational system was evident at the summit, and the number and breadth of institutions represented underscored the importance of the topic. The changes that are now fomenting in agriculture—on how to revamp a curriculum, how to foster and support high-quality undergraduate education, how to engage communities and stakeholders, and how to lead a cultural change within higher education—can serve as a model to other fields.

We urge you to keep abreast on what is happening in agriculture education, to read the National Academies report when it is released, and to work with your colleagues in your institution's college of agriculture in implementing change across the life sciences.