Creating Change: Building Human Capacity for a Sustainable Future

Proceedings from the A·P·L·U Academic Programs Summit June 21-22, 2010 The Penn Stater Conference Hotel Center, State College, PA

Academic Programs Section on the Board on Agriculture Assembly
Opening Session

Speaker John Foltz, Associate Dean at the University of Idaho, began the first morning of sessions at the APLU Summit meeting. He described the Academic Programs Section of the APLU organization as a collaboration of principal officers responsible for academic programs offered by college of agriculture faculty at their institutions.

Foltz also noted that this summit would be the continuation of a conversation that began at the Leadership Summit to Effect Change in Teaching and Learning that took place in Washington, D.C. and led to two publications: Transforming Agricultural Education for a Changing World by the National Research Council (NRC) of the National Academies and “Human Capacity Development: The Road to Global Competitiveness and Leadership in Food, Agriculture, Natural Resources, and Related Sciences (FANRRS)” by the APS. Foltz continued by discussing the overall goal of this summit as striving to meet global demand for human capital for a global agricultural market. He then stated three anticipated outcomes of the summit with regards to improving student recruitment and retention in the agricultural sciences: 1) developing the seed for a national recruitment strategy, 2) developing individual strategies (i.e. regional, societal, etc.) for recruitment, and 3) sharing best practices for student recruitment.

Bruce McPheron, Dean of the College of Agricultural Sciences (CAS) at the Pennsylvania State University, spoke next about enrollment struggles within CAS at Penn State. He stated that despite increasing enrollment university-wide over the past several years enrollment in the CAS has struggled in the past, particularly during the past 15 years. The CAS has found this to be troubling as it is the founding college of Penn State. Despite these declines, enrollment has greatly increased over the past several years and is anticipated to increase 50% more in the next academic year, although enrollment in some major fields of study, such as Plant Biology and Soil Sciences, continues to decline. McPheron concluded by stating that this summit would be the first in a series of impactful conversations regarding enrollment in universities with Agricultural Sciences programs.

The last speaker for the opening session, Ian Maw, Vice President of Food, Agriculture, and Natural Resources with the APLU, again emphasized that this summit would continue the conversation started at the Leadership Summit in Washington, D.C. and would, in the next few years, be followed up by meeting that would address specific curriculum-based issues. He addressed concerns regarding an anticipated 17% loss in United States Department of Agriculture scientists over the next five years and a greater anticipated loss of scientists in academic fields. As a result, Land Grant Universities will be pressed to develop and train individuals to fill these positions. Maw concluded by introducing the keynote speaker for this summit, Rick Foster.

Keynote Address

Speaker Rick Foster occupies the W. K. Kellogg Chair in Food, Society, and Sustainability with Michigan State University (MSU). Foster began his discussion by asking the audience several questions: He asked how agriculture can be relevant, build a sustainable future, and asked what niche we fill in society. He then emphasized that industry must work in conjunction with researchers and regulators in the Agricultural Sciences to address these questions effectively.
Foster continued by discussing a brief history of the goals and priorities of land grant universities. He stated that originally these institutions were put in place to allow anyone to have access to higher education in agriculture and were designed in this manner as a development mechanism during the late 1800s and early 1900s. This system delivered products off of the natural aspects of the land, facilitated change through sustainability research and education, and their funding was aided greatly by development during the early 20th century. However, during the late 20th century both interest and funding shifted towards research involving genetics and molecular research. Although agricultural sciences had the opportunity to adapt to this change, this transition did not occur to the extent that it did in other scientific disciplines. Following this discussion, Foster began telling the story of the state of Michigan that unfolded over the past several decades. During the Industrial Revolution and beyond, he described Michigan as being based around a “godfather” industry: a society based heavily on the automotive industry with its people having an “assembly line” mentality. With the recent economic downturn contributing to what was already a steady decline in automotive sales from Detroit, Michigan is now one of the poorest states with high rates of unemployment and poverty and a severely declining population. Despite economic uncertainties, Michigan is the second most diverse state agriculturally, after California, and has large quantities of forests and natural resources, along with many miles of shorelines (with vast shore and off-shore wind potential), and also contains the most sustainable city in the United States, Grand Rapids. All of these traits give hope for a brighter future for this state in the new “green” economy. The Greening Institute at MSU has also sought to promote innovation, public education, creativity, and sustainability to aid in the development of Michigan’s new economy. Some hopes for Michigan’s future includes becoming a leader in automotive battery technologies, wind and nuclear power development, and urban agriculture (i.e. using aeroponics to grow crops vertically in abandoned high-rise buildings).

In his concluding remarks, Foster emphasized that we, as land grant universities, must not just continue to bring our research data to the table, but now must also work in collaboration with one another in order to create a new niche for agricultural sciences. In order to maintain our pertinence, we need to instruct graduates from our programs about social responsibility and the importance of sustainability, and how to react and respond to changing global demands on the agricultural sciences.

“Generation Me”

Jean Twenge, a Professor of Psychology at San Diego State University, was asked to present some of her research regarding the changing viewpoints of young adults, and to discuss how administrators in the agricultural sciences need to respond to the changing face of young agriculturalists. Dr. Twenge began her discussion about inspiring and recruiting today’s young people by giving a brief history of each of the recent generations. She described “Baby Boomers”, born from 1946-1964, as generally regarding life to be a journey and becoming immigrants of the digital era during the middle of their adult lives; “Generation X”, born from 1965-1981, as greatly valuing the concept of individual importance and becoming immigrants of the digital era during their early adult lives; and finally those known as “Generation Y, Millennials, or Generation Me”, born from 1982-1999, as taking their value of self-importance beyond the level of Generation X and being natives to the digital era. Twenge also noted that the data given in this presentation were derived from meta-analyses of data dating back to the 1930s.
She stated that these data are not merely based on observations and stereotypes, but analyze the psychology of generations and do not assign labels to these generations, but rather recognize trends in personality, attitudes, and beliefs that are shaped by culture and experiences.

Twenge next discussed two key concepts that have shaped the attitudes of individuals in Generation Me: self-esteem and narcissism. She stated that the importance of self-esteem was emphasized with children of this generation from very young ages (i.e. self-importance songs in pre-school, trophies for participation rather than accomplishment, etc.). She remarked, however, that these observations are not necessarily correlated with either good grades or behavior and the emphasis on talent and hard work to accomplish goals are too often overlooked in this generation. Twenge presented a related study that demonstrated dramatic increases in self-esteem (based on Rosenberg’s self-esteem scale) from 1967-1994, with the greatest increases occurring in middle school age children. She also remarked that currently the most common score for this self-esteem measure is 40 out of 40 points. She added that the concept of narcissism (being self-centered, having an inflated sense of self-importance and entitlement, generally lacking in area of relationship skills, and being unable to empathize with others) is positively correlated with high self-esteem, and like self-esteem, has also been increasing over time, though not often to a clinical extent (e.g. Narcissistic Personality Disorder (NPD)). Individuals within Generation Me can have many positive traits as well, including a high sense of self-esteem, often leading to greater happiness, constructive assertiveness, and being confident and extraverted. They also tend to be more tolerant and less prejudiced than previous generations.

Following this, Twenge noted several changes in expectations, attitudes, and life goals of individuals in Generation Me when compared to previous generations. These differences include increasing numbers of high school students anticipating going on to pursue graduate and professional degrees, though in reality the percentage of students pursuing graduate and professional degrees have not changed; decreasing enjoyment of classes and work; increasing expectations for more vacation time and decreasing willingness to put in overtime hours at work; and increasing numbers of individuals only wanting a job to make money rather than for interest in the job or for helping people through their work.

In the next part of this talk, college recruitment of individuals in this new generation was discussed. Twenge noted that the number one concern of these students, when selecting a college to attend, is the ability to obtain a good, well paying job after graduation. This goal was followed by searching for a college having interactive, practical courses, personal attention and mentoring, and having clear goals, structure, and expectations outlined for them. She emphasized that marketing by colleges must reflect what this generation is looking for and must also take into account the desires of the parents of these students because parental involvement in college choice selection is becoming increasingly prevalent.

In her concluding remarks, Twenge emphasized both the pros and cons of working with Generation Me and stated that the most important caveat to remember was that the emphasis of self-focus in this new generation can be harnessed and directed towards the accomplishment of important and constructive goals by colleges.

For more information on this topic, please note that Twenge is the author of two books entitled The Narcissism Epidemic: Living in the Age of Entitlement (co-authored with W. Keith Campbell) and Generation Me: Why Today’s Young Americans Are More Confident, Assertive, Entitled – And More Miserable Than Ever Before.
The first speaker of this workshop, Cynthia Hall, Associate Vice President for University Relations at Penn State, discussed some of Penn State’s recruitment strategies which have been developed by gaining an understanding and appreciation of the goals and expectations of 16 and 17 year old high school students and what these students look for when they select a college to attend. She stated that some of the major things to consider regarding advertising to and recruitment of these students include the influence of both peers and parents. These students are marketing savvy, respond well to advertising that provides immediate gratification (i.e. little text, sound bites, excellent pictures, interactive components, etc.), and use an increasing number of different sources to find out about schools, including rising parental input. Additionally, Hall noted that the changing economy has resulted in an increase in students concerns and worries about paying for college.

Hall concluded her section of this workshop by showing several aspects of Penn State’s new “It’s Your Time” advertising campaign. This campaign includes commercials utilizing appealing color palettes and contemporary music, show faculty interacting with students, and use brand recognition devises (i.e. Penn State Nittany Lion Mascot). Designed in conjunction with the television commercials is a Penn State website devoted to showing alumni working in their careers, communicating stories of Penn State graduates and showing students living in real dormitories and apartments on campus.

The second and final speaker of this workshop was Mary Wirth, Director of College Relations and Communications for the College of Agricultural Sciences (CAS) at Penn State, who spoke specifically about recruitment strategies, predominantly based around a major change in communication methods. These changes, which have focused on changes to the internet presence of Penn State’s CAS, have been used in recent years to successfully increase both undergraduate and graduate student recruitment. Some of these strategic changes have included making major renovations to the CAS website to be more visually appealing and relevant to youths of this new generation, encouraging prospective students to “think outside the barn” when thinking about an education and career in agriculture through their “Think Again” campaign, and putting together a strategic and evaluative team to assess whether recruitment strategies are effectively increasing enrollment. Wirth also noted that CAS individuals involved with student recruitment have also become more collaborative and have made more integrated efforts in the past several years that have aided in forming a more uniform and effective recruitment program in the agricultural sciences.
Experiential Learning (Part 1)

One recommendation from the NRC’s report, Transforming Agricultural Education for a Changing World, is to increase the adoption of experiential learning in agricultural sciences. A particular favorite of the Generation Me student, experiential learning is now used as a recruitment tool by some institutions. To that end, summit planners included a session on experiential learning so institutions can develop experiential programs or capitalize better on existing ones.

The objectives of the Experiential Learning workshop were two fold. The first objective was to determine what characteristics make a good experiential learning experience for undergraduate students in the agricultural sciences. Any institution wishing to implement an experiential learning program must establish standards for the program as well as clearly identifying the skills and competencies that will be gained by students involved in the program. The second objective was to contribute to the building of partnerships and establishment of standards in experiential learning that can be utilized across agricultural programs regardless of discipline.

The sessions on Experiential Learning were moderated by Mary Brakke, Education Specialist at the Department of Agronomy and Plant Genetics at The University of Minnesota, and Ron Kovach, the Assistant Vice Chancellor for Academic Affairs at Purdue University Calumet.

Experiential learning is a rich discipline which differs according to the context of the various institutions which implement experiential learning programs. The basis for the desire to develop experiential learning standards is essentially to broaden undergraduate experiences in learning.

While experiential learning has been recognized for many years, its promotion in the agricultural sciences has only increased in the last decade. Experiential learning as a learning discipline is rooted in the work of John Dewey who stated that “Education is not preparation for life; education is life”. David Kolb, in the middle 1980’s, contributed to establishing experiential learning cycles, as well as setting a foundation for the evaluation of the quality of Experiential Learning experiences. Experiential Learning, as defined by Sawyer in The Cambridge Handbook Of The Learning Sciences (2009), is “learning that results in the ability to transfer knowledge” and satisfies the following five criteria: 1) builds on prior knowledge, 2) integrates knowledge across domains, 3) is able to be implemented and put to use, 4) reflects on learners own learning processes, and 5) is affected by the experiences and information gathered from the learner.

One of the benefits of experiential learning for undergraduate students is to establish criteria for what professionals do in each student’s discipline, such as those students involved in agricultural sciences. Experiential learning is vital in this format as students learn that work is collaborative, they apply knowledge gained during coursework in new situations, they utilize prior knowledge to formulate new methods to solve problems, and they develop specialized vocabulary and tools not attainable elsewhere. Educators can improve their teaching by incorporating experiential learning in their own lessons. This can be done by engaging the students using hands on experiences that students will acquire in “real world” situations. This may sound easy in practice, but this is hard to apply in classroom settings. This underscores the value of experiential learning as a process established outside of the classroom.
One of the most important ways that programs can measure the value of experiential learning is through the use of different methods of gaining introspection on the experience. This is often based on structured communication between the student and mentor during, between, or after, the experiential learning experience. During this communication between student and mentor, students may communicate many different outcomes from their experiential learning experience. Some of these outcomes can be the following: 1) applied learning not available in classroom settings, 2) learning by risk taking, 3) establishing the value of collaborative learning, 4) “life” learning by making a difference in value based experiences, 5) attaining “real world” feedback in experiences, 6) learning by teaching and giving guidance to others, 7) learning by establishing infrastructure or resources, and 8) learning by “thinking outside the box.” The reflection on outcomes of experiential learning is vital to the actual learning process. This reflection, often called metacognition, should be assessed to determine the value of the learning experience. Each student may respond differently to identical experiences, so this period of reflection should be based on the individual nature of each student.

The National Society for Experiential Learning (www.nsee.org) has established 8 National Standards to establish a rich experiential Learning experience. These include:

1. Established intention
2. Preparedness and Planning
3. Reflection
4. Authenticity (real world context)
5. Orientation and Training
6. Monitoring and continuous Improvement
7. Assessment and evaluation
8. Acknowledgement

Ron Kovach talked specifically about the role of administrators and faculty in crafting and supervising experiential learning for their students. He spoke about the development and focus of experiential learning at his school, Purdue Calumet University, which is largely a commuter campus located in the suburbs of Chicago. To attract students and take advantage of the proximity to Chicago, a experiential learning facility was developed with faculty leadership. This stressed the importance of faculty leadership in the implementation of experiential learning, along with using the NSEE standards of practices, which have lead to quality control in the experiential learning experience for the undergraduate.

The NSEE recognizes seven types of experiential learning experiences:

1. Internship
2. Practicum
3. Service Learning
4. Design Projects
5. Cooperative Education/Extension
6. Cultural Immersion (Study Abroad, etc.)
7. Undergraduate Research (Laboratory, Field, etc.)

From Mary Brakke’s Presentation: Student survey responses to, “How has your thinking about your internship changed as a result of this [internship boot-camp]?”

- “I think this day has made me realize the tremendous learning opportunity this internship can be – I think I will start treating it less like a job and more like an opportunity to learn.”
- “It has helped me to see how I can utilize the learning process to get the most out of my internship – to think about how I think and ways I can best teach myself.”
Experiential Learning (Part 2)

The second session of the Experiential Learning workshop was again moderated by Mary Brakke and Ron Kovach. This session consisted of round table discussions of four topic questions with the group reconvening to report as a whole and communicate ideas regarding the four questions posed.

What do experiential learning implementation standards look like at your university? Implementation standards differ throughout most institutions and range from no standards to strict standards for experiential learning programs. Most institutions offer credit for experiential learning at the 300 and 400 course level, although a few programs offer courses at the 200 level. Very few schools offer post-credit for internships, suggesting that most schools require students to make credit arrangements before the experiential learning experience actually starts. A majority of schools require that students have accomplished at least 80% of their coursework prior to earning credits from experiential learning. Many schools have differing criteria for experiential learning, such as writing intensive courses ("W courses") and "Gen Ed" requirements. Some schools require a service learning credit component to their graduation requirements, for example, students must acquire 3 credits of service learning experiences before they can graduate. Most of these experiences are tied to the assessment process and require a student to testify to their learning outcome. Some universities require a review process of the experiential learning experience, such as essay writing, oral interview by board, written daily journal or blog of the experience, or a reflection essay so that students may summarize their learning experience. The consensus of the round table breakout session recognized learning outcomes need institutional support and many universities require common standards, and these standards are especially common for industry internships.

What opportunities exist at your institution to integrate experiential education into academic programs? There are numerous examples of how universities can integrate experiential education into academic programs. Most schools offer credits for experiential learning, although there could be greater conformity in what universities allow for credit. National standards have been developed, but faculty and administrative support is needed to uphold these standards within each respective university. One aspect that was discussed at length was the establishment of ties to industry opportunities for experiential learning. Most universities already have ties to industry in the agricultural sciences which provide opportunities for institutional integration of experiential learning in academic programs. Some examples include hourly requirements for experiential learning in industry positions, others offer credits per hour involved in the experiential learning scenario. Some are paid internships for which the student essentially holds a job with a company. The student can receive student aid via scholarships, although this should be established first with each individual university’s financial aid programs. Some universities have offered legal counsel for patents, agreements, and other issues from student involvement with industry. There is an "Issues and Liabilities" board at NSEE which has consulted and refereed on a few cases of intellectual property during student's Experiential Learning opportunities. One university required industry internships to be a total of 100 work hours for 3 credits and students at this university could take up to 400 work hours per year as experiential learning credits in this format.
The student can receive student aid via scholarships, although this should be established first with each individual university's financial aid programs. Some universities have offered legal counsel for patents, agreements, and other issues from student involvement with industry. There is an "Issues and Liabilities" board at NSEE which has consulted and refereed on a few cases of intellectual property during student's Experiential Learning opportunities. One university required industry internships to be a total of 100 work hours for 3 credits and students at this university could take up to 400 work hours per year as experiential learning credits in this format.

**What is needed to ensure the quality of experiential education in your university programs?**

The most important thing stressed by numerous administrators and instructors is the development of assessments geared towards evaluation of learning experiences. Industry view of the negotiation of a quality experience for the student may be different for other experiential learning scenarios (this can be lessened with guidelines and structure from the university).

Another aspect that many representatives stressed is the active promotions of quality programs to facilitate student interest in experiential learning. Many representatives stated that students are not aware of the existence of experiential learning opportunities within their respective universities. Many universities have tried to increase awareness in experiential learning opportunities and this can be done in numerous ways:

1. Public relations work to promote experiential learning and works with university relations and student affairs. Some of the most successful campaigns to promote experiential learning are the ones in which the story of student experiences are told.
2. The development of methods of visualizing student experiences, i.e. faculty allowing students to present their experiential learning experiences to other students, students meeting with other students to promote and communicate their experiences.
3. The development of different techniques used to market learning experiences to students outside of the classroom (seminars, meetings, student presentations, video, etc.).

**What partnerships will be important for successful experiential learning or education in your programs and will you build those partnerships?**

The consensus of most of the representatives stressed the development of partnerships with industry. One benefit for industries is that this allows the development of publicity in the university setting. In some cases this also allows access to alumni associations and university media, which industry can greatly benefit from. Universities can promote opportunities in industry internships by promoting the fact that this allows industry to screen students for possible employment after graduation.

Numerous members stressed that universities should not discount the importance of promoting government opportunities for experiential learning. This can be done with internships at the local, state, and federal level, and consists of a diverse array of applied work for many different disciplines, predominantly in the agricultural sciences. Experiential learning from the government angle allows organizations within state and local government to have fresh ideas developed by young researchers. In this regard, new techniques and ideas from students are used to develop the next generation of ideas.
P-14 Program (Part 1)

Nancy Irlbeck, Associate Dean of Academic Affairs at Colorado State University, spoke first during the first part of this afternoon session. The title of “P-14” refers to pre-elementary through high school and community college programs (e.g. what was previously known as K-12). Irlbeck addressed the issue of the growing human population and need maintain an adequate food supply with a “trickling pipeline” of incoming students into the field of agricultural sciences. She also discussed declining “agricultural literacy” both within student populations and the general public, and provided several examples of how Colorado State University and other programs in Colorado (i.e. Food For America (FFA)) have addressed this through offering a number of interactive education programs to youth interested in agriculture. Some examples include the 4-H and “Ag In The Classroom” programs, and the Foodquest™ computer software for teaching agriculture to middle school students.

Mike Womochil, the Agriculture, Natural Resources, and Energy Program Director at the Colorado Community College System, continued this discussion by outlining Colorado’s plan to fill the “trickling pipeline” of student interest in agriculture. He remarked that in the current pipeline “ag literacy” education takes place from pre-school through middle school and formal agricultural education occurs during high school, which can then lead to careers right out of high school or higher education in agricultural sciences. The area of expansion needed most, he stated, was in high school formal education programs, which are scarce in urban and suburban area with the largest population centers. Womochil discussed how newly established high school programs in agriculture must meet the needs of the school first and foremost (e.g. maintain enrollment, engage students, and increase graduation rates), fit the setting where they are put in place (i.e. discuss urban agriculture in a city school), and potentially adopt the non-traditional philosophy of teaching agriculture from “farm to plate” to increase student “ag literacy” from a familiar viewpoint.

One of the major actions Colorado has specifically taken, Womochil stated, was creating a series of cluster programs that guide high school students through an educational pathway to a specific career in agriculture, with college being a step in some of these pathways rather than an end goal. He emphasized that awareness of careers outlined in these cluster programs is one of several key components of “ag literacy”. Womochil also pointed out that Colorado has state mandated legislation that requires students that are enrolled in concurrent college credit courses while in high school to have individual, written career and academic plans, which includes students interested in the agricultural sciences He concluded his discussion by encouraging all in attendance to spread the message of “ag literacy”. He stressed the need for attentive high school programs, as well as school administrators, counselors, and legislators, to get involved in the expansion of this segment of the education “pipeline” that feeds students into careers in agriculture.
Irlbeck concluded the first part of the P-14 program by remarking that there is currently a large divide between “locavore”, “green”, and “self-sufficient” type farming systems and traditional agriculture. She stated that in order to increase interest in agriculture and “ag literacy” in P-14 students, we must consider both of these branches of agriculture as equal and attempt to bring agriculture and agricultural awareness into the cities.

Two questions were then posed to participants in the audience and a discussion took place. One half of the room was asked to address the following question: “To some there appears to be a fragmentation of agriculture – traditional and the new – if that were true, in our time of change, how do we join forces to become a cohesive unit?”. To this question, participants responded that we should act cohesively, focus on what we have in common, and understand that we are all face the same challenge to increase student interest in agriculture. We must identify critical issues, and, while taking emotional concerns into consideration, exchange positive experiences and listen to each other in order to address solutions to increasing agricultural awareness.

The other half of the room was asked to ponder the question: “Milk has “Got Milk”, and Beef has “Beef: It’s What’s For Dinner”, and Pork is “The Other White Meat” – what would be a short slogan that could be used at national, regional and state levels to enhance the awareness of agriculture and ag literacy?”. Participants suggested that national collaborative efforts should be made with the Colorado State University business school students already developing ideas for this slogan. Some nominated suggestions included “Ag Is At The Table” and “Feeding The Future”.
P-14 Program (Part 2)

The second half of the P-14 Program workshop was initiated by Dwight Armstrong, Chief Operating Officer for the National FFA Organization, who described the mission of FFA as “building human capital” by strengthening student achievement and ensuring the presence of motivated students in agricultural programs. Armstrong discussed numerous FFA programs that provide student training and promote awareness of agricultural career opportunities. Some of the mechanisms through which the FFA does this is via leadership and learning programs, awards, recognition events, scholarship programs, career fairs, and global agricultural awareness opportunities. He also described how the FFA’s online network allows students to communicate, build resumes and portfolios, and keep electronic records of their experiences in agriculture.

A National Education Program Leader for the USDA-National Institute of Food and Agriculture (NIFA), P. Gregory Smith, continued the program by discussing the mission of “Ag in the Classroom” and its efforts to promote youth ag literacy and awareness. This nation-wide program is mainly available to elementary and middle school students and a limited extent to high school students. The “Ag in the Classroom” program provides specific classroom curriculum modules that teachers are instructed how to implement. These units teach specific aspects of agriculture that address critical issues of that specific region of the country (i.e. discussing genetically modified organisms in an urban area) through interactive, hands-on activities. Smith also states that unfortunately only nine percent of potential students are currently being reached through this program. Additionally, there is an urgent need for additional high school programs addressing Agricultural literacy.

Next, Christy E. Bartley, Program Leader for 4-H Youth Development at The Pennsylvania State University next discussed how 4-H youth development programs are conducted at land grant universities. She states that the 4-H program involves K-12 students from 5 to 18 years old and has approximately 16 million members nationally. Bartley gave a brief history of the 4-H program and discussed how it was once integrated into school curriculums, but is now an independent, extra-curricular program. She proceeded to talk about how 4-H activities are often tied into the research of faculty and, as a result, can give students great experiences, provide opportunities to help their communities, and give back to the universities in the form of research help. Several examples of what 4-H programs at various universities are currently doing were then provided (i.e. summer academic camps, Saturday programs, work in faculty labs, campus visits, online courses, recognition awards, workshops, etc.). Bartley concluded her section of the program by discussing several challenges/opportunities for the future, which include the promotion of increased middle and high school involvement, the encouragement of faculty and graduate student involvement in the program, the modernization of teaching curriculums, the engagement of 4-H alumni, and the promotion of new forms of technology in teaching.
The last speaker in this program was K. Russell Weathers, President and CEO of Agriculture Future of America (AFA). Weathers explained the mission of AFA focused on recognizing future leaders in agriculture by an early age by indentifying students with a combination of passion, talent, and commitment in various fields of agriculture. The studies and achievements of these students are then promoted through scholarships, annual leadership conferences, assistance with finding internships and work experiences, and a variety of other programs. Weathers continued to explain AFA as being a four pillared, college-level program promoting personal and industry assessment, communication, providing awareness for change, and maximizing the potential for lifelong learning. He concluded by emphasizing again that the goal of AFA is to enhance human capital through promoting motivated individuals who wish to pursue leadership roles in agricultural sciences.

A break-out session followed these presentations and audience members were asked to split up into small groups and identify important questions to be addressed and to develop potential opportunities to maximize the value of nationwide P-14 programs. The following two questions were posed to guide this discussion: 1) “How do we reach more K-12 students and teachers with agricultural sciences content when their curriculum is already full and constrained by state education standards?” and 2) “High schools are closing agricultural sciences programs due to decreased budgets and retiring teachers; how can colleges and universities help when they are experiencing the same issues?” One suggestion by participants included the proposal to provide an increased number of agricultural learning experiences to boy/girl clubs and organizations, especially in urban areas, such as the YMCA and boy/girl scout troops, as well as the Society of American Foresters, for badge earning opportunities. Another proposition was using popular new technology to teach agriculture in schools, such as virtual farming system (i.e. the Farmville game), in order to increase “ag literacy” for individuals with little to no agricultural exposure. A final suggestion was to promote increased “Ag in the Classroom” learning opportunities and to encourage new instructors to attend training sessions before teaching these modules.

**From Russ Weathers’ presentation on Agriculture Future of America:**

- Academic scholarship programs awarding 100 freshman scholarships each year
- Annual AFA Leaders Conference provides personal and professional development opportunities
- AFA Opportunity Fair allows industry professionals to network, inform and recruit the nation’s top student leaders
- Personal assistance finding intern or work experiences
- Virtually connect students, young professionals, partners and industry through web resources
- Partner with organizations to offer additional opportunities for training through the AFA network
- Strengthen partnerships to provide essential work experience for personal portfolio development
Gary Fretwell, Senior Vice President and Principal at Noel-Levitz, a consulting firm specializing in the management of college enrollment, spoke about methods for increasing the success of recruitment in the agricultural sciences. He began by briefly summarizing the three main topics to be addressed during his talk: 1) the changing environment for recruitment with new generations of students, 2) how students are currently finding out about institutions to attend, and 3) modern strategies for student recruitment. He stated that the core ideas of enrollment management are: 1) goals should be data based, 2) effective planning is used, 3) one maintains organizational structure, 4) effective processes are utilized, 5) has academic support throughout the recruitment process, 6) adequate resources are provided, and 7) support for students is available. Fretwell also discussed how an information-driven strategy is vital to successful recruitment programs and must include the creation of comprehensive information databases and the construction of relevant assessment reports. Recruitment policy changes should be based solely on analysis of gathered information from each exclusive agricultural sciences program. A short video was then shown that emphasized the importance of including new media technology in recruitment strategies for new generations of college applicants.

Fretwell next discussed three key metrics for evaluating recruitment strategies: 1) understanding what makes your institution stand out from others, 2) understanding what your competition can provide, and 3) understanding the changing student market and what they are looking for in educational opportunities. He stressed that students want to know what makes the university unique when they apply for education. Universities can maximize their uniqueness in this regard, he contends, by understanding what makes their respective institutions unique. He suggests that this can be ensured by showing applicants that students are both getting what they are looking for and what they are promised by the institution (i.e. good housing and food, excellent advising, individual attention). He stressed the quality of student advisement in terms of student satisfaction in their education and noted that students who do not receive good advising talk to students who are possible applicants. In terms of understanding the changing
student market, Fretwell remarked about declining high school graduation rates, especially in certain states, as well as the demand for specific major fields of study in high earnings and popular areas of interest (i.e. health sciences/allied health). He noted that interests in agriculture are near the bottom of the list in popularity. Finally, he discussed the importance in understanding competitive institutions by stating that we must assess who our true competitors are and promote what we, as institutions, do differently and superiorly when compared to these competing programs of study.

In the next part of his discussion, Fretwell talked about the “funnel” of recruitment from inquiries to applicants to accepted individuals to enrolled students to retained individuals to matriculated students. Metrics should be used to measure and improve the success of this funnel at all levels. He stated that it is particularly important for institutions to be upfront about tuition fees and support available to students in the form of financial aid since financial considerations are often the key deciding factor that accepted individuals consider prior to matriculation through enrollment. It is also beneficial to be aware of more individuals than solely high school seniors in recruitment strategies. Fretwell also emphasized that, if an institution wishes to make major revisions in their current recruitment strategies, then they must first identify the current status of their program (i.e. enrollment rate) and their goals for future enrollment standards in order to develop long-term strategies that are data-based and make efficient use of available human, technical, and fiscal resources.

Fretwell provided several examples of effective strategies that can be utilized to enhance recruitment programs. One example was to increase interest at the top of the funnel (e.g. promoting inquiries) through the use of e-inquiries (web sites, online resources and university tours, etc.). He suggests that this could be accomplished by blocking access to certain sections of the institution website unless a brief e-inquiry is made by the student. Fretwell noted that, although mail is still the number one way students hear about an institution, school websites are also critically important and may cause students to lose interest in an institution if their online presence is not properly developed. He stated that other forms of social media web sites (i.e. Facebook, YouTube, etc.) have also become increasingly important for inclusion in recruitment
strategies in recent years. Campus tours on weekdays, rather than weekends, are also recommended as mechanisms to demonstrate true campus life to prospective students, such as seeing students attend courses or participate in extra-curricular activities. To conclude his talk, Fretwell emphasizes that recruitment is all about building a relationship with a prospective student and ensuring that your institution will be a “good fit” for individuals interested in applying. He states that students of today are looking for programs that, no matter what their academic interest, can be personalized to their diverse needs and goals in life.

Regional/Industry/Society Break-Out Action Follow-Through Planning Sessions and Summary of Summit and Charge to Participants & Group; Closing of 2010 Summit

The overall goal of this final session was to summarize the previous sessions in a cohesive manner so that participants could then evaluate and modify their own agricultural education programs upon return to their home institutions. The participants of the meeting were divided into several groups of ten or fewer people according to their various disciplines. Each group was given a list of several questions which read:

- In your opinion, what is working well to increase the supply of trained graduates in food and agricultural sciences (This could be core programs, collaborations, projects,
practices, structures, enrollment management plans, marketing efforts, use of social
media, assets, values, service, technology or capacities such as leadership)?

• Stretch your imagination and describe what should be done to respond to the increased
demand for trained graduates in food and agricultural sciences.
• From your perspective, describe what your agency, organization, or institution can do to
meet the increasing need of trained graduates in food and agricultural sciences.
• What priorities should be addressed by the APLU in the next 3-5 years?
• . What innovative practices, programs or collaborations can support the capacity to
address these priorities?
• . What action steps can you take to address these priorities for next year?
• What actions or plan can be implemented collectively to increase the pipeline of trained
graduates in food and agricultural sciences?

The APLU Summit was concluded by then reuniting the entire group to discuss the series of
above questions posed to the participants. Each group was then asked to present 1-2 action items
that they had developed to the other groups at the Summit as a mechanism to summarize ideas
developed during the meeting.

The first focus group, representing natural resources, began this interactive forum by
stating that a need exists for better networking and sharing between institutions. They stressed
that a strategic plan should be developed for efficient use of each institution’s resources. The
focus group representing industry suggested involving alumni in recruitment strategies and also
instituting programs that bring in students whose grandparents attended that university for
campus visits and other activities. The following group proposed that agriculture be described to
prospective students in more contemporary terms that do not include the word “agriculture” in
order to increase student interest and decrease student perception of agriculture as leading to
farm-centered, low income careers. A third focus group recommended that marketing and
recruitment should focus on potential careers that students could pursue following graduation
from an agricultural based academic program as this is a major concern for students in choosing
a university to attend. They also emphasize that money is of large concern to students and
schools should clearly communicate education costs and available financial aid.

The focus group representing animal sciences approached the outlined questions with a
different point of view. They stated that animal sciences is one program within the majority of
agricultural programs that does not often lack in sufficient student recruitment as many other
programs in agricultural sciences do. However, enrollment is often centered in pre-veterinary
majors and an issue of concern is that only a small percentage of students in pre-veterinary
programs are accepted to veterinary school after graduation due to high competition. Students
who are not accepted to veterinary programs do not have a good idea of other animal-related
career options that are available. This group suggested that recruitment strategies for other
animal science majors be used during pre-veterinary students’ undergraduate programs to give
them an idea of what alternative exist. A recommendation to increase agricultural literacy and
fostering an interest in agricultural sciences was also made by suggesting that an agricultural-
based general education course be implemented for all undergraduate students at land grant
universities. On a related note, another group suggested that instructors might inspire student
interest in agriculture and increase Agricultural literacy, even in unrelated classes, through the
use of examples that involve food and agricultural products that are used by everyone (i.e. food, beer, wine, and cheese making, agricultural based biotechnology and medicine, agricultural history, etc.).

A focus group representing the American Plant Pathology Society recommended that institutions underscore their relevance and function to society by ensuring excellent quality teaching and advising, and to minimize the boundaries between teaching and research. Another focus group specifically proposed that undergraduate research under the guidance of faculty should be promoted through the inclusion of funding for these opportunities through grants and financial incentives for faculty distributed by respective universities. Another group suggested that institutions take a good look at how their university is represented on their website and test the effectiveness of this website using student evaluations. Numerous groups supported the renovation of agricultural science websites to meet the needs of this new generation including using more attention grabbing devices and interactive components. One group in particular suggested the promotion of agricultural careers on the Discovery channel as well as hiring a well-known television personality to become the face for agricultural literacy.

Multiple groups proposed making agricultural sciences more visible across campuses, especially to non-traditional students and audiences, by promoting the acronym “STEAM” (Science, Technology, Engineering, Agriculture, and Math) rather than “STEM”, which leaves agriculture out. It was suggested multiple times that APLU organizations need tolerate to young people’s passions and interests within the agricultural sciences, and should work with industry to promote these ideals through internships, scholarships, etc. A group representing two-year college programs suggested that two-year institutions make collaborative efforts with two-year universities for grants and articulate their missions as a springboard to four-year universities. Another group, representing soil sciences, proposed bringing together programs that instruct K-12 teachers on how to teach science in the classroom in order to relieve teacher’s fears of teaching the agricultural sciences and to increase the agricultural literacy of public educators.

The consensus of this forum was that increased awareness of agriculture and its related career opportunities is greatly needed both in general student populations within whole universities and within the programs within colleges of agriculture. This may be accomplished over the next several years through creating a “clearinghouse” of opportunities that students can become involved in and developing a unified voice for agricultural sciences through institutional and media partnerships.
ACKNOWLEDGEMENTS

*APS wishes to thank The Pennsylvania State University for serving as host for this event.*

*APS wishes to thank Land O’Lakes, Inc. for providing sponsorship of this event.*

*Many thanks are also owed to the 2010 Summit Planning Committee, without whom, this summit would not have been possible.*

*Co-chairs*

Marcos Fernandez
The Pennsylvania State University

Donna Graham
University of Arkansas

Jay Bell, University of Minnesota
Wendy Fink, A·P·L·U
Dale Gallenberg, University of Wisconsin – River Falls
Marc Los Huertos, California State University – Monterey Bay
Linda C. Martin, The Ohio State University
Donald McDowell, North Carolina A&T State University
Susan Sumner, Virginia Polytechnic Institute and State University
Donald Viands, Cornell University
2010 A・P・L・U Summit Agenda

Monday, June 21, 2010
8:00 AM - 8:30 AM  Opening Session
8:30 AM - 9:30 AM  Keynote Address

Rick Foster, W.K. Kellogg Professor and Endowed Chair in Food, Society and Sustainability and Director, MSU Greening Michigan Institute

10:00 AM - 12:00 PM  "Generation Me"
Jean Twenge, Professor of Psychology, San Diego State University

1:00 PM - 3:00 PM  Workshop on Communication and Marketing Strategies
Cynthia Hall, Associate Vice President for University Relations, Pennsylvania State University
Mary F. Wirth, Director of College Relations and Communications, College of Agricultural Sciences, Pennsylvania State University

3:00 PM - 4:00 PM  Break and Summit Poster Session
"Engaging Future College Students"

4:00 PM - 5:30 PM  Concurrent Sessions

Experiential Learning - Part 1
Ron Kovach, Assistant Vice Chancellor for Academic Affairs, Purdue Calumet University
Mary Brakke, Extension Specialist, Dept. of Agronomy and Plant Genetics, University of Minnesota

P-14 Programs - Part 1
The Colorado Initiative, Nancy Irlbeck, Associate Dean of Academic Affairs, Colorado State University
Michael Womochil, Agriculture Program Director, Colorado Community College Systems

6:00 PM - 8:30 PM  Industry Reception and Dinner

Tuesday, June 22, 2010
8:00 AM - 10:00 AM  Concurrent Sessions

Experiential Learning - Part 2
Facilitated Discussion
**P-14 Programs - Part 2**

FFA - Dwight Armstrong, Chief Operating Officer, FFA

Ag in the Classroom - P. Gregory Smith, National Institute of Food and Agriculture USDA

4-H – Christy E. Bartley, Program Leader, 4-H Youth Development, The Pennsylvania State University

AFA – K. Russell Weathers, President and CEO, Agricultural Future of America

10:30 AM - 12:00 PM  **It’s Not Business as Usual**
Gary Fretwell, Senior Vice President, Noel-Levitz

1:00 PM - 3:00 PM  **Regional/Industry/Society Break-Out Action Follow-Through Planning Sessions**

3:00 PM - 4:00 PM  **Break and Summit Poster Session**
"Retaining Students through Excellence in Curricula, Teaching, and Experiential Learning"

4:00 PM - 5:00 PM  **Summary of Summit and Charge to Participants & Group; Closing of 2010 Summit**

6:00 PM - 9:00 PM  **Reception & Social with NACTA/SERD Conference Participants**
**POSTER PRESENTATIONS**

"Engaging Future College Students"

Poster 1 Engaging Youth Through Residential Pre-College Outreach Opportunities, Leonard A. Savala III* and Eunice F. Foster, Michigan State University

Poster 2 Undergraduate Students’ Attitudes towards Veterinary Medicine as a Career: Gender Differences, Russell F. Daly* and Alan K. Erickson, South Dakota State University

Poster 3 Increasing Urban Youths’ Science Interests and Science Career Intentions through a Pre-college Agricultural Discovery Camp, Robbie R. Ortega, Neil A. Knobloch*, and Levon T. Esters, Purdue University

Poster 4 The University of Hawaii’s Agribusiness Education, Training and Incubator Project, Charles Kinoshita*, Andrew Hashimoto, Steven Chiang, William Sakai, Marcia Sakai and Sabry Shehata, University of Hawaii, Orlo Steele, Pamela Sheffler, Hawaii Community College, Kakkala Gopalkrishnan, Honolulu Community College, Glenn Hontz, Kauai Community College, Ronald Takahashi, Kapiolani Community College, Priscilla Millen, Leeward Community College, Ann Emmsley, University of Hawaii Maui College, Inge White, Windward Community College

Poster 5 Vets to Ag Training Program - Partnerships to Effect Change, Eunice Foster*, Tom Smith, Stacey Rocklin, Michigan State University

Poster 6 The Pennsylvania Governor’s School for the Agricultural Sciences, Marianne L. Fivek* and Ketja Lingenfelter, The Pennsylvania State University

Poster 7 The Role of Professional and Scientific Societies in Developing the Next Generation of Natural Resource Professionals: The Wildlife Society as an Example, Michael Hutchins*, Grant C. Sizemore, Joshua Kurtz, and Emily Boehm, The Wildlife Society

Poster 8 Reversing the Downward Trend of Agricultural Production Interest—A Partnership Across Academic Units, Antonio DiTommaso*, Kari Richards, and Gary W. Fick, Cornell University

Poster 9 Human Capacity Development in Science, Technology, Engineering, Agriculture, and Math (STEAM) Disciplines through Pre-College Science Workshops for Rural High School Students, Levon T. Esters*, Neil A. Knobloch and Robbie R. Ortega, Purdue University
Poster 10 Improving the Educational Pipeline to Develop Educational Capital: A Public Policy Approach, Jolene Hamm* and Daisy Stewart, Virginia Tech

Poster 11 Partnering to Grow Strategic Populations within CALS, Ann LaFave* and Travis D. Park, Cornell University

Poster 12 An Examination of Perceptions of African American Agriculture Teachers in S.C. Regarding the NFA/FFA Merger and Its Impact on Human Capacity in Agriculture, Wash A. Jones*, Prairie View A&M University, Curtis D. White, Sr., Clemson University, Alvin Larke, Jr., Texas A&M University

Poster 13 Employment Opportunities for College Graduates in Food, Renewable Energy, and the Environment United States, 2010-2015, Allan D. Goecker, Purdue University, P. Gregory Smith*, US Department of Agriculture, Ella Smith, Food and Drug Administration, Rebecca Goetz, Purdue University

Poster 14 Hispanic Serving Agricultural Institutions - Insights from the FAEIS Database, William W. Richardson*, Virginia Tech

Poster 15 —Life is a Journey. Take it with CASNR! – A Student-Centered Recruitment Campaign, Anna F. Adams, Douglas E. Edlund, Lorna H. Norwood* and Rachel J. Rui, University of Tennessee

Poster 16 ACES ACCESS: An Innovative Collaborative Educational Initiative, Laurie Kramer, University of Illinois, Dennis Sorensen, Kankakee Community College, Donald Pearl*, Sauk Valley Community College

"Retaining Students through Excellence in Curricula, Teaching, and Experiential Learning"

Poster 17 Designing the Urban Agricultural Landscape, Brian Osborn*, Rutgers University

Poster 18 Landscape Architecture in the Land Grant Mission, Jean Marie Hartman*, Rutgers University

Poster 19 Designing the Twenty-first Century Farm, Holly Grace Nelson*, Rutgers University

Poster 20 Tools for Interpreting Place, Holly Grace Nelson*, Rutgers University

Poster 21 Building Human Capacity for a Sustainable Future: A Course for Building Computer Proficiency, Robert O. Burton, Jr. *, Kansas State University
Poster 22 Is There Enough Time for Student Academic Motivation? Frank J. Dooley*, Purdue University, John W. Siebert and Kerry K. Litzenberg, Texas A&M University, Christine A. Wilson, Kansas State University, Al F. Wysocki, University of Florida

Poster 23 Developing Human Capacity through Learner-Centered Teaching Approaches at Historically Black Colleges and Universities, Neil A. Knobloch* and Levon T. Esters, Purdue University, Orlenthea S. McGowan and Bruce W. McGowan, Langston University

Poster 24 Evaluating Teaching Excellence across Diverse Disciplinary Units within Higher Education, Pat Crawford and N. Suzanne Lang*, Michigan State University

Poster 25 The University as a Rental Center for Education: Making the Most of All Our Educational Tools, Ralph R. Johnson*, Purdue University

Poster 26 Strategies for Ecology Education, Diversity and Sustainability (SEEDS), Teresa Mourad*, Ecological Society of America

Poster 27 A Sub-Saharan Context for Internationalizing Crop, Soil, and Environmental Science Curricula, Darrell G. Schulze*, George E. Van Scyoc, Lori Unruh Snyder, Brad Joern, Phillip R. Owens, Sylvie Brouder, Melba Crawford and Helen I. Rowe, Purdue University, Noah Freeman, Ivy Tech Community College, Diane E. Stott, USDA, Wilson Ng’etich, Moi University, Pearson Mnkeni, University of Fort Hare

Poster 28 Developing and Building Community Connections: Utilizing Grant Funding to Support Student Teachers, Cooperating Centers and Communities, John C. Ewing, Daniel D. Foster*, Tracy S. Hoover, The Pennsylvania State University, Paul Heasley, State College Area High School

Poster 29 Gender Comparison Disciplines Faculty and Students, Jolene D. Hamm*, Virginia Tech


Poster 31 Factors Affecting Retention of Undergraduate Students in Fisheries and Wildlife Programs, Kelly F. Millenbah*, Michigan State University, Bjørn H. K. Wolter, Robert A. Montgomery and James W. Schneider, Michigan State University


*Presenter