
Symposium 24 (S24): The Toronto Knowledge and Scholarship Forum

Tuesday · August 13

Location: Fairmont Royal York Hotel, Concert Hall

1300–1320

S24–0–1

TO BE ANNOUNCED

1320–1340

S24–0–2

ACKNOWLEDGING AND REWARDING SCHOLARSHIP IN TEACHING—LIFE IN THE TRENCHES AT AN AMERICAN RESEARCH UNIVERSITY

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Faculty and administrators in Colleges of Agricultural Sciences at Carnegie Research Universities who are being evaluated according to their scholarship are faced with balancing the need and pressure to excel in research with excellence in their other responsibilities (often resident education and/or extension education). The broader definition of scholarship has made it possible to document and reward successful teaching with the same level of importance as successful research. While universities, colleges, and departments can be progressive in defining and rewarding scholarship in its broadest definition, promotion and tenure evaluations often are still viewed by many as perish experiences. Dr. Decoteau will share his experiences as a faculty member and departmental administrator in the scholarship of teaching and share his thoughts on what changes have been made and what changes are still required for the scholarship of teaching to be successfully acknowledged and rewarded.

1340–1420

S24–P–3

THE INTEGRATION OF TRADITIONAL TEACHING AND DISTANCE DELIVERY OF PLANT PROPAGATION STATEWIDE

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The development of strategies to reach students who are place-bound due to their job, families, or community responsibilities is an important opportunity for land-grant colleges. Univ. of Florida (UF) currently has 13 satellite programs where various undergraduate degrees in agriculture are offered. The onset of interactive video has created an opportunity to merge the on site and off site classes into one united class and to improve the effectiveness of educational programming. Although distance education has been around for many decades in different forms, UF is structuring a new concept of bringing the state-wide expertise of faculty and the diversity of students together via interactive videoconferencing and web-based technology. The UF plant propagation course (PLS 3221C) is being completely restructured to integrate various forms of distance education technology into existing traditional classrooms. The course is currently taught live on site at 4 locations throughout Florida and scheduled for state-wide distance delivery from one location to 6 additional campuses in Fall 2002. Lectures will originate from Milton and Fort Pierce campuses and will be broadcast to designated campuses throughout the state of Florida. Corresponding labs will be administered on site by a faculty member at each campus.

1340–1420

S24–P–4

TEACHING HORTICULTURE IN COMMUNITY COLLEGES

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Teaching horticulture in community colleges contrasts markedly to that in four-year universities. Differences in student population age, education, experience, and purpose at community colleges present unique challenges and benefits. While four-year Univ. students are relatively homogenous in their age and educational background, community college students range in age from 17 to 77 or order, some of them barely finished high school while others have bachelor's, master's, or even doctoral degrees in other fields. They come to study horticulture for very different reasons. Some come to get a career in the field, while others come to further their knowledge after running a business for many years, and still others come to horticulture for self enrichment. To teach effectively in this kind of environment requires special techniques. The differences in students and the techniques used in teaching horticulture at community college will be presented.

1340–1420

S24–P–5

TRAINING FOR HORTICULTURAL COUNTY EXTENSION AGENTS USING A COMPETENCY BASED PROGRAMING MODEL

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There is inherent difficulty training county extension agents of vastly different backgrounds. A problem existed in agent retention and establishing agents at the cutting edge of technology. To resolve this situation a 5 tier training program and a mentoring program was established. The training program takes a competency based approach as presented in the North Carolina Cooperative Extension training program called Personal and Organizational Development (POD). The program for horticulture was developed using a representative group approach. A planning team was drawn from volunteers representing agents and specialists in various horticultural specialties, and specialists from supporting disciplines. Training needs were determined with survey of learners. The planning group discussed the needs and formulated a plan that accounted for the employee's background and experience. The proposed plan was then sent to the planning group, for review and modification and later to all Horticulture specialists for comment. The plan was then sent all horticulture agents for their suggestions and modifications. Finally, the plan was discussed with the leaders responsible for agent career development, where it received a favorable response. The plan has 5 tiers: 1) technical orientation and mentoring; 2) basic topics; 3) intermediate topics; 4) advanced topics; and 5) graduate level courses taught accommodate agent schedules. The training program has been initiated and met with favorable response from both trainees, trainers and administrators. Training in the following competencies was provided: Technical Information; Leadership; Communications; Professionalism; Human Relations; and Programming. An Extension Specialist mentor was assigned to work with each new agent in the program and with others responsible for that agent's development. Details of the plan will be discussed.

1340–1420

S24–P–6

REACHING ACROSS WYOMING: HORTICULTURE QUESTION AND ANSWER SESSIONS VIA COMPRESSED VIDEO

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Interest in horticulture in Wyoming increases each year. This is both a boon and a bane to the Univ. of Wyoming Cooperative Extension Service partially because of the the state's size and low population. With only 23 counties, Wyoming has a limited number of county-based Extension personnel. For campus-based specialists it is difficult to do routine on-site programs and visits. To help address this and assist county-based Extension Educators in timely horticulture problem-solving, a series of two question-and-answer sessions was produced and distributed via compressed video in the summers of 2000 and 2001. In 2000, nine 50-minute sessions were held with six sites. In 2001, 11 sites participated in eight 50-minute sessions. Participants included Extension Specialists, Extension Educators, county Horticulture Program Coordinators, Master Gardeners, and an occasional local citizen. Discussions centered on current problems and possible solutions. The use of compressed video allowed samples, photos, and other visual materials to be shown to, and solu-

tions to be discussed interactively by all participants simultaneously. Evaluations returned after completion of each year's sessions indicated that 65% (2000) and 71% (2001) wanted to see such sessions continued during the next growing season. Also, the information learned was used by 35% (2000) and 57% (2001) of respondents.

1340-1420

S24-P-7

DESIGN, DEVELOPMENT AND USE OF AN ORNAMENTAL TEACHING GARDEN AT THE INDIAN RIVER RESEARCH AND EDUCATION CENTER, UNIV. OF FLORIDA

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In 1997, a new Univ. of Florida (UF) teaching program was established at the Indian River Research and Education Center (IRREC) in Fort Pierce. Increased student enrollment and the need for hands-on laboratory activities outdoors inspired the idea of transforming a 2-acre fallow piece of land into a teaching garden. The garden is intended to serve as an outdoor teaching laboratory available to many classes offered at IRREC, for extension demonstration and master gardener training, as well as for leisurely visits from the general public. Half of the garden was developed as a subtropical fruit demonstration block displaying 88 specimens of mango, lychee, avocado, citrus and other tropical fruit. The other half of the garden was designed as an ornamental display garden. Site preparation required elevating the plot, installing an underground drainage system, and creating berms for accent and definition. The 8-zone irrigation system was designed for versatility and appropriate water usage. The walking areas of the garden (approximately 8,000 sq. ft.) were planted with sprigs of *Paspalum vaginatum* (Sea Isle 1 Seashore Paspalum) selected for its drought tolerance, wear tolerance and chinch bug resistance. Features of the ornamental teaching garden include, a pond containing native aquatic plants, a rose garden, and a salt tolerant collection of species. In addition, students enrolled in Florida Native Landscaping (ORH 4932C) and Annual and Perennial Gardening (ORH 4804C) courses designed and installed a native plant garden and an annual and perennial display entrance. For teaching purposes, all plants are identified by family, genus, species, and common name.

1340-1420

S24-P-8

DEVELOPMENT OF CD-ROM BASED INSTRUCTIONAL MODULES FOR LANDSCAPE CONSTRUCTION

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The objective of this project was to develop a CD-ROM based instructional module in landscape construction techniques. Although training in landscape construction is critical for students pursuing careers in landscape horticulture, many colleges and universities are not able to offer courses in this discipline due to personnel and/or fiscal constraints. The cd-rom based modules include step-by-step graphical depictions of a range of construction projects that are commonly used in the landscape industry. This project, funded by an USDA Challenge Grant, was tested and evaluated by landscape horticulture students at Southern Illinois Univ., Carbondale.

1340-1420

S24-P-9

STUDENT ASSESSMENT OF SERVICE LEARNING AS AN EFFECTIVE TOOL FOR HORTICULTURAL THERAPY COURSES

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Horticultural therapy students participated in service-learning programs of varying lengths at Catawba psychiatric hospital, Wilson Avenue Alternative School, the Salem Veterans Hospital, Kluge Children's Rehabilitation Hospital, the Virginia Tech Adult Day Services program and two local nursing care facilities. Qualitative written assessments and discussion groups were used to determine the factors most beneficial from these service-learning

experiences and modifications that should be made to enhance their effectiveness.

1340-1420

S24-P-10

CLOSING THE LOOP ON THE INTERNSHIP EXPERIENCE WITH A NEW PRE-INTERNSHIP COURSE

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Students majoring in horticulture at Kansas State Univ. are required to complete an internship, as well as written and oral reports about the experience, as a component of their degree program. However, the quality of experiences and student preparedness for these internships ranges broadly. During the Fall 2001 semester, the department created and offered a new one credit-hour course, Pre-Internship in Horticulture, to introduce the internship program to our underclassmen in an effort to prepare them early for getting the most out of their eventual internship experiences. The first half of the course included programs on topics such as: how to plan for and find a rewarding internship; departmental requirements for completing an internship; guest lectures from industry leaders on what employers are seeking; appreciating the Hispanic culture; cover letter and resume preparation; and how to create and deliver a quality oral presentation using digital visual aids. A comparison of pre- and post- course evaluation data indicated that students' perceptions and understanding of internships, the range of opportunities, and Hispanic cultural issues in the industry were changed as a result of taking the pre-internship class. In the second half, students in the pre-internship class actively participated as the audience for the more than 50 presentations conducted by the previous year's interns. This provided underclassmen with exposure to the variety and quality of internship opportunities available, as well as real-world information about what to expect from careers in horticultural industries. Pre-internship students were required to critically evaluate the presentations, and these peer evaluation results were analyzed and summarized before return to the upperclassmen presenters.

1340-1420

S24-P-11

A WEBCT-BASED DISTANCE LEARNING COURSE TO TEACH WATER AND NUTRIENT MANAGEMENT PLANNERS FOR THE NURSERY AND GREENHOUSE INDUSTRY

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In response to a legislative and environmental mandate, an interdisciplinary team of faculty at the Univ. of Maryland developed an interactive, WebCT-based course entitled "Water and Nutrient Management Planning for the Nursery and Greenhouse Industry." This course utilizes the rich educational potential of the web to provide a unique learning experience for resident students, together with widely dispersed nursery and greenhouse professionals. This course was designed for online delivery with little or no face-to-face interaction, for credit and noncredit (certification) purposes. The faculty team made key design decisions, using a range of collaborative tools and pedagogical methods to develop and deliver this award-winning course, to enable the learning process and make the technology transparent to the learner. By using a problem-based learning approach and with guidance from the faculty, learners analyze, synthesize and evaluate information to enable them to create and implement site-specific water and nutrient management plans for individual nursery and greenhouse operations. The role of the faculty is to facilitate independent learning and collaborative inquiry. During the four semesters this course has been offered, teams of students, growers and consultants have written thirty-one plans as case-studies, with 85 students in five states and Ontario successfully completing the course.

1340-1420

S24-P-12

AN INTERDISCIPLINARY COURSE IN ASIAN HERBS AND ALLIED HEALTH FOR HORTICULTURE AND NON-HORTICULTURE MAJORS

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A non-horticultural interdisciplinary course linking herbs used in Asian medical systems, their functional properties and current status has been developed and is offered at the Univ. of Connecticut. This course attracts students from several academic disciplines thereby creating an interest in plant science and horticulture and the importance of plants in human health. Herbal medicine, and diet and nutrition therapy have evolved as alternative medical practices in North America. The heightened interest in the 21st century for plant-based foods results from several factors. These include an aging population, increased healthcare costs, dissatisfaction with the conventional medical systems, desires for self-efficacy and autonomy in health care, and accumulating scientific evidence of the health benefits derived from plant foods. Nutrients and non-nutritive food components present in plants have been associated with the prevention and/or treatment of major diseases and chronic conditions including cancer, coronary heart disease, diabetes and hypertension. Data supporting the role of specific plant foods in health promotion and disease prevention continue to accumulate. A number of medicinal properties of plant species used in Asian traditional medical practices have been demonstrated in controlled experiments and have become an option to Americans seeking cost-effective health care and improved health status. These issues will be discussed in this paper.

1340-1420

S24-P-13

HAVE CAMERA, WILL TEACH: VIDEO CASE STUDIES AS A METHOD TO PROMOTE INDUSTRY INVOLVEMENT IN TEACHING HORTICULTURE AND AGRIBUSINESS

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The linkage between industry and education is basic to most agricultural teaching programs as industry provides the framework for the information that is presented in class. Employers are seeking trained employees with more problem-solving and decision-making experience and the ability to work in teams; the same abilities that we are teaching with critical thinking and experiential learning exercises. The Horticulture and Agribusiness teaching programs at the Univ. of Florida's Indian River Research and Education Center have involved agricultural industries in teaching through guest speakers and field trips with great success over the past three years. Videotaped case studies with agribusiness leaders allow instructors to overcome time and spatial limitations of the classroom thus bringing a wider cross-section of industry to a greater number of students across disciplines and locations. A series of videotapes that feature horticultural and agribusiness professionals in situ emphasizes visual information on specific and current issues. Written transcripts and supporting materials provide additional details. Students analyze and respond to the featured problem to gain experience in the decision making necessary in an agricultural enterprise. Industry participant and student feedback is used to evaluate the video case studies as a critical thinking tool.

1340-1420

S24-P-14

DIGITAL PHOTOGRAPHY CREATES A VIRTUAL RECORD OF PLANT PHENOLOGY FOR TEACHING

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The growing season for many horticultural crops does not correspond with the academic year: this may complicate teaching in the horticultural sciences. Students may not have the opportunity to see a plant's entire life cycle or the development of physiological disorders in context. We propose to enhance learning by enabling students to have access to detailed visual records of plant phenology and physiology in order to further their understanding of growth stages and plant development. We have prepared a detailed digital photographic data bank of fruit, vegetable and floricultural crops. In order to establish the data bank undergraduate students grew examples of agriculturally-important plant families at the Horticultural Research Centre of McGill Univ. Weekly photographs were taken of each plant from seed to harvest. In addition plants were grown hydroponically with various nutrient deficiencies. The development of nutrient deficiency symptoms were recorded photographically over a 4 to 6 week period. The digital pho-

tos have been catalogued by species, by plant family and by date: this will allow students to make comparisons between the developmental physiology of related species. We anticipate using the photos to enhance problem-based learning related to horticultural production practices.

1340-1420

S24-P-15

THE RESOLUTION OF VEGETABLE CROPS PROBLEMS UNDER ARID SUBTROPICAL CONDITIONS

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Beginning in 2000, regulations for the agricultural engineer's degree from the Faculty of Agronomy and Agroindustrias at the National Univ. of Santiago del Estero (NUSE), Argentina, require the horticulture class to link teaching, research and extension. Students must solve production problems in commercial vegetable growing during the summer season of the arid subtropical regions of Argentina. This final project for students was developed to use the scientific method as an instructional tool. The student research topic was entitled, "Comparative trial of lettuce varieties (*Lactuca sativa* L. var. *crispa*) of the cv. Grand Rapids' which is tolerant to bolting when sown late in the season in the arid subtropical climate of Argentina." The experiment was grown at NUSE. The results obtained in the experiment allowed students to infer that it is possible to produce cv. Grand Rapids commercially by late sowing (October). The crops were of good quality as indicated by a smaller stem length compared with cvs Bris and KriptUn. This form of experimentation produced information useful for generating profitable production systems for arid subtropical climates.

1340-1420

S24-P-16

AN ADULTS' SCHOOL THAT CONTRIBUTES TO HORTICULTURAL EDUCATION AS LIFELONG LEARNING

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Our present society is under stress. With an increasing percentage of elderly people in the population, lifelong learning has been proposed so that people may lead enriched lives. Horticulture and gardening activities are effective in promoting this realization. Tokyo Univ. of Agriculture (TUA) started an Adults' School in 1975. The minimum age for admission to this Adults' School is 50 years. For the 26 years since its opening, 5,500 alumni have graduated. Today, they are not only achieving enriched lives through horticulture and production of garden products, but are also contributing to society by activating local communities through their horticulture activities, such as working as volunteer gardeners to complete public parks. TUA's Adults' School has three courses: Horticulture and Landscaping, Advanced Horticulture, and Health Promotion. In both the Horticulture and Landscaping and the Advanced courses the students are given lessons for four hours a day, three days a week, of which two days are used for professional training and the remaining one day for liberal arts for 38 weeks annually. Most lectures and exercises are presented by the teaching staff of TUA, with the remainder by outside specialists. The results of a questionnaire in 2001 of students in the Horticulture and Landscaping course indicated that 58% of the total students were male and 41% female, and the average age of students was 61 years. As for the reason they entered the school, the answer, "because I like gardening" was most common (66%), followed by the answers, "for keeping the garden trees and flowers at my home in good condition," "because I have much time to spare after retirement from my job," and "for keeping good health." To the question what the respondents want to learn at the Adults' School, 93% of the students answered, "how to grow plants," and 87%, "a rich knowledge of horticulture in general."

1340-1420

S24-P-17

IS AN EARLY-20TH CENTURY US EXTENSION MISSION RELEVANT TO TWENTY-FIRST CENTURY ISSUES AND NEEDS?

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Legislation creating the US Extension system was enacted in 1914 (the Smith-Lever Act). The intent was "to aid in diffusing among the people of the United States useful and practical information on subjects relating to agriculture, home economics, and rural energy, and to encourage the application of the same". At the time of enactment, the US had a population of 92 million, 31% of whom resided on farms. In 2000, the population is 280 million, with 1.8 % related to agriculture. In that 86 year period, the US moved from an agrarian, rural population to an urbanized society. Dr. Steven Blank, in his book *The End of Agriculture in the American Portfolio*, notes that as societies mature, their economic activities transition from a food production base to an information production base. The greater economic returns associated with information production "forces" the society to abandon agricultural endeavors and invest its capitol in higher-return ventures. It is clear that the societal issues and needs are very different today than they were in the early-1900s. If public extension programs do not respond to these changing needs, they become redundant and funding is jeopardized. Like societal economic activity shifts, public extension programs go through transitions. They begin as a mechanism to get a backlog of agricultural production information into the hands of the end-user. They then transition to the development of additional information, through applied research. As the society becomes less dependent on agriculture, extension programs serve a smaller and smaller clientele and new societal needs emerge. Those extension programs that are unable to address those needs either vanish or become privatized.

1340-1420**S24-P-18****PLANTSMANSHIP, ADDING AN EXTRA DIMENSION TO HORTICULTURAL UNDERSTANDING**

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For a many years individual horticulturists with a good knowledge of the origins, cultivation and use of Garden plants have been referred to as Plantsmen. In 1995 the Royal Botanic Garden Edinburgh (RBGE) in conjunction with the Scottish Agriculture College (SAC) gained approval to offer the Higher National Diploma (HND) in Horticulture with Plantsmanship. The origins of the Course will be described and the opportunities for student learning highlighted." Plantsmanship training is now recognized as a valuable discipline within horticulture and attracts students from a wide range of backgrounds. The HND Plantsmanship Course is accepted as an integral part of the Scottish horticultural scene and allows students through their study of plants to progress into degree and post-graduate level courses in horticulture and related specialties.

1420-1440**S24-O-19****THE NIAGARA PARKS COMMISSION SCHOOL OF HORTICULTURE**

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The Niagara Parks Commission was established in 1885 by an act of Provincial Parliament of Ontario to preserve and enhance lands adjacent to Niagara Falls. Additionally, it was to remain self-funded with as many free facilities as possible for the general public. Since then, it has grown from 154 acres (62.2 hectares) to more than 4,000 acres (1,619 hectares). Due to a shortage of trained gardeners in Canada, the school was formally established in 1936 as The Niagara Parks Commission Training School for Apprentice Gardeners. As well as operating a school, students and staff are guardians of a unique, world-class campus, Niagara Parks Botanical Gardens (99 acres/40 hectares). The school provides a unique blend of academic and hands-on practical training at the gardens.

1440-1500**S24-O-20****INTERNATIONAL HORTICULTURE: AN INTERDISCIPLINARY COURSE FOR AGRICULTURE UNDERGRADUATES**

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A course entitled, "International Horticulture" was developed in order to expand the depth and diversity of the undergraduate horticulture curriculum at Louisiana State Univ. It was designed to be interdisciplinary in nature, in order to attract horticulture and non-horticulture students with interests in agriculture business, trade, food science, and plant protection. The intent of the course is to broaden the exposure of both domestic and international students to the importance of horticulture, the global diversity of crops and cropping systems, the economic significance of horticultural product trade, and value-added activities worldwide. An overview of horticultural crop production methods, postharvest handling, agro-processing, and marketing is provided from numerous countries and in all continents. Instructional information is obtained from numerous sources, including personal travel and work experiences, international horticulture trade publications, agriculture statistics reporting services, private sector producers/exporters, transportation companies, websites, and library reference materials. Students are encouraged to share additional international horticulture-related information with the class during the lecture and discussion presentations. The class information can easily be formatted for delivery via compressed video or other long distance learning mechanisms. The student learning experience is greatly enhanced by the extensive use of visuals from the individual countries discussed. A supplementary international horticulture study tour can be added for additional credit.

1500-1520**S24-O-21****STUDENT SUGGESTIONS TO IMPROVE AN EXPERIMENTAL UNDERGRADUATE COURSE IN HORTICULTURE AND AGRICULTURAL EDUCATION**

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Recent suggestions to reform undergraduate professional education include strategies such as institutional engagement, curriculum integration, and the provision of a variety of learning experiences for students. Students just completing an experimental undergraduate course that integrated horticulture and agricultural education disciplines were the subjects of a study which consisted of three focus group interviews and an ethnography. This semester-long study sought to 1) improve educational practice, 2) to uncover students' perceived needs, and 3) to explain students' dissatisfactions with the course. Researchers concluded that although most students enjoyed the course and believed the content to be valuable to their future careers as formal and nonformal educators, their dissatisfactions appear to be associated with their preconceived notions of how undergraduate courses are traditionally organized. Student feedback into areas for course improvement includes clearer course organization, less emphasis on the course's technology component, and the infusion of more horticultural information. This study has implications for future educators such as teachers seeking to incorporate school gardening into their curricula, public garden educators who may apply principles learned in the course to their educational programs, and Univ. professors educating future teachers.

1520-1540**S24-O-22****INTEGRATING HORTICULTURE INTO THE ELEMENTARY SCHOOL CURRICULUM: MEETING THE SOLS THROUGH INTERDISCIPLINARY EXPERIENCES**

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Integrating Horticulture into the Elementary School Curriculum: Meeting Standards of Learning (SOLs) through Interdisciplinary Experiences (HORT 6004), is a graduate level course offered through the Virginia Tech Univ. Dept. of Horticulture that can be taken either for graduate credit or Continuing Education Credit and serves to meet the recertification requirements for Virginia teachers. Students learn to use the interdisciplinary features of horticulture and gardening to meet the Virginia SOLs across the elementary school curriculum. This course is offered to elementary school teachers, Master Gardeners, 4-H agents and leaders, and horticulture educators with the knowledge and skills

necessary to use gardening and horticulture as a tool to enhance various aspects of the curriculum. It focuses on practical, hands-on experiences for participants as they are introduced to the science of horticulture and currently available garden-based curricula. The class meets in the summer as an intense, weeklong course at various botanical gardens and arboreta around the state with a fall meeting to present final projects. It is offered at a distance to accommodate non-traditional students. This class was developed in response to a survey of Virginia teachers and serves as an outreach to educators throughout the state. Partnerships with botanical gardens and arboreta were formed to link educators to local resources. Additionally, a website was created to communicate with the students at a distance. The methods used to implement the course statewide along with enrollment trends will be reported

1540-1600

S24-0-23

IMPROVING PROSPECTIVE TEACHERS' AND PROSPECTIVE HORTICULTURAL EDUCATORS' LEARNING: THE IMPACT OF AN INTERDISCIPLINARY COURSE SITUATED IN A PUBLIC GARDEN

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With fewer people experiencing nature firsthand, there is an increased need to design educational experiences and programs that help people connect themselves with nature. Educators who design such experiences in horticulture require not only horticultural knowledge, but also an understanding of how people learn. This study determined the impact of an experimental undergraduate horticulture course funded through a USDA Higher Education Challenge grant. The course used a public garden as a context to foster prospective teachers' and prospective public garden educators' understanding of how to teach through horticulture. To gain insight into student learning, the researchers employed a social science research design that assessed both perceptions and knowledge levels pre- and post-instruction. The population for this multi-year case study was students enrolled in two interdisciplinary courses offered at a land-grant Univ.. Findings indicate that horticulture is a fruitful context in which to situate learning for future educators. Perceptions related to learning theories and technology show the greatest positive change, while horticultural knowledge was not as dramatically affected. To further solidify the acquisition of horticultural knowledge, the authors suggest aligning learning theory instruction more closely with horticultural activities that can serve as a context for instruction. This study has implications for horticulturists who seek to help Univ. students become prepared to teach in both formal and non-formal settings, such as in schools, communities, and public gardens.

1600-1620

S24-0-24

USING STREAMING VIDEO TECHNOLOGY TO TEACH VEGETABLE CROPS AT VIRGINIA TECH AS A ASYNCHRONOUS DISTANCE EDUCATION COURSE ON THE WORLDWIDE WEB

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Horticulture 4764 "Vegetable Crops" is a required course for horticulture majors in the Crops-option at Virginia Tech. A classroom section of the course is taught each Fall Semester on the Virginia Tech campus in Blacksburg. An asynchronous, web-based distance learning section of the course is taught during the Spring Semester. The distance education website (<http://www.bsi.vt.edu/welbaum/hort4764/>) for the class contains 43 lessons layered by topic areas into short paragraphs or bulleted descriptive summaries in html format that can be easily read from a computer screen. The distance learning website relies heavily on approximately 600 graphic images and brief Quicktime scripted streaming video movies that enable students to view field-based demonstrations of the principles of vegetable production. Net Forum software enables discussion between the instructor and students. The website is not password protected and contains a keyword search function to allow extension clients not affiliated with the class to find information of interest. This class is open to Virginia Tech students and continuing education students not affiliated with the Univ.

1620-1640

S24-0-25

EFFECT OF INTERACTIVITY AND LEARNING STYLE ON DEVELOPING HANDS-ON HORTICULTURAL SKILLS VIA DISTANCE LEARNING

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One of the most significant challenges facing horticultural distance education is developing effective strategies for teaching hands-on skills. An asynchronous web/CD-based course, "The How, When and Why of Grafting," was used as a vehicle to evaluate two pedagogical variables related to teaching the hands-on horticultural skill of grafting to non-traditional students. In collaboration with Cornell Cooperative Extension, we worked with Extension Educators in 5 counties to enlist an audience of amateur gardeners. The 10-week course was delivered on 2 separate occasions to a total of 67 students. The two pedagogical variables evaluated in this experiment were type of student/instructor interaction and student learning style. Interaction involved either entirely asynchronous, non-facilitated instruction (text, pictures, video, and discussion board) or the asynchronous components in addition to a 3 hour face-to-face (facilitated), hands-on grafting session with the instructor. Learning styles were evaluated and students were classified as either active or reflective learners. The experimental design was a Randomized Complete Block with 4 treatments in a 2x2 complete factorial arrangement of the 2 types of interaction (+/- facilitation) and the 2 learning styles. Blocks consisted of 5 different county extension sites. Hibiscus plants, grafting knives, and other grafting supplies were provided to the students for the grafting lab exercises. Students and instructors independently evaluated student grafts after four weeks based on pre-defined criteria of grafting success. Statistical evaluation of the results of student self-evaluation was there was no significant effect of facilitation or of learning style, indicating that students can effectively learn to graft at a distance regardless of learning style or the absence of face-to-face interaction with an instructor.

1640-1700

S24-0-26

A COMPARISON OF ASYNCHRONOUS COMMUNICATION LEVELS WITH STUDENTS ENROLLED IN COMPRESSED VIDEO, WEB-BASED, AND TRADITIONAL CLASSES

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Increasingly, universities are offering more courses through a variety of formats for distance education. While many innovations have been developed to support the distant learner, instructors remain limited by time, funds, and communication methods. Both compressed video and web-based courses require enhanced asynchronous contacts between the faculty member and the students. The convenience of having a self-paced class on demand confounds these methods of asynchronous contact. Compressed video and web-based courses have been studied over several years to determine the different levels of communication needed for each type of course. It was determined the number of contacts between the faculty members and the students was significantly greater for the distance classes than for the traditional classes. Recommended methods for handling this increased level of coordination and communication will be provided.

1700-1720

S24-0-27

HORTIPS—A NEW CONCEPT IN HORTICULTURAL TECHNOLOGY TRANSFER

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HorTIPS (Horticultural Technology into profits) provides ready access to sources of technological innovation for the English horticultural industry. Particular focus is given to the needs of small and medium sized growers. The

pilot program has three phases: 1) identification of the major technical constraints inhibiting profitability in the industry; this resulted from a survey of trade press, published reports and discussions with each sector of the supply chain; 2) intensive web searching to find sources of information and its electronic publication; information from 750 hours of web searching was collated and posted at www.hortips.co.uk; and 3) outreach to growers and their consultants through meetings, conferences, trade journals, web based communication including discussion boards and distance learning units. The HorTIPS Team unites expertise from universities, commercial consultants and grower organizations aiming to increase accessibility to knowledge. Progress is monitored by a Steering Group of leading growers. Electronic communication between Team members has been essential for information exchange, organization and project management. Funding comes from government (Dept. for Environment, Food & Rural Affairs–DEFRA, London, UK), levy based organizations (Horticultural Development Council–HDC) and industry.

1720–1740

S24–O–28

**HORTICULTURE HIGHER EDUCATION FOR THE 21ST CENTURY;
PREPARATION OR COMPROMISE?**

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Due to a series of institutional changes including implementation of a Univ. core curriculum, and a mandated reduction in degree credit requirements, the

Horticulture, and Turf and Landscape Horticulture bachelor of science (BS) degree programs were revised in the late 1990s. The Univ. required that BS programs be reduced from 132 to 124 credits and implemented a 35 credit core curriculum of fundamental laboratory science, math, language skills, arts and humanities, and social sciences. The College of Agricultural, Food and Life Sciences simultaneously implemented a core curriculum of 18 credits of communications and language skills and general agriculture, and further required 18 credits remain undetermined as “free electives” so that students could pursue a second degree program other than their major degree. After reviewing literature on horticulture education, surveying employers and alumni, studying benchmark institutions, and considering the institutional requirements, new degree programs were created with concentration areas of Management, Science, Merchandising and Business Operations, Turf Management, and Landscaping. These degree programs had new course areas added including earth and/or environmental science, leadership development, economics and business management, and a mandatory internship work experience was instituted. The objective of the degree programs was for a student to be immediately employable upon graduation. Comparing the new degree programs to previous programs, it is apparent that the amount of horticulture training and coursework that students take has been greatly reduced. However, the trade-off for reduced horticulture training is a broader educational experience. A question now arises if students are better educated and/or trained for the 21st century horticulture workplace. Experiences with the transition in degree programs, and the internship program will be presented and discussed.