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ON THE COVER

At the end of Carroll Goering's history lesson: today's powerful tractors. (Photos, from top left clockwise, courtesy of Case IH, John Deere, AGCO Corp., and Kubota Tractor Corp.)



TransAtlantic Precision Agriculture Consortium

George Vellidis

TAPAC students and faculty visit a farm near Regensburg in Bavaria, Germany, during the summer of 2007.

Sometimes things that sound too good to be true *are* indeed true: for example, an international student exchange program that provided American and European agricultural engineering students the opportunity to study abroad at *absolutely no cost*. The exchange program was developed under the umbrella of the TransAtlantic Precision Agriculture Consortium, or TAPAC. TAPAC is a partnership between six universities—three in the United States and three in the European Union—developed to foster student and faculty exchanges. The partnership officially began in 2004, but the foundation was laid years before through professional networking and long-term friendships. The partner universities are the University of Georgia (lead U.S. partner), Auburn University, Mississippi State University, the University of Thessaly (Greece—lead EU partner), the University of Padua (Italy), and the Technical University of Munich (Germany).

Underwritten by grants

The impetus for formalizing the partnership was two grants from a United States/European Union program now known as the Atlantis program. One grant was awarded to the American partners by the U.S. Department of Education's Fund for the Improvement of Post-Secondary Education (FIPSE), and the other grant was awarded simultaneously to the European partners by the European Commission's Multinational Partnerships for Cooperation in Higher Education program. The goal of these programs is to provide students with the experience of living and working in a culture different from their own. This immersion provides young professionals with the self-confidence and experience to function in the global economy and usually provides them with a significant competitive edge in the job market.

The grants provided generous stipends for 21 American college students and 21 European college students to spend a semester in Europe or the United States, respectively, immersed in the precision agriculture research program of their host university. Each partner university was responsible for sending seven students abroad and hosting seven students from abroad.

Diverse faculty and students

The faculty involved in this program is a multidisciplinary group and includes a soil scientist, an agronomist, and several agricultural engineers. The students participating in the program reflect the multidisciplinary nature of the faculty and included engineering students as well as students representing several of the agricultural sciences. The majority of the participating students were upper division undergraduate students, but a few graduate students also participated.

To prepare for the exchange program, the students were required to take a precision agriculture course at their home university or learn the same information from an on-line training module developed by TAPAC faculty. (The training module is available at www.nespal.org/tapac/training.) In addition, the students were required to study the language and culture of their host university prior to their departure. Although all of the participating European students were fluent in English, the American students found it quite difficult to learn conversational Greek, German, or Italian within a semester or two prior to their departure. The language preparation was focused on providing American students with enough language skills to allow for simple day-to-day communication on the bus or at the market. Faculty and students with whom the American students interacted with professionally at the host institutions were typically fluent in English.

The students' living arrangements varied greatly from place to place and year to year. In Europe, students typically lived in off-campus apartments or residential hotels, which required them to use public transportation daily to reach the university. It also allowed them easy access to shopping, cultural and historical sites, and night life.

At work, the students' responsibilities varied based on their experience and knowledge. Typically students were associated with projects related to their interests, and their work was assigned so as to give them as much diverse experiential learning as possible within the confines of the semester-long exchange. Their work ranged from developing a GIS database of the Botanical Garden of Padua (the oldest botanical garden in the world, begun in 1545) to evaluating the efficacy of variable-rate application of herbicides on peanuts. The former project was accomplished by Conner Trott, an Auburn University student at the University of Padua, while the later project was the master's thesis project of Katia Rizzardi, an Italian student visiting the University of Georgia. American students participating in the program typically enrolled in an internship course at their home institution and earned up to three credits for this experience.

It wasn't all work

The students were encouraged to travel during weekends and public holidays, and many took advantage of this opportunity. During 2006, three of the students in Germany attended a World Cup match and, later that summer, were present at the finish of the Tour de France in Paris. The excellent European rail system made it easy and inexpensive to travel between cities and countries within the European Union. In addition to individual travel, during 2006, TAPAC faculty organized a driving tour of the American partner campuses, which began at the Atlantic Ocean and ended at the Mississippi River and was attended by many of the TAPAC faculty and all of the European students in the United States at that time. In 2007 and 2008, a similar 10-day tour was organized in Europe. When possible, students also attended precision agriculture conferences. During the summer of 2007, for example, all nine of the American students in Europe at the time and several European student alumni of the program attended the Sixth European Conference on Precision Agriculture in Greece. Five of the students presented papers or posters on their projects at the conference. All TAPAC faculty also attended the conference.

These many opportunities to interact with colleagues and students from the six partner universities further solidified the already strong partnership that existed between these six institutions and built a level of trust that will greatly enhance our ability to work closely together in the future. But, most importantly, the TAPAC program provided the participating students with a deep appreciation of cultures, life-long friendships, and the confidence that they can live, work, and contribute to a global society.

The following excerpt provides a student's perspective of the program. It is an email from an Auburn University biosystems engineering student who spent the summer of 2006 at the Technical University of Munich:

... Thank you for enabling me to be a part of the incredible TAPAC program. The experience was very eye-opening and beneficial in many ways. The trip to Germany was a once-in-a-lifetime opportunity, and I enjoyed it very much. That was my first time outside of the United States, and I think on a global basis now, not just about North America. It was interesting to see how other cultures function, which puts a new perspective on our own culture. I know my work habits have improved, and I have made global connections for the future. The trip was unforgettable....

—Mack Moncus



Manuel Renga, a crop production student from the University of Padua, uses the Crop Circle sensor to create reflectance maps of peanuts at the University of Georgia.

The program not only broadened the horizons of the students but also the faculty and staff who interacted with visiting students. At the University of Georgia, for example, having Greek, German, and Italian students spending several months working with us in our research programs offered those who have not had the opportunity to travel abroad a unique window to the culture and traditions of Europe. Our experience has been nothing but positive, and we strongly encourage students and faculty in all disciplines to become engaged in international education activities. We owe it to ourselves and to our students.

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