

A Student-managed Horticultural Enterprise Hort 465: The Beginnings

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In 2010, Wade Miller, chair of AgEdS department; Jeff Iles, chair of Horticulture department; and Mark Honeyman, coordinator of ISU Research Farms, including the Horticulture Research Station, began discussions that were the beginnings of a new course at ISU – Horticulture Enterprise Management, Hort/AgEdS 465X.

The discussions included several key points:

- The Ag 450 course (AgEdS 450 Farm Operation and Management) was experiencing large enrollments. It was a required capstone course for Ag Studies majors. Enrollment in the College of Agriculture and Life Sciences and the Ag Studies major was growing. Tom Paulsen, instructor, and Greg Vogel, farm operator, had created a strong format that students were embracing. The Ag 450 class/farm dated to 1943 and was well established at ISU. Relief was needed for the Ag 450 course.
- The local foods movement was about five years old and had reached the Midwest. Farmers markets in Iowa were flourishing. For example, the Des Moines Farmers Market had grown to about 300 vendors with 20,000 visitors each Saturday and one-time crowds exceeding 40,000 people.
- The local foods movement had become more than farmers markets, however. Interest in eating local, becoming a

“locavore,” and reducing “food miles” became a national trend. Restaurants, institutional food services, and grocery stores began featuring local foods, particularly fruits and vegetables. Community Supported Agriculture (CSA) groups were becoming more common. Also, the Leopold Center at ISU had become a leader in promoting local foods and organizing regional food systems working groups. The first group had been convened in 2003.

- The new technology of high tunnels had become established. The ISU Research Farms had built two high tunnels in 2006 – one at the Horticulture Station, Ames, and one at the Armstrong Research Farm, Lewis. A high tunnel is a plastic greenhouse with crops planted in the soil. High tunnels are used to extend the growing season in the upper Midwest.
- Efforts were underway to hire a new faculty member in horticulture at ISU. The area of emphasis was vegetable production. Ajay Nair, assistant professor, started July 1, 2011.

During the fall of 2010, a request for an experimental course was prepared for simultaneous submission to the curriculum committees of both the Horticulture and Agricultural Education and Studies departments. Malcolm Robertson, Leopold Center, was recruited to serve as the first instructor. Nick Howell, superintendent, ISU Horticulture Research Station, was enlisted to provide land, equipment, and labor. A syllabus and course objectives were prepared and a budget secured.

In spring 2011, the first class was offered as Hort 490F, an independent study. In May 2011, the college curriculum committee approved a dual-listed experimental course AgEdS/Hort 465X Horticulture Enterprise Management. In July 2011, the course, students, and crops were a featured stop at the ISU Horticulture Station field day.

As a capstone course, the syllabus was designed to provide an experiential learning environment for students to foster an appreciation of the business, production, and marketing complexities of a fruit and vegetable operation. The course was structured as a business and was managed through decisions made by students in four major areas: finance, operations, production, and marketing. Most financial, production, and marketing activities were done by the students enrolled in the course. Specifically, the course focused around on-farm learning that gave students hands-on experience in horticultural enterprise planning (business plan development, budgeting, crop scheduling, record keeping, and marketing); crop production (crop nutrition, crop protection, food safety, and post-harvest handling), and practical implementation of the decisions made by the class.

Class Activities

Spring session: Business planning and early-season high-tunnel production. Spring sessions of the course focused on the development of a complete Small Farm Local Food business plan and the selection of summer field crops that were identified by class market research. The spring class was involved in the production of early-season high-tunnel crops.

Summer session: Crop production and operations. The summer session class focused on all aspects of field production, crop maintenance, record keeping, and field

operations. Students actively participated in the operation of the equipment. The decision of which late-season tunnel crops to grow was researched and decided by the class. They also ordered all materials needed for the late-season high-tunnel production.

Fall session: Marketing and food safety and late-season high-tunnel production. The fall semester focused on marketing and training and understanding Good Agricultural Practices (GAPs), which contains the new Federal standards involving food safety in the fields, at harvest, and post-harvest. In addition to managing the late-season high-tunnel crops, this class also was responsible for the decision of which early-season tunnel crops would be grown. They ordered all required materials for the incoming spring class.

2011 Crop Overview

Mini-tunnel. The class had access to a mini-tunnel at the Horticulture Station for an early-season crop in 2011. After researching market demand and crop potential, a tomato crop was selected for production in the mini-tunnel. Crop harvest continued into late-July/early-August.

Field production. The spring 2011 class selected four field crops for summer production: 1/4 acre onions (sets and direct seeded), 1/4 acre watermelons, 1/8 acre tomatoes, and 1/8 acre potatoes. Late spring rains delayed land preparation and planting operations, including laying of black plastic mulch and installing subsurface drip irrigation. Cornstalk mulch was placed between rows to promote long-term soil health and reduce weed pressure. Due to the delayed arrival (late-July) of a purchased unit, no fertigation was done on any of the crops. Irrigation scheduling was determined with tensiometers positioned in each crop.

Lessons after the first year:

- 1) Improved communication between students/instructor and farm staff during critical production stages was needed. Funding for a graduate intern located on the farm in 2012 was secured to ensure better communication occurs.
- 2) The class needs to be able to grow produce during the spring and fall semester to gain full experiential learning. A high tunnel was purchased and constructed in late spring 2012. This ensured early-season production and extended late-season production of crops and consequently hands-on experience by the class

2012 Crop Overview

Crop production during 2012 proved to be extremely challenging due to drought. In order for students to gain the full benefit of the experiential learning and to minimize peak labor demands, crop planting occurred over a three-month window, which started in late April. As a result of the extended planting window and the combination of drought and high temperature conditions, several crop failures occurred.

Despite the challenging year, there were a couple of notable achievements. First, a Premium Round Style High Tunnel (30 ft W × 12 ft H × 96 ft L) was acquired and constructed. Following the recommendations outlined in the 2011 AgEdS/Hort 465 business plan, a tunnel was purchased to meet early- and late-season crop production needs. Second, and again following the recommendations of the 2011 class, the first perennial crop, approximately 1/10 acre of asparagus, was planted in late April.

Field production. The spring 2012 class selected four field crops for summer production based on market demand and crop potential. These included 1/8 acre tomatoes (*cv.* Celebrity), 1/4 acre peppers (*cv.* King Arthur), 1/3 acre onions (*cv.* Copra and Red Zepplin), and 1/2 acre watermelons (*cv.* Sugar Baby).

Malcolm Robertson was the class instructor for seven semesters from spring 2011 to spring 2013, including summer terms. The class was not offered summer 2013. Beginning fall 2013, Leah Riesselman has been the instructor.