

2012

# AgEdS/Hort 465 Class: Horticulture Enterprise Management

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## Recommended Citation

Robertson, Malcolm, "AgEdS/Hort 465 Class: Horticulture Enterprise Management" (2012). *Iowa State Research Farm Progress Reports*. 31.

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# AgEdS/Hort 465 Class: Horticulture Enterprise Management

## **Abstract**

The production of local fruit and vegetables is a rapidly expanding segment of Iowa agriculture. The new ISU AgEdS/Hort 465 class trains future growers in the management and operation of diversified horticultural enterprises on an Iowa farm situation. Management of the finances, production, and marketing is performed by the students. The course is structured as a business and is guided through decisions made by student committees (finance, operations, production, and marketing committees). Each committee investigates the feasibility of a desired enterprise before coming together to make a final decision. The course was offered for the first time in 2011.

## **Keywords**

RFR A1144, Horticulture, Leopold Center for Sustainable Agriculture

## **Disciplines**

Agriculture | Horticulture

## AgEdS/Hort 465 Class: Horticulture Enterprise Management

### RFR-A1144

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### Introduction

The production of local fruit and vegetables is a rapidly expanding segment of Iowa agriculture. The new ISU AgEdS/Hort 465 class trains future growers in the management and operation of diversified horticultural enterprises on an Iowa farm situation. Management of the finances, production, and marketing is performed by the students. The course is structured as a business and is guided through decisions made by student committees (finance, operations, production, and marketing committees). Each committee investigates the feasibility of a desired enterprise before coming together to make a final decision. The course was offered for the first time in 2011.

### Course Structure

The on-farm learning gives 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 postharvest handling) and *practical implementation* of the decisions made by the class.

*Spring–business planning and early season high tunnel production.* Spring semester focuses on business planning and crop selection according to market research.

*Summer–crop production and operations.* The summer session focuses on all aspects of production, crop maintenance, record keeping, and operations. Students actively participate in the operation of equipment.

*Fall–marketing and food safety and late season high tunnel production.* The fall semester focuses on marketing, training, and understanding Good Agricultural Practices (GAPs), which contain USDA standards for food safety in the fields, at harvest, and post harvest. Additionally, students select and grow crops in the high tunnel that extends the season.

### Crop Selection and Growing Practices

*Mini-Tunnel.* The class used a mini-tunnel at the ISU Horticulture Research Station, Ames, Iowa for an early season crop in 2011. After researching market demand and crop potential, a tomato crop was selected for production. Bed preparation, which included laying black plastic mulch and sub-surface drip irrigation, occurred in early April and seedlings were planted in mid-April. Row covers were used to protect the crop from frost and to enhance early-growing conditions. These covers were removed during the day when air temperatures began to exceed 75-80°F. Crop harvest continued into late July/early August.

*Field Production.* The spring 2011 class selected four field crops for summer production based on market demand and crop potential. These included: 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 the fieldwork including laying black plastic mulch and installing subsurface drip irrigation. Corn stalk mulch

between the rows promoted long-term soil health and reduced weed pressure and chemical inputs. Due to the delayed arrival (late July) of a purchased fertigation unit, no fertigation was done. Irrigation scheduling was determined through the use of tensiometers, which were positioned in each crop.

*Tomatoes.* Transplants were hardened or acclimated to growing conditions for approximately ten days before planting in the mini tunnel (mid-April) and the field (mid-May). Staking and tying occurred two weeks after planting. An extended period of exceptional heat occurred during the main fruiting period of the field crop and the latter part of the fruiting period in the mini tunnel crop. This unfavorable weather resulted in poor internal fruit quality and a low marketable yield (Table 1).

*Onions.* Two types of production methods were decided by the students: onion sets and direct seeding. Onion sets were purchased and kept in a controlled environment and acclimatized for a short period prior to planting (early-May). To mitigate peak labor demands and to minimize the costs of purchasing sets, the class decided to run an observation trial to see if seeding would be successful and/or if it would offset peak labor demands by creating a staggered harvest period. The class understood the risk and low chance of potential success for direct seeding but made the decision to go ahead with the observation. The onion sets yielded very well and as expected the direct seeded onions did not financially break even (Table 1). From this experience, the spring/summer classes suggested that future classes should consider growing their own transplants in greenhouse environments to minimize variable input cost involved with specific crops.

*Potatoes.* Seed potatoes were ordered and arrived ahead of schedule. Improper storage resulted in the potatoes having 1 to 2 in. sprouts prior to planting. Extreme care was taken to slice the larger seed potatoes into smaller pieces and then to plant them. Yield is shown in Table 1.

*Watermelons.* The crop was direct seeded over six weeks in three planting intervals to minimize labor demand. A cold spell occurred after the second planting, lasting 7-10 days, which slowed vegetative growth development. Two weeks after the third planting, vegetative growth of the second and third plantings was visually similar but once temperatures warmed up again, the earlier planted crop set fruit and matured earlier, helping to minimize labor demand at harvest. Yield is shown in Table 1.

*Lessons and future plans after one year.* Improved communication is needed between students/instructor and farm staff during critical production stages. Funding for a graduate intern located on the farm in 2012 has been secured to ensure better communication occurs. The class needs to be able to grow produce during the spring and fall semester to gain full experiential learning. Thus, a high tunnel/greenhouse has been purchased and will be constructed in 2012. This will ensure early-season production and extended late-season production of crops and hands-on experiences for the class.

### Acknowledgements

Thanks to Nick Howell and the Horticulture Research Station staff for their assistance.

**Table 1. Summary of the 2011 yields.**

Crop	Yield (lb)
Tomatoes	806
Potatoes	1,288
Watermelon	4,151
Onions	3,280