

**Plan of Work for UK Horticulture  
University of Kentucky, College of Agriculture  
for the  
Kentucky Horticulture Council's Proposal Funded by the Agriculture Development Board**

This plan of work to be funded by the Kentucky Horticulture Council with funds from the Agriculture Development Board reflects the plan of action developed over several years to meet industry needs. Funds to the Horticulture Department will increase on-farm (off-campus) assistance and educational programs through the University of Kentucky Cooperative Extension Service. Through the addition of technical support and operating funds to the base-level programs, the Kentucky Agricultural Experiment Station will generate important technical information. The specific objectives to be addressed and the activities to be fulfilled are outlined below.

**Objective 1.** Develop variety recommendations for a wider range of horticultural crops and increase the rate of production system development that can provide the products demanded, or accepted, by the market.

**Variety Trials and Plant Evaluation**

The primary sites for variety trials and plant evaluation are the Agriculture Experiment Station Research Farms. The new varieties and new plant and plant products with the greatest potential for industry impact will also be tested on commercial farms in collaboration with farm managers in subsequent years.

Many new varieties of vegetable crops produced in Kentucky are introduced by seed companies and universities each year. The market preferences for specific varieties change rapidly. Activities to be conducted in this project include improved overall quality of variety trials and additional trials with a major crop and two minor crops for profitable niche markets (field and greenhouse production). Program requires construction of cold storage facility at the Horticulture Research Farm in Lexington for postharvest evaluation.

International seed companies are introducing new annual bedding plants each year. New product development is the life blood of the floriculture, nursery, and landscape industries. Activities needed in this area include the evaluation of new plants and varieties in the diverse geographic regions of Kentucky (Lexington, Quicksand, Princeton).

Small fruit varieties will be evaluated in different geographic regions of Kentucky. Fresh market and wine grape variety trials will be established or expanded at the Lexington, Quicksand, and Princeton research stations. New Eastern European grape variety crosses will be evaluated at Princeton for their potential to improve hardiness and wine grape quality. Blackberry trials will be continued.

## **Production System Research**

The number of field research plots will be expanded at the Kentucky Agricultural Experiment Station farms to generate the crop- and location-specific cultural recommendations for the primary horticultural commodities and those that offer potentials for niche markets.

Research is needed on production systems, including varieties, for additional vegetable and/or fruit crops to expand the season for marketing cooperatives. Expansion of the marketing season with spring or fall crops can increase the efficient use of facilities and management.

Additional cooler and storage space will be constructed at the Horticulture Research Farm in Lexington.

Research will be conducted at the Robinson Experiment Station (Quicksand) on integrated cropping systems for small acreage in eastern Kentucky for efficient production of the range of fresh produce to satisfy local, direct-to-consumer markets.

Production systems research with small fruits at Kentucky Agricultural Experiment Station research farm in Lexington will focus on strawberry variety performance in modified raised-bed systems.

Alternative crops for tobacco greenhouses will be much more successful if the greenhouse is available for spring production. Research is needed to develop production systems for alternative crops in tobacco greenhouses, including vegetable transplants and vine-ripe produce.

A naturally-ventilated greenhouse will be constructed at the Horticultural Research Farm in Lexington.

Research will be conducted in Lexington to determine the suitability of the pot-in-pot system for plant species currently or potentially important to our nursery crops market.

## **Implementation**

Field and greenhouse plots at the three primary Research Farms of the Kentucky Agricultural Experiment Station will be increased to provide information about varieties, landscape plant cultivars, and production system components. Listed below are the additional field/greenhouse research that will be conducted as a result of this project.

### **Horticultural Research Farm, Lexington**

#### **Vegetable Crops**

Year # 1 - organic peppers, acorn squash, fall yellow and zucchini squash, fall broccoli, sweet potatoes and specialty melons.

Year # 2 - vine-ripe and specialty tomatoes, cucumbers, muskmelons, pumpkins, new potatoes and sweet corn.

### Fruit Crops

Years # 1 and 2 - Grape variety trial, strawberries for plasticulture.

### Annual and Herbaceous Perennial Landscape Plants

Year # 1 - Heat tolerant flowers *Verbena* (40 varieties and species), *Lantana camara* (20 varieties) and of *Salvia* (20 varieties and species).

Year # 2 - Seed and cutting propagated petunias (40 varieties) and geraniums (50 of the 180 varieties). Establish a test plot for plants evaluated by the Specialty Cut Flower Association to evaluate field grown cut flowers for sellers at farmers' markets and roadside stands.

### Nursery Crops

Years # 1 and 2 - Expand the pot-in-pot demonstration area to support a research project focused on irrigation and nutrition for selected species.

### Greenhouse Crops

Year #1 - Construct new greenhouses

Year #2 - Construct and evaluate a movable trough system for greenhouse strawberries; and evaluate verbena varieties for spring hanging baskets.

## **Research and Education Center, Princeton**

### Vegetable Crops

Year # 1 - tomatoes

Year # 2 - broccoli or asparagus

### Fruit Crops

Year # 1 - Expand the blackberry variety trial

Year # 2 - Expand the trial with European grape crosses

### Annual and Herbaceous Perennial Landscape Plants

Year # 1 and 2 - *Rudbeckia*

## **Robinson Station, Quicksand**

### Vegetable Crops

Year # 1 - tomatoes, peppers, squash, fall broccoli, and specialty melons.

Year # 2 - tomatoes, cucumbers, muskmelons, pumpkins, and sweet corn.

### Fruit Crops

Year # 1 and 2 - establish a grape variety trial, expand the blackberry trial, and continue the blueberry trial.

## Annual and Herbaceous Perennial Landscape Plants

Year # 1. - *Verbena*, *Lantana*, and *Salvia*

Year # 2 - petunias and geraniums

**Objective 2.** Educate farm families in the daily management of horticultural enterprises through on-farm demonstrations, tours and workshops. This education must be specific to individual crops and cropping systems.

### **On-Farm Demonstration and Consultation**

Support will be given to new growers by demonstrating the implementation of specific crop production strategies, pest management procedures, mechanization of production, irrigation, harvesting, and marketing operations and skills. Reliable data from on-farm demonstrations will be collected and analyzed to guide future research and to validate the profitability of production/marketing systems on working family farms. Six Horticulture Extension Associates will establish on-farm demonstrations that meet commercial production standards.

On-farm demonstration and on-farm consultation is required for successful expansion of production anticipated in the four fresh produce marketing cooperatives (6 to 10 demonstrations in the counties served by each cooperative). This revised proposal funds Extension Associates to assist in the counties surrounding three of the cooperatives at this time (GRPMC, CKGC, WKGC). County Extension Agents will cooperate with Horticulture Extension Associates, Horticulture Extension Faculty and individual farmers in the planning, establishment, maintenance and harvest of on-farm demonstrations. This strategy has proven to be extremely successful and must be replicated in parts of the state.

On-farm consultation and demonstration will be required for farmers considering and/or implementing small fruits as alternative crops (6 to 10 per year). Assuming the Board funds the continuation of the Grape Assistance Program, much of the activities with small fruit will be devoted to grapes. Technical, field assistance is essential to extend the expertise of a multi-disciplinary team of UK faculty to individual farms seeking assistance with site selection, production system design and cultivar selection. This will be provided through portions of two Extension Associates (Lexington and Princeton) with small fruit and vegetable crop responsibilities. Assistance with market assessment and planning will be provide by KDA marketing personnel.

On-farm demonstrations and consultations for nursery crops will be greatly expanded in western Kentucky. This work will include collaboration with the West Kentucky Dark Fired Tobacco Growers Association's efforts to diversify into nursery crops.

## **Implementation**

1. The UK Horticulture Department will hire Extension Associates in consultation with collaborating County Extension Agents and cooperative managers.
2. Recruit grower-cooperators through meetings, newspapers, and extension newsletters.
3. Establish demonstrations; make routine visits to demonstration grower-cooperators.
4. Conduct field days at demonstration sites in cooperation with County Extension Agents.
5. Collect economic data for analysis and publication.
6. Conduct winter meetings/workshops/training programs.

Each Extension Associate will require an annual budget for general position support (\$3,000), travel (\$4,000) and demonstration plot supplies (\$10,000). Vehicles and field equipment will be purchased to allow efficient establishment of on-farm demonstrations.

Extension Associates will be located in each of the following areas and will work with growers in the associated counties:

**Central Kentucky:** (Anderson, Bourbon, Boyle, Clark, Estill, Fayette, Franklin, Garrard, Harrison, Jessamine, Lincoln, Madison, Mercer, Nicholas, Powell, Scott, and Woodford Counties). This area serves the Central Kentucky Growers Association in addition to the numerous direct marketing opportunities for fresh produce.

**South-Central: Mammoth Cave Area:** (Allen, Barren, Butler, Edmonson, Grayson, Green, Hardin, Hart, Larue, Logan, Metcalfe, Monroe, Simpson, and Warren Counties) This area serves the Green River Produce Marketing Cooperative with on-farm demonstrations and consultations related to the production and marketing of fresh produce.

**North-Western Kentucky:** (Daviess, Hancock, Henderson, McLean, Ohio, Union and Webster Counties; possibly Breckenridge County). This area serves the new West Kentucky Grower Cooperative located in Owensboro with on-farm demonstrations and consultations related to the production and marketing of fresh produce.

**Small Fruits and Vegetable Crops for Central Kentucky:** An Extension Associate will work under the direction of a team of UK faculty to provide on-site consultation, in collaboration with County Extension Agents, on small fruits (70% of time), concentrating on grapes, and vegetables (30% of time) and will establish on-farm demonstrations. Demonstrations will utilize farm-based tours and workshops to extend the results. This position can also assist the team of faculty in this area to provide statewide technical assistance for the Vineyard Assistance Program.

**Nursery Crops in Western Kentucky:** An Extension Associate will be supervised by a Horticulture faculty member at the UKREC in Princeton to conduct on-farm demonstrations of nursery crop production systems and provide on-farm consultations. This position will focus initially on providing

technical assistance to the members of Western Dark Fired Tobacco Growers Association and their project for business diversification.

**Vegetable and Small Fruit Crops in Western Kentucky:** An Extension Associate will be located at the UKREC in Princeton to conduct on-farm demonstrations and provide on-farm technical assistance with vegetables (70% of time) and small fruits, primarily grapes (30% of time), in western Kentucky. Initial efforts will concentrate on product expansion for the Fairview Auction and for direct sales in the Purchase region. One variety trial with vegetable crops will be conducted at the UKREC annually. This position can also assist the team of faculty in this area to provide statewide technical assistance for the Vineyard Assistance Program.

### **Reporting**

Results of the research and demonstrations and other educational programs will be reported in the annual research reports; Fruit and Vegetable Research Report and Nursery and Landscape Research Report. Results will also be presented annually at the Kentucky Landscape Industries Conference and Trade Show and the Fruit and Vegetable Annual Meeting. Field days and twilight tours will be conducted for clientele groups. Results will also be summarized annually at a Kentucky Horticulture Council meeting and feedback gained for project adjustment and continuation. Summaries of project results will also be posted on the UK Horticulture web site.