



## **Commercial Horticulture, Fruit and Vegetable Production**

### **Situation:**

Agriculture in Strafford County includes several high value commodities. Fruits and vegetables, greenhouse plants, and cut-flower producers could lose thousands of dollars very quickly if disease or pests threaten their crops.

Ornamental horticulture contributes to the economy and environmental quality of the state, where quality of life is of utmost importance to residents and tourists. The ornamental horticulture in Strafford County consists of 27 greenhouse and garden center operations (with almost a half million square feet under glass or plastic cover), nine field cut flower operations, eight nursery stalk operations, a sod farm and about 40 landscape companies.

The commercial vegetable industry in New Hampshire is made up of about 313 farms with approximately 3,400 acres of mixed vegetables. The top grossing vegetable commodities are sweet corn, pumpkins, and tomatoes, with many others grown in smaller amounts. In Stafford County, vegetable and fruit production consists of five greenhouse vegetable operations, 39 vegetable farms (291 acres), and 21 orchards. The total value of agricultural production in Strafford County accounts for \$9,873,000, excluding the value of landscaping operations (Source: 2002 Census of Agriculture).

### **UNH Cooperative Extension's Response:**

For the farming community to thrive, it must continue to be economically and environmentally sustainable. Cooperative Extension in Strafford County is uniquely positioned to provide educational and research-based programs to assist agricultural businesses and natural resource firms in meeting these goals. Geoffrey Njue, Strafford County Agricultural Resources Educator, and campus-based Extension Specialists understand the challenges and opportunities faced by New Hampshire farms and have forged important partnerships within the region. Strafford County citizens turn to UNH Cooperative Extension as a source of non-biased, accurate information.

Farm visits, workshops, twilight meetings and demonstrations provide growers the educational materials they need on important issues, including scouting and trouble shooting plant nutrient and pest problems, production systems for healthy nursery crops, greenhouse energy conservation, alternative energy sources and more. More than 30 growers attended a greenhouse and nursery twilight meeting, 18 growers attended the greenhouse energy conservation meeting and 29 attended the flower and vegetable workshop. Extension Specialists worked with Geoffrey Njue to visit farms, problem-solve, make recommendations, and implement Integrated Pest Management (IPM) strategies that improve production, decrease crop loss, and minimize the need for pesticides. Growers also received one-on-one assistance during farm visits to learn how to identify and trouble shoot nutrient deficiency/toxicity problems, calibrate fertilizer injector systems, identify and control disease or pest damage and how to use plant growth regulators. Other topics included organic strawberry production, protecting and preserving crop pollinators, and growing and marketing cut-flowers.

### **How We Make a Difference:**

- Growers increased their knowledge and skills in identifying and correcting for nutrient deficiency and toxicity, scouting and control of insect pests and diseases, using Integrated Pest Management (IPM) control techniques, a cost-saving measure.
- Growers who implemented monitoring for pH and Electrical Conductivity (EC) and scouting and control of diseases and pests improved the quality of their crops and saved money in the process. Growers improved their awareness and knowledge of energy conservation and alternative sources of energy, allowing them to save money as energy costs rise.

- Extension Specialist Brian Krug works with greenhouse growers in Strafford County with Geoffrey Njue on a variety of projects, including an Energy Conservation Workshop in September, 2008. One Strafford County greenhouse grower in attendance reports he's insulated or closed his greenhouses two months earlier than previous years and has saved significant heating costs as a result.
- As a result of extensive Extension educational efforts, highbush blueberry growers learned how and when to monitor for fungus and how to use cultural practices (e.g. mulching or raking) to manage the disease. In total, 17 acres of highbush blueberries in Strafford County (Durham, Strafford, Farmington) benefited from blueberry IPM education over the past two years. Using New Hampshire average yields and prices for highbush blueberry, if mummyberry management techniques reduced crop losses by 15%, this equates to approximately \$18,000 saved for commercial blueberry growers in Strafford County. This does not take into account the funds saved and environmental benefit from reducing applications of ineffective fungicides.
- One farmer saved about three acres of squash by diagnosing a plant fungal disease and providing recommendations for control.
- An organic vegetable grower saved a tomato crop valued at \$6,000 after following Extensions recommendation in improving plant nutrition and ventilation in the greenhouse.
- Extension Specialist Becky Grube, with Strafford County Extension Educator Geoffrey Njue, worked with a Strafford County farm to design a research project and prepare a SARE (Sustainable Agriculture Research and Education) farmer/grower grant, "*Potassium nutrition for greenhouse tomatoes in the Northeast*," to study the effects of different potassium fertilization regimes on fruit yields and quality in a greenhouse tomato operation. This resulted in a successful grant that provided the farmer with \$7,200 to conduct research to further his knowledge and that of tomato growers throughout New Hampshire.
- There are 117 licensed pesticide applicators residing and/or spraying pesticides in Strafford County. These people are farmers, landscapers, golf course superintendents, municipal employees, exterminators, and parks and recreation department workers. Our *Pesticide Safety Education Program* teaches pesticide applicators about the responsibilities of environmental and human safety, sprayer calibration, integrated pest management, pesticide storage and proper disposal of pesticides.
- Extension Specialist Alan Eaton, with Geoffrey Njue, made site visits to 14 Strafford County farms, orchards, and greenhouses in 2008. Results from Strafford County apple orchards that implemented IPM recommendations and reduced pest injury are estimated to have saved \$16,000 to producers.
- Extension Specialists Cheryl Smith, Alan Eaton and Becky Grube, with Geoffrey Njue provided information on site selection and how to establish new plantings of strawberries, using a plasticulture production system and bramble crops to a fruit and vegetable farm in Durham. New plantings were established in 2008, and we anticipate the new sites and production methods will allow commercial production on a small scale where it was not previously possible. Estimated economic impact will depend on success of the new enterprises, estimated in the range of \$1,500 annually.
- A vegetable grower in Lee asked Geoffrey Njue to diagnose a plant disease that afflicted 1.5 acres of winter and summer squash. In 2007, the excessive rains kept soils water-logged for an extended period of time, causing fungal diseases to spread at a rapid rate. The fungal disease that infected these plants would likely have devastated the entire harvest, had Geoffrey not identified the disease and recommended the appropriate pesticide. Geoffrey's actions helped the grower harvest a squash crop worth \$11,000 (National Agricultural Statistics Service, USDA, 2007).
- On a visit to a fruit farm in New Durham, Geoffrey made recommendations to improve sub-soil drainage and relocate several hundred raspberry plants. Geoffrey's assistance helped the grower save the raspberry plants, which previous to the harsh weather, earned approximately \$4,000 each year.
- In 2007, Geoffrey taught a vegetable grower in New Durham to basket-weave field tomatoes, a practice which significantly increases crop yield. The harvest was valued at \$3,000, about 50% higher than it would have been if the plants were allowed to grow without this plant support system. (National Agricultural Statistics Service, USDA, 2007).

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