

Abstracts of Submitted USDA SCBG Projects (FFY 2008)

Sustainable Fresh Market Tomato Nitrogen Fertilization

Nitrogen fertilizer can be applied efficiently and effectively, but nutrient recommendations must be made for specific soil types and land use areas in each region. Current fertilizer recommendations for tomato production in Virginia are no longer followed as the production system has drastically changed in recent years. Intensive tomato production systems using plastic mulch, drip irrigation, cover crops, and hybrid varieties have resulted in substantial increases in tomato yields per acre. Therefore, current fertilizer needs are higher than in traditional systems and fertilizer is often over-applied to guarantee top yields. Since the official Virginia recommendation is out-dated, fertilizer recommendations used for commercial tomato production in Virginia were designed in California and Florida. These states use different tomato varieties, have different soil types, and have different climates. New fertilizer application practices for Virginia need to be developed to replace those researched and designed under different growing conditions in ensure fertilizer efficiency and reduce nutrient losses to the environment, while maintaining productivity. Identifying nitrogen fertilization practices will also help farmers remain profitable, as fertilizer prices over the last ten years have increased over 400%; while average crop prices have increased only 85%.

Organic Control of Powdery Mildew in Winter Squash Crops

Virginia farmers who sell organically-grown vegetables have reported rising consumer demand for several different species of winter squash. Some of the more popular varieties are Red Kuri, Delicata, and Sweet Dumpling. A primary disease of cucurbit crops in the Eastern U. S. is powdery mildew (PM). Caused by either *Sphaerotheca fulginea* or *Erysiphe cichoracearum*, the familiar powdery white spots typically appear on the tops of leaves. Winter squash yields can be severely reduced due to this disease. Several synthetic chemical fungicides provide reliable control of PM in conventional production systems. Farmers who grow winter squash organically for sale at local markets do not have reliable controls. A number of biological control products that have some efficacy against powdery mildew have been approved by OMRI for certified organic production. These products need to be tested in winter squash field trials on organic vegetable farms in different regions of Virginia to provide reliable information to growers. Replicated field trials concerning powdery mildew control in winter squash will be established in 2009 and in 2010 at five organic farms and at Virginia State University's Randolph Farm. Four organic control products will be tested on six different varieties of winter squash at each location.

High resolution vineyard site suitability mapping of Virginia

Vineyard site selection in Virginia has greatly improved in the last 10 years with the advent of a site selection technical publication, a first generation Geographical Information System (GIS) for vineyard site appraisal, and by the collective experience of pioneers since the nineteen-seventies from whose successes and mistakes others have learned. The situation can be further improved and vineyard development could be

increased by bringing contemporary GIS resources directly to industry end-users. We propose researching digital climate, soil, physical land features, and satellite imagery data and using those datasets to develop a high-resolution GIS resource for vineyard site selection purposes. The vineyard GIS will be available online to anyone, at anytime, and it could be mined for high resolution appraisal of site-specific parcels of land from the user's computer. The availability of this resource will help inform rational vineyard site selection decisions and will also serve to substantiate future demarcations of American Viticultural Areas within the Commonwealth.

Creating Conditions for a Sustainable Commercial Organic Blueberry

This grant proposal develops a model system of specialty agriculture by creating and documenting the formation of a small sustainable commercial organic blueberry operation involving about 165 bushes. The proposal targets two major populations—small local community farmers in the Shenandoah Valley and undergraduate students in biology / environmental science at Eastern Mennonite University. The proposal objective is to determine the economics and best practices in developing an organic blueberry operation in contrast to a traditional (non-organic) operation. Specific investigations include optimization of horticultural practices involving soil preparation and amendments, fertilizers, herbicides versus mechanical tillage, pest management, overall plant health and productivity, selection of suitable cultivars for the Shenandoah Valley of Virginia, marketing strategies, and cost benefit of using drip irrigation and high hoop horticulture. Experimental and practicum opportunities in blueberry horticulture are provided for undergraduate students through summer projects. This organic blueberry model system will impact regional farmers, students, and horticulturists through the dissemination of information via an internet website, professional presentations at regional conferences, and publications in journals and trade magazines.

A New Nursery Production and Marketing System

The US nursery industry started in the 1700's with the production, harvest, shipping, and marketing of bare root trees. Current nursery production systems, that can lead to poor quality tree root systems (roots too deep in root balls; structurally defective roots; reduced root biomass), are causing significant landscape losses due to poor tree establishment and growth. In addition, fuel costs are making shipping landscape-caliper trees, both B&B (balled in burlap) and container-grown, less economically feasible for growers and purchasers.

A new system for producing, holding, and marketing landscape-caliper trees is proposed for development at Virginia Tech's Hampton Roads Agricultural Research and Extension Center. The system is based on growing trees in inorganic substrate production beds (patterned after the Missouri Gravel Bed system), and subsequently harvesting, shipping, and marketing the trees bare root for bare root planting to the landscape. Alternative substrate components need to be tested, as well as materials to prevent root desiccation. Because tree species respond differently to bare rooting, major native and non-native trees in Virginia production need to be evaluated in this system. In addition to using the

system for production, its potential for holding and marketing, at both the wholesale and retail level, needs to be determined.

Pumpkin Promotions

The Blue Ridge Plateau of Southwest Virginia is becoming one of the, if not the, premier pumpkin production region in the United States. Growers in this region, as well as other parts of Virginia, are producing some of the highest yields and highest quality pumpkins of any part of the country. Although our producers are among the best in the country, there are promotional strategies and research that can be implemented / conducted to help pumpkin producers in Virginia fair even better.

Identification and promotion of “Virginia Grown Pumpkins” should increase total sales of Virginia pumpkins. If the product is identified as a “premium” product, then the price paid to the grower could also increase.

Even though the pumpkin producers of Virginia are among the best in the nation, they still need current recommendations on varieties, crop protectants, cultural practices, fertility, etc. With some monetary support for research, researchers should be able to provide producers with the latest production information.

Bottom Line: Our goal is to help Virginia grown pumpkins produce and promote the “Best quality pumpkins in the World”.

Enhancing Productivity of Small Beekeepers in Southside Virginia

The Southside Beekeepers Association is comprised of a group of novice and experienced beekeepers, who meet monthly at the Greensville/Emporia Extension Office. The group has met informally for about 6 months, and developed by-laws for a more formal association in August 2008. The group’s objectives are to promote the use of honeybees for pollination and consumption of honey, educate both themselves and the general public in regard to bees and beekeeping, and to facilitate the production of quality honey products by small local producers. To that end this grant proposal requests funds for the purchase of honey processing and bee education equipments to be utilized by association members. Equipment will allow small beekeepers to develop their business, and provide resources for educational outlets including school groups, community organizations, and workshops.

Two demonstration hives will be set up this spring at the Greensville/Emporia Extension Office for use by a 4-H Entomology Club and the Southside Beekeepers. Hives will be provided by Virginia Tech, and bees will be donated by area beekeepers. These hives will be used to teach youth and adults beekeeping skills and basic biological lessons. This knowledge will serve to encourage new beekeepers to enter this field.