

Monitoring Water Quality to meet GAP Certification

Water quality management is often perceived as a time-consuming and costly activity; however, it is strongly recommended that it receive a high level of attention when food safety GAP certification is involved. This project compares various methods of testing and monitoring water samples taken from fruit and vegetable production environments including irrigation wells, ponds, spray water and produce wash lines. Trials will compare various tests for determining the presence of fecal coliform bacteria in irrigation, spray and wash water sources. There will also be a comparison of various tests used to monitor free chlorine in produce wash lines. The ultimate goal of the project is to determine the most accurate testing methods that are economically feasible for producers to use in their GAP Plan of Action. Information and data collected will serve to develop “hands-on” tables and procedures that Virginia’s fruit and vegetable producers will be able to use in their daily production/harvest operations.

Sustainable Snap Beans Nitrogen Fertilization

Nitrogen (N) is the most difficult nutrient to manage in crop production systems because it is highly mobile in the environment. With fertilizer costs near record highs, fertilizer over-application is both expensive and can cause environmental issues. The objective of this study is to refine fresh market snap bean N fertility programs in Virginia to increase farmer production and profit while simultaneously reducing nitrate concentrations deep in the soil profile; which can lead to groundwater contamination. We will test a cheaper granular fertilizer source, urea, against commonly used liquid urea-ammonium nitrate and granular ammonium nitrate. We will apply treatments at-planting as well as 3 weeks after emergence at 0, 40, 80, and 120 pounds of N per acre. Plant samples will be taken for N use efficiency calculations, infrared camera readings to develop calibration standards for Virginia, along with soil samples for nitrate concentrations within and below the effective snap bean root zone. Snap beans will also be graded for size. Virginia growers will be presented with data at Extension meetings, conferences, and via Extension publications. Helping farmers increase their fertilizer use efficiency will make them more sustainable and profitable in the future.

Producing & Mktg New Specialty Crops for VA

During the past 3 years, interest in “new” specialty crops has continued to increase. This increased interest has been on the part of growers, VDACS, farmer’s market management, Extension, and most importantly on the part of buyer. Over this time broccoli, collard and kale production have went from essentially 0 acres of production to nearly 100 acres. Annual sales of these products in approaching \$1,000,000. This year a buyer approached the Southwest Virginia Farmer’s Market about growing 25 acres of cilantro. They also have interest in other greens like mustard and turnip.

It is great to have these marketing opportunities, and we believe in the old adage that you need to sell it before you plant it. However, we have no research and little production information for commercial production of these new crops. The growers need support to make these new specialty crops successful. The purpose of this project is to provide that needed support.

The goals are to conduct variety evaluations, herbicide evaluations, population and spacing evaluations, fertility evaluations and any other production component that needs attention. Most of this will be conducted in and around the Blue Ridge Plateau of Southwest Virginia.

Production and Marketing of High Tunnel Grown Raspberry in VA

Virginia growers are looking for profitable farm enterprises to diversify their current production systems. In recent years the health benefits associated with many of the berry crops, in particular raspberries have caused a sharp increase in market demand. Adding to this trend is also the increase in consumer demand for locally grown food thus making crops such as raspberry a prime production candidate for Virginia farmers to produce. A high tunnel is an affordable structure that provides a micro climate for crops under production, allowing growers to expand their production season and improve fruit quality. Therefore this project proposes establishing high tunnel production of raspberries as an alternative farm enterprise for some Virginia growers. This project will partner with three different growers each in the Northern, Central and

Southwest areas of the state, and will establish in each location a high tunnel to produce and market fresh raspberries. It is estimated that this project will provide training for an additional 200 potential growers in the area of raspberry production and marketing.

Biofumigation and Herbicides for Use in Pumpkin Production

The Blue Ridge Plateau of Southwest Virginia is becoming one of the, if not the, premier pumpkin production regions 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 is still production areas that need addressed. Two of those areas are soil disease control and weed control.

A research institute in Italy has developed a blend of mustards that when used properly can provide control of soil pathogens and suppress some weeds. Some 2008 data from New York showed this process effective in controlling *Phytophthora capsici* on summer squash. If effective and economically feasible it might have a fit in pumpkins.

New herbicides are being evaluated for use in pumpkins and some will likely be labeled in the next couple of years. In order for growers to produce the best crops possible trials evaluating the best uses and combinations of these products need to be conducted.

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

Increasing Awareness / Consumption of Local Strawberries

According to the 2007 Agriculture Census, 330 acres of strawberries grew in Virginia. Sixty –five acres were grown within the targeted southeast region in 2009. Plasticulture strawberries are very expensive to grow but can be a profitable specialty crop with good management practices and productive sales. Each year it becomes harder to get consumers to the farm to pick or purchase berries.

Consumers need to know when the berries are in season, the location of the farms, how to pick, care for and use the berries, and to learn the nutritional benefits. Such gained knowledge would lead to new customers visiting the farm to buy berries, customers purchasing more berries, and a satisfied customer in knowing how to care for and use the berries.

This proposal is to design and develop promotional tools for increasing nutritional knowledge of strawberries and to development regional community awareness of locally grown strawberries thus increasing on farm sales and consumption of berries. Promotional tools will include the development of a nutritional facts brochure to be used at the farm, strawberry booklets for children, and media spots to alert consumers to the local strawberry season.

Off-season and Ready to Prepare Product Blends

Tobacco farmers throughout Southwest and Southside Virginia continue to struggle to find profitable farm enterprises, nearly five years after the end of the Federal Tobacco program. Nine years ago, Appalachian Sustainable Development (ASD) initiated *Appalachian Harvest*, an organic production and marketing network, as a means to enable tobacco farmers to profitably and sustainably raise and sell organic produce. At present, 65 farmers are participating in *Appalachian Harvest*, and sales over the past two years reached nearly one million dollars (\$983,000).

This project, *Off-season and ready-to-prepare product blends* builds on the *Appalachian Harvest* growers network, and on a previous Specialty Crop Grant focused on Hoop House production of early season crops. The project has two central goals:

1. Construct at least two large greenhouses and utilize them to train farmers and to raise high value organic crops during the off season; and
2. Develop and test market a new organic product line, *Appalachian Harvest U-Blend* which creates healthy, ready-to-prepare assortments accompanied by a chef-tested recipe and nutritional information.

We project that 20-30 farmers will participate in and directly benefit from this project in the first year, with many more growers benefiting once the feasibility of these enterprises has been demonstrated.

VA Wine Quality Assurance Program

The Virginia Wine Quality Assurance program (VQA) is designed to increase wine quality and consumer perception of the Virginia Wine industry locally, nationally and internationally. The implementation of the VQA program will lead to an increase in the financial sustainability of all Virginia wineries through improved quality and consumer awareness of Virginia Wine regions and their quality. A direct result of this program will be an increase in tourism in the Virginia wine regions, many of which are economically depressed. Tourism will increase as the demand for Virginia Wines increases by creating more populated well sought after wine trails. The Virginia grape farmers will realize financial stability by instituting the VQA program leading to an increase in sales. Additionally, the program will work toward the creation of the American Viticulture Areas to help increase regional awareness of Virginia wines due to better marketability.

Grafting Tomatoes to Control Soil-borne Diseases in Open Field Production

Virginia produces around 6,000 acres of tomatoes annually and ranks third in the nation in tomato production and has an economic value of nearly 100 million dollars. In order to support and enhance the competitiveness of tomatoes in Virginia, new technologies must be implemented to overcome obstacles of tomato production associated with intensive cultivation on limited arable land. Grafting has been shown to provide resistance to soil-borne diseases, nematodes, and increase yields. In many countries grafting has been incorporated into more sustainable, environmentally friendly production practices such as reducing/eliminating the use of soil fumigants. In addition, limited availability and the increased cost of soil fumigants traditionally used in tomato production are making grafting become a more economically feasible alternative. The majority of grafted tomato plants in North America have been used commercially for hydroponic greenhouse production. Therefore, the efficacy of grafted tomatoes in field trials must be determined. Grafting is applicable to a variety of situations since it can be effectively utilized by small or large farmers and by organic or conventional growers. Our field research will focus on the efficacy of grafted tomato plants against soil-borne diseases, the effects of grafting on fruit yield and quality, and cost analysis.

Profitable Greenhouse Production of Local Produce

Virginia Tech and Virginia Cooperative Extension will be administering this plan of work. Participating faculty include: Joyce Latimer, Allen Straw, Janet Spencer, and Eric Eberly. Consumer interest in buying locally grown foods and produce is providing new opportunities for small-farmers located near the larger population centers in Virginia. In addition an increased number of grocery stores are interested in purchasing locally grown produce. Farmers and other entrepreneurs with small but suitable acreages are contacting VDACS regarding support for business development and production and marketing details (L DuBois, personal communication). The work proposed herein will provide training and training resources for greenhouse installation and maintenance for the profitable production of locally grown vegetables under protected greenhouse culture. Enterprise budgets and decision support spreadsheets will be developed to assist in crop selection, pricing and marketing decisions. Specialists will conduct the initial workshops but VCE agents will receive specific training and resources to permit them to continue to conduct small group or one-on-one trainings to assist future producers.

Virginia's Shipping Point Farmers Markets GAP / GHP Certification

The purpose of this project is to create and implement comprehensive management plans for the Virginia Farmers Market System, which encompasses four shipping point farmers' markets, to focus on a Fresh Produce Audit Verification Program, Good Agricultural Practices and Good

Handling Practices (GAP/GHP) for the markets and growers that utilize those markets. The project will offer and promote GAP/GHP compliance and certification for the four Virginia shipping point farmers' facilities, enhancing food safety and traceability for fruit and vegetable specialty crops being handled and processed through the state's wholesale farmers market system.

Enabling Virginia Enterprises to Better Compete in a Global Horticultural Market Through Water Mold - Risk Mitigation

This project aims to help Virginia enterprises to better compete in an increasingly globalized horticultural market through technological innovation. Specifically, it attacks 'water molds', oomycete pathogens that pose a constant threat to horticultural productivity and quality with far-reaching impact on consumers' confidence. These diseases begin with contaminated irrigation water, thus water decontamination is the key. However, current treatment, chlorination, has two inherent problems. It is efficacious only for slightly acidic water, but water in most irrigation reservoirs actually is alkaline. It also presents a significant health risk to laborers as chlorine is corrosive (in its liquid form) or explosive (as a gas). Here we propose to revamp existing heat-treatment protocols for irrigation water. Our preliminary data indicate that zoospores (the primary dispersal and infection structures) of water molds can be killed at a much lower temperature with an extended treatment period, potentially reducing energy consumption by 75%. This project will expand existing research and determine whether data from laboratory tests are applicable to the real world (e.g., nursery, greenhouse production). The proposed innovation will reduce crop losses, improve horticultural product quality, and build consumers' confidence, while cutting costs and limiting carbon dioxide release into the environment.

Promotion of Native Plant Production and Sales in VA

The Beautiful Gardens® Plant Introduction Program was initiated in 2003 with an overall purpose of expanding production and sales opportunities of ornamental plants for Virginia growers. The years leading up to 2009 have seen the establishment of (5) plant evaluation sites, a tissue culture lab in Danville, VA, and the first year of retail sales in 2009. Workshops with Virginia tobacco area growers interested in switching to production horticulture crops were initiated. A committee of talented individuals from a cross section of the Virginia horticulture industry-continues to lead this activity towards financial self-sufficiency and profitable outcomes for participating Virginia growers. The program's contacts with 27 retail garden centers this spring have indicated a growing interest and opportunity in the area of native plants. With the stated interest from garden centers and the need for continued emphasis on sustainability and conservation we consider adding native plants to our areas of work that include: collection, purchase, or contractual acquisition, evaluation, propagation, and promotion. There is growing demand in the areas of homeowner sales, landscape design and reclamation efforts at the local, state and federal levels. We see this as an opportunity for Virginia growers and a positive step toward environmental stewardship.

Building Capacity of Community Food System

This project has three components: building programs that Lynchburg Grows ("LG") offers producers engaged in the direct marketing of specialty crops to consumers; expanding regional capacity of Virginia's farmer-to-consumer food system; and presenting a series of targeted regional workshops for new direct farm marketers on the benefits, challenges, and logistics of agricultural direct marketing.

The overall goal is improving the network utilized by producers engaged in the direct marketing of specialty crops to consumers and the resources available to producers. To accomplish this LG will: expand the growing season for producers by providing heated space and/or starter stock to individuals; expand marketing opportunities available to individual producers by providing cold storage and sales space in a "food hub" that links producers to consumers; and expand the educational opportunities available to producers.

LG will complete the project in three stages. Enhanced cold storage capacity will be available by end of 2009. Educational programs will be launched during two workshops held during the winter of 2009-2010 with

follow up provided by a peer mentoring network established during the workshops. The provision of heated growing space and starter stock will begin in February 2010 to assist producers in extending the 2010 season.

Mt. Rogers Christmas Tree Growers Assoc Seed Orchard

MOUNT ROGERS CHRISTMAS TREE GROWERS ASSOCIATION, INC. (MRCTGA) has operated a seed orchard on property that is part of Grayson Highlands State Park for several years. MRCTGA maintained the trees, collected the seed and provided the seed to growers of Fraser Fir Christmas trees in Grayson County and surrounding areas. This preserved the seed strain for trees native to Whitetop and Mount Rogers mountains. The trees are now older and no longer feasible to operate as a seed orchard.

Governor Kane signed SB 1371 on 03/30/09 that authorized the transfer of approximately 450 acres of land from the Department of Conservation and Recreation (Grayson Highlands State Park) to the Virginia Department of Forestry. Virginia Department of Forestry has agreed to make 15 to 20 acres of that land available to MRCTGA to establish a new Fraser Fir seed orchard.

Enhancing Specialty Crop Production and Marketing

The project entitled "Enhancing Specialty Crop Production and Marketing," will be a multi-faceted approach undertaken by the Northern Neck Vegetable Growers Assoc. (NNVGA) during the winter of 2009 and 2010 to expand the knowledge base of the NNVGA membership and other growers of the region and state. The project will include three educational opportunities: a locally held formal production meeting with speakers instructing growers, and two field trips. The trips will provide educational opportunities including formal presentations and field experiences in order to accommodate the differing learning styles of grower/producers. All three of the educational programs will allow ample time for growers to share informally methods and personal experiences that will prove invaluable. Time and again, evaluations with this group have proven that producers feel they learn just as much from each other as in formal presentations. This project will provide the best of both formats.

Eastern Shore Ag Conf & Trade Show

Last year the Eastern Shore Agricultural Conference and Trade Show celebrated its twentieth anniversary. Total attendance for the two day event is over three hundred, mostly from the Eastern Shore, but some from Maryland, Delaware and mainland VA. Over 80% of the vegetable operations on the Shore are represented at the conference.

Subjects covered at the Conference are many and varied, from Marketing innovations and information to production issues, food safety Good Agricultural Practices and more. It is the one time of year where vegetable growers, scientists, and marketing specialists can interact on a variety of issues, such as those listed above..

WE have included a program from last year to give you an idea of how varied our presentations are.

In the past we have relied on exhibitors and sponsors to underwrite the cost of the Conference, and have kept those costs at reasonable levels so that growers would have the opportunity to discuss issues with agribusiness men and women.

The funding we have requested will provide funds for basic trade show infrastructure (drapes, building rental etc), and help us keep the costs of exhibitors and sponsors at reasonable levels.