

Developing Research-based Resources on Hard Cider Apples for Virginia's Commercial Orchards and Cider Makers

Virginia Polytechnic Institute and State University, Winchester AREC

The purpose of the proposed project is to develop resources that will further increase the quantity and quality of hard cider produced in Virginia. Virginia currently has eight licensed commercial cideries and several more are slated to open in the next few years. Many hard cider producers believe specialized hard cider cultivars are essential to the quality and branding of their products. With little to no information available on how these specialized cultivars might perform in Virginia, there is a critical need to generate reliable information through replicated research trials. There are four primary objectives of this project: 1) to establish a replicated field trial to evaluate potential apple cultivars specifically for hard cider production, 2) to provide training sessions to commercial orchardists, cider makers, and associated professionals on the horticultural and economic feasibility of growing hard cider cultivars, 3) to analyze the economic drivers for the current expansion of the cider industry, including market conditions and future trends, and 4) to conduct preliminary studies of the juice and hard cider chemical characteristics of potential hard cider cultivars. Data generated from these evaluations will benefit commercial apple growers and cider makers by identifying the top performing hard cider-specific cultivars.

Virginia Wineries Association: Commonwealth Quality Alliance Marketing

Virginia Wineries Association

The Commonwealth Quality Alliance (CQA) is a quality standards initiative of the Virginia Wineries Association that works to reward and promote Virginia-grown wines. The three primary objectives of the CQA are to:

- 1) Assist wineries to continuously improve the quality of Virginia wines by employing "best practices" in wine testing and evaluation.
- 2) Enhance Virginia wines' competitiveness nationally and internationally.
- 3) Increase individual producer's income and ensure the sustainability of the Virginia wine industry.

With previous Specialty Crop Funding through VDACS, the Virginia Wineries Association established the CQA program structure and legal framework, designed a marketing strategy and began design and production of marketing materials. 2013 Specialty Crop funding will be used to meet three objectives: 1) Continue winery and consumer marketing efforts, 2) Expand marketing efforts directed to restaurants, retailers and wholesalers, and 3) Increase the number of CQA participating wineries and the number of CQA Approved wines through the creation and implementation of a wineries incentives program. Each of these objectives is designed to ensure the long-term viability and effectiveness of the CQA program.

Primus Trainings & Consultations

Southwest Virginia Farmers Market

Since 2009 when the first Food Safety policies and procedures went into place at the Southwest Virginia Farmers' Market (SWVFM), it has been a struggle to enhance and increase the competitiveness of Virginia's specialty crops. Following industry trends, it is imperative that the SWVFM and the regions' producers invest in GFSI Certification to ensure the marketability and growth of southwest Virginia's agriculture.

PrimusLabs is the most requested certification being sought by major produce retailers today. The need for information and education from PrimusLabs concerning their audit system for the SWVFM and our producer network is the reason for our funding request. The ability of the SWVFM and the farmers to prepare the facility and farms for audit will ensure that our region's specialty crops not only meet marketability requirements but also increase the region's agricultural economy.

It is the goal of the SWVFM to assist the specialty crop farmers of this region in remaining competitive while developing the best practices for food safety and sustaining economic growth.

Assisting Virginia Farmers to Access Quality Markets through USDA GAP and Harmonized GAP Training, Assistance and Certification Appalachian Sustainable Development

Most wholesale produce buyers insist that the farmers who supply them hold some form of food safety certification. Good Agricultural Practices (GAP) certification is currently available from several sources (USDA GAP, GLOBAL GAP, Global Food Safety Initiative (GFSI) to name a few). A compromise effort between these many paths, the Harmonized Food Safety Audit, is gaining traction with many produce buyers.

Appalachian Sustainable Development (ASD), along with Virginia Cooperative Extension, has been in the forefront of both working with wholesale buyers to accept GAP certification plans that are friendly to smaller-scale farmers and also working with farmers to receive training in food safety principles and actions and to obtain their GAP certifications so that they can have continued access to quality wholesale markets.

ASD, through this grant, will continue to spearhead these efforts throughout the State, providing:

- 1) Training and consultation to farmers to prepare them to be USDA GAP or Harmonized GAP certification-ready.
- 2) Expand the training to include direct-market farmers who may need the certification to sell to restaurants and/or institutions.
- 3) Continue research and education efforts to ensure that GAP certification stays within a reasonable grasp of smaller-scale and limited resource farmers throughout the State of Virginia.

Exploring Brussels Sprouts as a Profitable Crop for Southwest Virginia Farmers Appalachian Sustainable Development

The wholesale produce industry is a highly competitive and limited market. Any competitive advantage a grower can muster greatly increases his/her chances of a successful season. Appalachian Harvest has a long history of helping growers find a secure foothold in wholesale produce by offering buyers a wide range of options for "locally grown" produce: certified organic, local conventional, specialty items and custom packaging to name a few.

Regular and clear communication with our buyers allows Appalachian Harvest to respond to their needs and work with our growers to do farm planning to meet those needs. This past season, two Appalachian Harvest buyers inquired about the possibility of on-the-stem Brussels sprouts as a future item for which there would be a strong demand.

This grant will enable Appalachian Harvest to conduct on-farm trials of Brussels sprouts as a potential market crop for our growers. ASD will provide seeds, transplants and technical support for three farmers, each growing ½ acre plots. If these trials find that Brussels sprouts can be successfully grown for the wholesale market in our climate, this will open up additional income opportunities for Appalachian farmers.

Enhancing Food Safety of Virginia-Grown Tomatoes

Virginia Tech – Eastern Shore Agricultural Research & Extension Center (AREC)

Salmonella enterica is considered the leading cause of bacterial foodborne outbreaks in United States, which causes 1.4 million cases of illness and 500 deaths every year with total estimated costs of \$3.4 billion/year. At least three outbreaks of salmonellosis associated with tomatoes have been traced back to Eastern Shore of Virginia, which also raised questions about the safety of irrigation water in this region. In addition, although extensive studies have been done on this pathogen, little is known about the effects of agricultural production practices on the decontamination of *S. enterica* as well as the susceptibility of commercial tomato types and cultivars in Virginia to *S. enterica*. In order to reduce the chance for a foodborne disease outbreak associated with Virginia-grown produce, especially tomatoes, we would like to investigate: 1) the spatial and temporal incidence of *Salmonella* spp. in irrigation pond water during major production seasons on the Eastern Shore of Virginia, 2) the effects of fumigant, bactericide, and sanitizing agent applications on the decontamination of *S. enterica*, and 3) the susceptibility of different tomato types and cultivars in Virginia to *S. enterica*.

Advancing Virginia's Strawberry Production and Industry

Virginia Department of Agriculture and Consumer Services

Virginia has approximately 70 strawberry growers and 250 acres of strawberries. Plasticulture strawberries are very expensive to grow but can be profitable with good management practices. This proposal will help Virginia growers achieve greater profit with plasticulture strawberries in offering strawberry fertility and nutrient management through plant tissue analysis. The lab results make it possible to fine-tune nitrogen application and other nutrients, to maximize yield and quality and to extend the fruiting season as well as protect the environment from over fertilization. The grant will also support the new Virginia Strawberry Association through the formative stage with start up funds for electing a Board of Directors, hosting meetings for directors and members, and educating the Board to better address the needs of all Virginia strawberry growers. Two state pre-plant meetings will be held in August and one winter strawberry meeting and field day, all to strengthen and enhance Virginia's strawberry production.

Virginia Wineries Association Cooperative: Collective Purchasing Program

Virginia Wineries Association Cooperative

The Virginia Wineries Association Cooperative (VWAC) is requesting \$25,000 in Specialty Crop Funding to establish its Collective Purchasing Program. The VWAC Collective Purchasing Program will impact the State's 230 farm wineries and 300 grape growers. This industry represents approximately \$750 million to the Virginia economy on an annual basis. In order to ensure individual farmer income and the sustainability of the wine industry, the VWAC

Collective Purchasing Program estimates that it will realize individual winery and vineyard savings of between 15 and 25% on purchased equipment and supplies.

In 2012 Specialty Agriculture funding assisted the VWAC in planning its electronic wine portal, Virginia Wine Online. In this next phase, VWAC will establish a Collective Purchasing Program. The objective of the Program is to reduce costs for individual producers through collective purchasing of products and services including fencing, bottles, shipping containers, barrels, corks, wine glasses, etc. Initial estimates for a winery producing 4,000 cases per year predict savings of \$28,800 annually on bottling costs and \$11,250 in savings on planting a new five acre vineyard. These savings can ensure economic sustainability for individual producers, the rural communities of Virginia and the overall Virginia wine industry.

Edible Landscape Demonstration Gardens in Virginia Virginia Polytechnic and State University

The goal of this project is to educate nursery and landscape industry personnel as well as Virginia home owners on the benefits and value of using edible fruit-bearing species in residential landscapes. In addition to supplying homeowners with low-cost, nutritious, and health-promoting fruit, edible landscape plants beautify the environment with showy flowers, foliage, and fruit. Furthermore, home-grown food has other impacts such as imparting the satisfaction of self-produced food and involving children in gardening activities and healthy eating. This goal will be accomplished by establishing edible landscape demonstration gardens at three major botanical gardens in the most populous regions of Virginia. The botanical gardens, Lewis Ginter Botanical Garden (Richmond), Norfolk Botanic Garden, and Green Springs Gardens (Alexandria) in cooperation with Virginia Tech Department of Horticulture will establish the demonstration gardens. Because these gardens have extensive educational missions with over half a million visitors per year, they are well poised to develop highly professional demonstration gardens that will expertly display and market the edible landscape garden concepts and techniques. These demonstration gardens will also have a major impact on edible landscape species sales at Virginia wholesale and retail nurseries.

Developing Soil Solarization and Microwaves for Pest Management in Annual Plasticulture Strawberry Production

Virginia Tech – Hampton Roads AREC

Virginia is one of the top 14 strawberry-producing states in the U.S. and additional growers are interested in producing this high-value crop for diversification. Virginia Beach is the largest strawberry-producing area in Virginia, with an annual production value at \$750,000 to \$1,000,000. Two of the most important production challenges in Virginia include management of diseases and weeds. Conventional growers in Virginia typically pre-plant fumigate their strawberry fields with methyl bromide: chloropicrin (MBPic) for control of devastating diseases such as *Verticillium dahliae* and *Phytophthora* spp. as well as for weed control. Methyl bromide use is being phased out as it depletes the ozone layer. Although there are alternative fumigants available, they do not provide the complete spectrum of pest control as MBPic. Increased regulations on fumigant use means leaving more buffer areas, especially for those fields that surround sensitive sites such as residential homes, schools and hospitals. Organic producers have few options for disease and weed control and therefore research on organic methods of pest

management is a high priority. The objective of this study is to compare strawberry production using conventional pest control tools including fumigation and herbicide treatment, to non-chemical approaches utilizing soil solarization and microwave treatments.

Cover Crop Evaluation for Weed Suppression, Erosion Control and Nutrient Management in Newly Planted Vineyards
Virginia Tech – Hampton Roads AREC

Grape production is expanding in Virginia due to a suitable climate combined with a demand for locally-produced wines. The Virginia viticulture industry ranked 7th nationally in 2007. State Secretary of Agriculture Todd Haymore stated in February 2013 that Virginia wine sales are increasing annually by 8%. One of the biggest challenges with newly-established vineyards is preventing soil erosion since the crop is generally grown in hilly environments. These needs are also in other grape producing states as reflected by research priorities published by the Viticulture Consortium East (2007). Mowing between rows is dangerous on steep slopes. Besides loss of valuable topsoil, soil erosion leads to sediment discharged into streams and rivers, damaging water quality. Decreasing chemical dependence and increasing soil health is demanded by growers and the public alike. There is therefore a need for cover crops that reduce soil erosion, suppress weeds, and require minimal mowing. The goal of this project is to decrease maintenance costs of row middles, reduce herbicide inputs, and reduce soil and nutrient loss, while improving vine growth. Although this trial will focus on grapes, these results will be beneficial to producers of other specialty crops, including tree fruit and nursery producers.

Increasing the Competitiveness of Virginia Christmas Tree Growers
Virginia Christmas Tree Growers Association

VCTGA intends to build upon our successes as we implement those actions described in the FY 2011 and FY 2012 USDA Specialty Crop Competitive Grants. Beyond those actions addressed in the past two grants, we propose to strengthen our presence at local agritourism festivals, along with aggressively participating in similar state and regional events in order to expand our presentation to wholesale and retail customers alike.

The proposed project, Increasing the Competitiveness of Virginia Christmas Tree Growers, consists of mutually supporting activities that will expand the relationships between growers and all buyers, further educate both groups and promote the sales of not only Christmas trees but other Virginia grown and/or produced specialty products.

In addition to our annual meetings, we intend to sustain the winter meetings in order to share marketing experiences from the most recent holiday season. Secondly, we plan to refine our new website, add a mobile website and delve into social networking as a means to both communicate among the membership and market our trees. And lastly, we propose to maintain our inventory of promotional items (stickers, pencils, refrigerator magnets, calendars) that identify and promote our trees and greens at public agritourism events.

**Building a Bridge between Farmers and Food Industry: Setting Standard Criteria for Chickpea Physicochemical and Functional Properties for Hummus Preparation
Virginia State University Agriculture Research Station**

Chickpea is a major ingredient in hummus, a Middle Eastern and Arabic food dip or spread, which is increasingly popular the United States with sales reaching nearly \$300 million by 2010. SABRA Dipping Company, which manufactures hummus for worldwide distribution, has been recently relocated to Chesterfield, Virginia and provides a ready market (approximately 50,000 acres) for chickpea producers in Virginia. On-going efforts at Virginia State University includes developing suitable chickpea varieties for commercial production in Virginia and conducting field demonstration to familiarize Virginia farmers with chickpea crop. The current proposal will further enhance these efforts by determining seed composition characteristics of chickpea varieties for hummus production. The *objective* of this project is to build a bridge between farmers and food industry by establishing standard criteria for physicochemical and functional properties of chickpea to help agronomists, plant breeders, farmers, and food industry in developing/selecting chickpea varieties suitable for production in Virginia and also for meeting specific needs of food processors like SABRA. The efforts will contribute towards enhancing Virginia's agricultural economy and will help in achieving our *long-term* goal of establishing chickpea as a new specialty crop for production by Virginia farmers and utilization by local food industry.

**Phase II, Commercial Green Production in Underused Industrial Sites in Martinsville, VA
Patrick Henry Community College**

The Agriculture department of Patrick Henry Community College (PHCC) is seeking to build upon our successes as we further implement the objectives described in the FY2011 USDA Specialty Crop Competitive Grant (MOU Agreement #2011-548) between VDACS and PHCC. The previously funded project investigates the suitability of hydroponic productions of various greens using LED lighting in an underused commercial manufacturing structure vacated by the loss of the many textile and furniture industries in the Martinsville and Henry County, Virginia area. The project proposed herein, Phase II, consists of four mutually supporting activities that will build upon the previous project. The first activity involves further crop development of salad greens production using hydroponic systems. The second embraces developing Good Agricultural Practices (GAP) compliance protocols. The third includes selecting proper packaging for use in the handling of fresh salad greens. Finally, the project seeks to implement, hydroponic to schools and hydroponic to local tables, concepts that creates the opportunity to provide fresh greens to local public schools and local restaurants. The result of this study may further provide an industry evolution using agriculture production to provide employment for growers, packers, salespersons, and distributors from a population of extremely high unemployed residents.

**Assisting Growers to Meet New Demands for Food Safety, GAP Certification, and Best Practices in Wholesale Crop Production
Local Food Hub, Inc.**

Local Food Hub will conduct a program to address one of specialty crop producers' most pressing issues: how to comply with new regulations under the Food Safety and Modernization Act as they relate to the institutional marketplace. Whether or not growers are legally required to

comply, they are feeling increasing pressure from buyers to meet these enhanced standards. Local Food Hub is uniquely positioned to assist these growers, as it has achieved and maintained GAP certification on its own farm; provided training and technical assistance to growers of diverse sizes and types; collaborated closely with government-funded agencies; and understands the needs of institutional buyers.

Regional Farm Tours of Sustainable Farms Virginia Association for Biological Farming

The Virginia Association for Biological Farming will jump start an annual Farm Tour weekend, in which 12-30 different sustainable farms in the Richmond region will open their doors to the public on a Saturday and Sunday afternoon each year.

The VABF will:

- interview and select a group of farms within the Richmond region that grow specialty crops and would be well suited to a visit by the public
- create a one day training/planning workshop for the selected farms to help them prepare
- advertise the event with newly developed marketing tools and use social media to raise public awareness
- manage the two day event in conjunction with other partners and food activists
- follow up by supporting the nascent network of farms in the area

Evaluating High Tunnel Strawberry Production in a Substrate System Virginia Pumpkin Growers Association

High tunnels are increasing in popularity among growers. However, in more rural areas, is the production and price enough to justify the investment. In Europe, some growers have moved to a substrate system to increase production. The substrate system is placed inside the high tunnel; there will be three rows that are approximately 100' by 3' and approximately 4' above the ground with rocker arms that hold a 10'' gutter system that holds the organic socks with an irrigation tube running through the middle of the sock. Plant population will be three or four varieties of day neutral strawberries, with three plant spacing's (6, 9 and 12 inches), replicated 3 or 4 times. The three or four day neutral varieties that will make up the beds are Sea Scape, San Andreas, Albion and possibly a numbered variety from NC State Research facility. The other two rows in the high tunnel will be traditional raised beds on black plastic mulch. The study will answer a number of questions. However, the primary question it will answer is; Can strawberries grown in a substrate system in a high tunnel be cost effective?

Improving Strawberry Production Through the Use of Native Bees Old Dominion University Research Foundation

Our goal is to improve competitiveness of small farmers producing berries by supplementing farms with native mason bees (*Osmia lignaria lignaria*), given that dramatic honeybee declines raise concerns for farmers. Mason bees are very effective early crop pollinators and we anticipate benefits to farmers through increased strawberry (and ultimately raspberry and blackberry) crop yield and berry shape. This sustainable production practice promotes native bee conservation. Mason bees also forage in colder, wetter conditions than honeybees, are not susceptible to varroa mites and do not die from colony collapse disorder. Mason bees provide outcrossing of berries

when honey bees die, which is essential because self-pollinating strawberries are poorer quality berries that consumers prefer less. Funding is requested to stock six small farms in southeast Virginia with mason bees and bee-houses, to monitor strawberry pollination rates and berry quality on these farms in the presence and absence of mason bees, and to perform glasshouse studies to examine details of mason bee pollinating organic strawberries. The farmers contacted have expressed interest in this project (see Support Letter) and our results benefit all berry farmers. We will also educate consumers about strawberry nutrition and native bee pollination at the Pungo Strawberry Festival (120,000+ people).

Virginia Urban Agriculture Summit

Lynchburg Health Department

Building on past urban agricultural successes throughout the Commonwealth of Virginia while addressing gaps and needs in policies, systems, and environmental changes in food, health and agriculture is the primary goal of the annual Virginia Urban Agriculture Summit. Urban agriculture includes community food centers that connect rural producers with urban buyers, community gardens, and urban farms, among others. Sharing knowledge and experience among stakeholders and participants regarding urban agriculture access, education, and replication is critical toward the development of healthy, livable communities statewide. Topics included in the summit will highlight elimination of food deserts by innovative strategies, food policy development and implementation to impact health, food networks and their beneficial economic impacts on producers and consumers, job creation, and renewable energy through farming. Additionally, promotion strategies of reducing food insecurity and improved community nutrition through urban agriculture, best practices and good agricultural practices that enable produce of safe, nutritious foods to all individuals and households, and identification of actions steps for the long-term sustainability of the Summit to progress urban agriculture in Virginia will be emphasized.