New York State Agricultural Experiment Station

Recent Accomplishments & Ongoing Research

SINCE 1882, **GENEVA** HAS CONTRIBUTED TO THE ECONOMIC VITALITY OF AGRIBUSINESSES IN NEW YORK AND CONTINUES TO HELP THESE BUSINESSES REMAIN COMPETITIVE ♦ **GENEVA'S** CORE COMPETENCY IN THE VARIOUS SCIENCES OF FOOD AND AGRICULTURE IS ALSO AN EXTREMELY VALUABLE PLATFORM FROM WHICH TO LAUNCH FUTURE STRATEGIC INITIATIVES AND HELP COMPANIES DEVELOP NEW PRODUCTS, NEW VENTURES, AND NEW JOBS.

Develop & Select New Crop Varieties for New York

ACCOMPLISHMENTS

- Released two new raspberries, 'Prelude' and 'Encore', that significantly expand the berry season (early and late) for marketability
- Released 'Whitaker', the first summer squash resistant to three viruses
- Released new 'Onondaga' lettuce, specifically bred for NY
- Released two new cool-climate grapes, 'Traminette' and 'Marquis', for the wine and table grape industries
- Conducted annual field trials to help processing industry select promising new varieties of snap beans, sweet corn, and buckwheat
- Released five new apple rootstocks especially developed for NY that incorporate disease resistance and winter-hardiness
- Released the high quality 'Fortune' apple adapted to both fresh market and processing

ONGOING RESEARCH

- Release additional improved apple rootstocks to industry
- Genetically modify popular wine grape varieties to be resistant to pests and diseases
- Breed pest-resistant varieties of cabbage and other crucifers
- Develop disease-resistant strawberry and raspberry varieties that expand the harvest season
- Identify promising stone fruit varieties to diversify NY fruit crop
- Accelerate selection of foreign grape clones using the new USDA-approved Research and Evaluation Quarantine facility at Geneva
- Continue to develop the Station's apple breeding program, and place an emphasis on quality and storability

Grow Crops Competitively

ACCOMPLISHMENTS

- Revolutionized NY apple industry by developing high density orchard systems that average 500-600 trees/acre; production is around 500 bushels/acre by the fifth year and up to 1,000 bushels/acre by the eighth year
- Developed mechanized grape canopy management systems that maximize light interception and increase quality and yield
- Published the weekly newsletter *Scaffolds* to help NY apple growers manage pests and diseases during the growing season

ONGOING RESEARCH

- Continue improving apple and grape production systems to increase quality and profitability
- Develop management models for growers to apply chemical thinners that balance size, quantity, and quality of apples per tree
- Develop biological control of diseases to aid profitable greenhouse production of tomatoes grown in NY in the winter
- Determine cause and control of poor berry set of Concord grapes

Grow Healthy Crops & Maintain a Healthy Environment by Reducing Pesticide Applications

ACCOMPLISHMENTS

- Developed a Risk Assessment program for grape berry moth infestation that reduced the number of sprays by two-thirds and saved grape growers $5.5 million over six years
- Developed an Integrated Pest Management Program for processing sweet corn that reduced sprays 60% and saves growers $500,000/year
- Developed management techniques to control cabbage pests and educated growers about their use; as a result, insecticide use was reduced by 50% and growers saved $7 million over a 12-year span
- Inserted a gene from a beneficial fungus into apple, grape, potato, and tomato that makes these plants resistant to several diseases
- Developed an effective and novel technology for the application of biocontrol agents in sweet corn and strawberries

ONGOING RESEARCH

- Develop new management strategies that will prevent or delay pests becoming resistant to approved chemicals
- Develop non-toxic chemicals to control plant diseases
- Introduce new insect and mite predators to biologically control pests and diseases in apple and vegetable crops
- Develop monitoring traps using sex attractants to determine if and when pesticides are needed for lawns and golf courses
- Assist with development and registration of more environmentally-benign pesticides
- Serve as a resource for technical information about issues important to NY agribusiness, particularly pesticide registration issues related to the Food Quality Protection Act and food safety issues

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Ensure a Safe Food Supply

ACCOMPLISHMENTS

- Developed rapid assay method for detecting specific pesticide residues in food
- Developed safe process for low temperature pasteurization of apple cider to eliminate contamination by *E.coli*
- Conducted workshop on cider processing and demonstrated safe cider production; attended by most producers in NY

ONGOING RESEARCH

- Develop guidelines for application of manure and compost that eliminates contamination by human pathogens like *E. coli*
- Develop rapid assay methods for the detection of more pesticid and pathogens in food
- Develop cider pasteurization methods that are cost-effective for small producers

Assure High Quality Foods

ACCOMPLISHMENTS

- Conducted wine quality evaluations for over 60 NY wineries that enabled them to improve their products and reduce R&D costs
- Developed devices that help food processors detect and measure the chemicals in processed foods that impart flavor; helps processors manage this critical variable

ONGOING RESEARCH

- Develop minimal processing technologies for fruits and vegetables
- Understand how granule size affects starch thickening properties to improve texture quality in foods
- Better understand and control haze formation in beverages like fruit juices, beer, and wine

Develop Value-Added Products & Processes

ACCOMPLISHMENTS

- Developed honey ultrafiltration process that has expanded production of mead and new honey-flavored fruit wines
- Produced newsletter to advise grape growers on optimizing production and maximizing value of current year's crop
- Developed low-temperature, long-time blanching process that increased firmness of frozen and canned vegetables

ONGOING RESEARCH

- Help NYS winemakers produce unique wines from grapes suited to regional climate and soil conditions
- Use sensory evaluation and flavor recovery technology to optimize flavor in NY fruit and vegetable products
- Develop new products using processing waste from plant-based foods

Increase Businesses and Markets

ACCOMPLISHMENTS

- Helped, via NYS Food Venture Center, establish 300 new food manufacturers and answered more than 1,700 requests for assistance since 1988
- Developed a biocontrol product resulting in the establishment of a NY company now producing 1 million lbs of crop-treatment product/yr
- Conducted grape and wine industry workshops and international meeting; helped 125 NY wineries produce higher quality products
- Patented 172 distinct GENEVA discoveries or inventions for commercial development since 1992; many are now licensed

ONGOING RESEARCH

- Continue to conduct educational programs, workshops, and fie days that help NY growers and processors become more competitive
- Develop and expand NY microbrewery and winery industries with the new Vinification & Brewing Technology Lab
- Help NY vegetable and food processing industries meet growing multicultural demands for ethnic foods
- Foster development of new companies and help established companies bring new products to market using Geneva technologies

$600,000 Was Appropriated by the NYS Legislature in 1997: What Did It Buy?

The appropriation was used to upgrade equipment for research in laboratories, food processing pilot plant, and fields.

- **NYS Food Venture Center (FVC):** $33,500 to expand operations to help new food companies bring new products to market
- **Fruit & Vegetable Processing Pilot Plant:** $341,500 to help industry and university researchers test and develop food products
- **Food Safety Lab:** $88,000 to outfit lab for new food microbiology/food safety program
- **Field Research Unit:** $137,000 to buy farm machinery needed for the Station's field research trials

Why Is More Money Needed?

An increase in the annual base budget is needed to fill positions and support ongoing programs. One-time funds are needed to continue to rebuild the infrastructure.

A SUNY Campus in Geneva, NY

NEW YORK STATE
Agricultural Experiment Station
CORNELL UNIVERSITY

More Information:
James E. Hunter, Director
315-787-2210
jeh3@cornell.edu
http://www.nysaes.cornell.edu