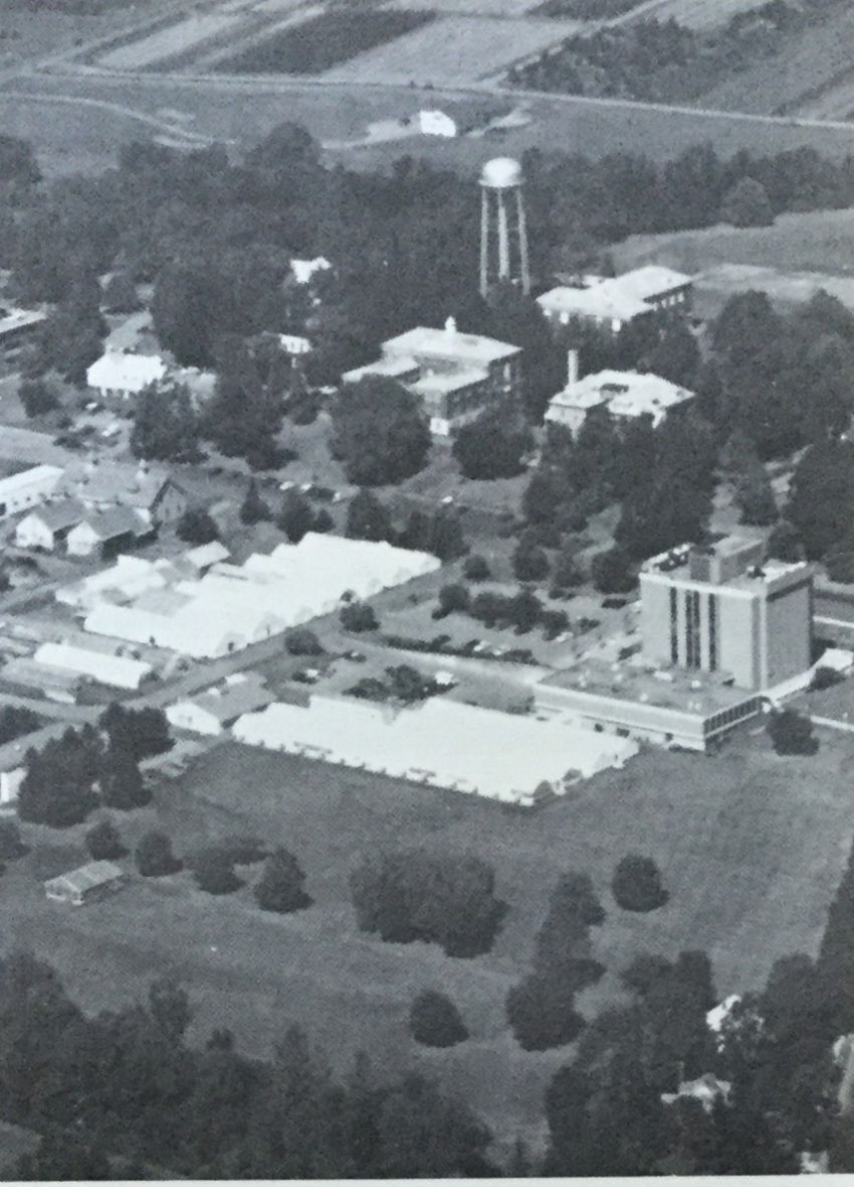


Meeting the Needs of
21st CENTURY AGRICULTURE
in New York

A proposal to strengthen the capacity of the New York State Agricultural Experiment Station at Geneva to help the agricultural economy of the State.

Programs that must be Strengthened to Achieve Goal

Genetic Improvement of Crops

- **Action Plan:** Develop new varieties with improved taste and other sensory qualities; improved nutrition; resistance to diseases and insects; characteristics needed for market niches; adaptation to local growing conditions.
- **Resources Needed: $316,000**
  Plant breeders (3): vegetables, small fruit crops, and rootstocks for tree fruit crops
  – Molecular plant pathologist (disease resistance) (1)
  – Sensory evaluation scientist (1)
  – Technical assistants (3) for breeder, molecular plant pathologist, and sensory scientist.

Management of Waste from Food-Processing Plants

- **Action Plan:** Develop technologies to convert food wastes to marketable products or to dispose of wastes in an economically and environmentally acceptable manner.
- **Resources Needed: $61,000**
  – Biological systems engineer and technical assistant (2)

Production Systems for Fruits and Vegetables

- **Action Plan:** Develop more efficient and cost effective systems for producing high quality fruits and vegetables.
- **Resources Needed: $44,000**
  Technical assistants (2) for field trials

Partnerships with entrepreneurs bring products to market.

Integrated Pest Management

- **Action Plan:** Develop more effective, economical, and environmentally acceptable strategies to control insects and diseases.
- **Resources Needed: $116,000**
  Biological control entomologist (1)
  Technical assistants (3) for apple and vegetable specialists and insect ecologist

Technology Transfer to Growers and Food Processors

- **Action Plan:** Increase contacts with private sector to focus research efforts on industry's needs, and accelerate adoption of new technologies and development of commercial products.
- **Resources Needed: $129,000**
  – Food Venture and Processing Technology Center manager (1)
  – Plant pathologist (tree fruit extension) (1)
  – Assistant for extension fruit pathologist (1)
  – Technician, wine lab (1)

Market Strategies for Foods Produced in New York

- **Action Plan:** Develop strategies to increase market share of fresh and processed New York produce in domestic and export markets.
- **Resources Needed: $40,000**
  – Marketing specialist (1)

Breeding disease-resistant varieties reduces pesticide use.

Storage, Packaging, and Processing Perishable Crops

- **Action Plan:** Improve technologies to extend the shelf-life of fresh and lightly processed foods, and to make processed products more fresh-like or useful as components of manufactured foods.
- **Resources Needed: $144,000**
  – Food process engineer and technical assistant (2)
  – Post-harvest physiologist and technical assistant (2)

Human Health and Food Safety

- **Action Plan:** Develop analyses for natural components and contaminants of foods having beneficial or deleterious effects on human health, and improve systems to alter their presence when desirable.
- **Resources Needed: $150,000**
  – Toxicologist/phytochemist (1)
  – Microbiologist (food spoilage, diseases) (1)
  – Microbial geneticist (1)

High Priority Equipment Needs

- **Food Processing Pilot Plant ($250,000)**
  Modernize equipment used by researchers and food industry personnel to improve processing technologies and to bring new products to market.
- **Field Research Programs ($200,000)**
  Purchase modern equipment to facilitate development of improved varieties, increase efficiency of production to reduce costs, and develop and demonstrate new integrated pest management technologies.

Minimal processing of foods benefits consumers.

PARTIAL COST of Strengthening Geneva

These additions to the Geneva budget could be phased in over three years.

Recurring Annually:	
Salaries, Scientists	$664,000
Salaries, Support Personnel	$336,000
Total:	**$1,000,000**
One-Time Equipment Expenditures	
Food Processing Pilot Plant	$250,000
Field Research Program	$200,000
Total:	**$450,000**

ECONOMIC DEVELOPMENT BENEFITS of Strengthening the Geneva Station

Retain and Attract Companies to New York

Scientific expertise at Geneva and a record of turning research discoveries into products of marketable value are reasons for industries to remain in New York or relocate here. Green Giant's recent decision to have 18,000 acres of vegetable crops grown and processed in New York by Seneca Foods is an example of growth possibilities.

Start-up Companies Emerging From Research at Geneva

Sanford Scientific, TGT, Inc., and Datu Inc. are three high technology companies recently established in New York that resulted from discoveries at Geneva. Another start-up biotechnology company in New York is investing in technology being developed at Geneva that has tremendous potential. Cummins Nursery and Empire Nursery were recently developed from conventional technologies at Geneva.

SOME SIGNIFICANT ACCOMPLISHMENTS

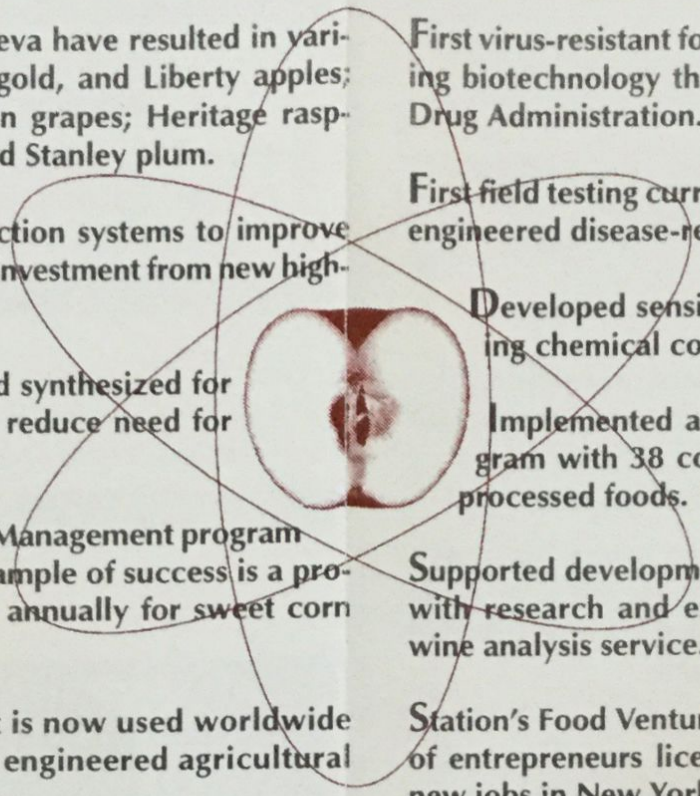
Breeding programs at Geneva have resulted in varieties such as Empire, Jonagold, and Liberty apples; Cayuga White and Horizon grapes; Heritage raspberry; Jewel strawberry; and Stanley plum.

Developed orchard production systems to improve yield, quality, and return on investment from new high-density plantings.

Sex attractants isolated and synthesized for many insect pests; used to reduce need for pesticides.

New York Integrated Pest Management program initiated in 1973; latest example of success is a program that saves $500,000 annually for sweet corn growers.

Gene gun developed that is now used worldwide in developing genetically engineered agricultural crops.



First virus-resistant food crop recently developed using biotechnology that was approved by Food and Drug Administration.

First field testing currently being done of genetically engineered disease-resistant apple rootstocks.

Developed sensitive, rapid method for detecting chemical contaminants in food.

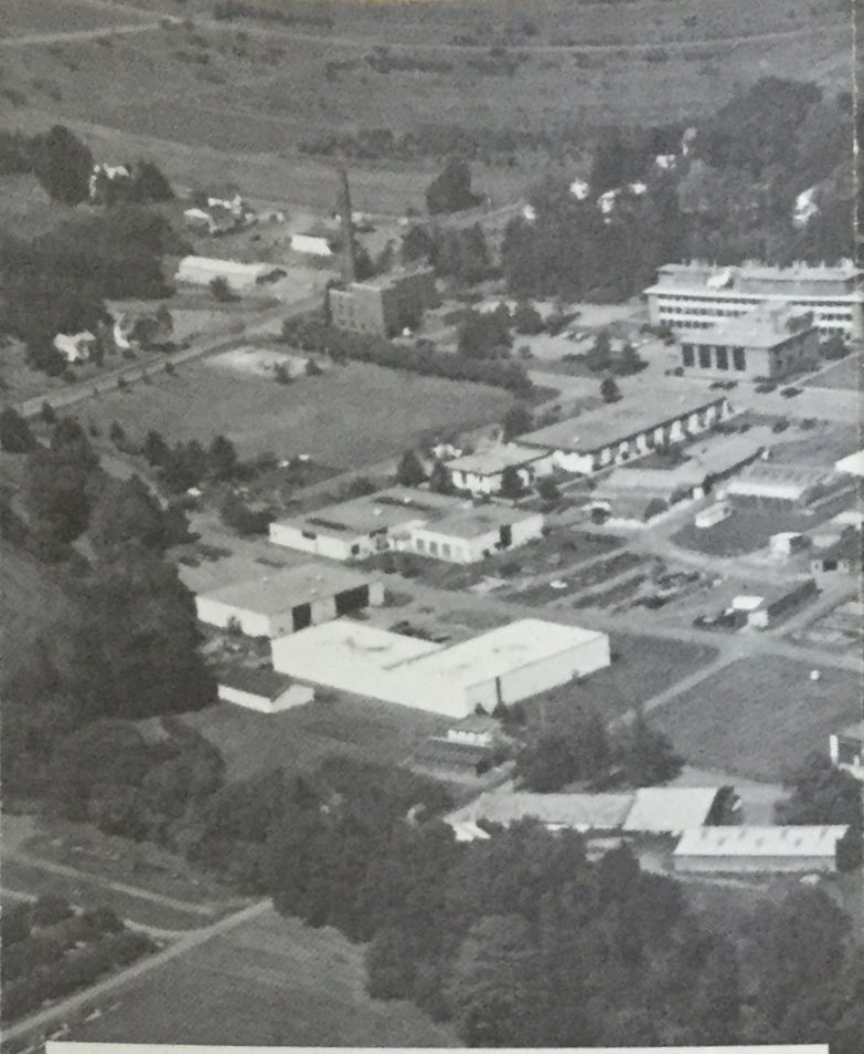
Implemented a flavor-chemical analysis program with 38 companies to improve flavor of processed foods.

Supported development of over 100 small wineries with research and extension, including providing wine analysis service.

Station's Food Venture Center has helped hundreds of entrepreneurs license new products and create new jobs in New York State.

Background Information

- Geneva Station founded by State in 1880; operated by Cornell University.
- Concentrates on research and extension programs that increase the competitiveness of New York's fruit and vegetable industry.
- Programs cover all aspects of the production and processing of fruits and vegetables.
- Fruit and vegetable industry in New York has annual farm value of $500 million; value of processed product is considerably greater.
- Main facilities are at Geneva; outlying laboratories in the Hudson Valley at Highland and in Lake Erie Region at Fredonia.
- Approximately 900 acres available for field trials at Geneva, Highland, and Fredonia.
- Research and demonstration field trials are conducted throughout the State on growers' land.
- Strong extension program to keep growers and processors informed of research advances and recommendations.
- Geneva Station has lost 90 of 273 state-line staff since 1970s—currently 183 staff.
- Additionally, approximately 108 employees are supported by non-state funds.
- More than 90 graduate students conduct research for their thesis at Geneva. Most are studying for their doctorate degree.
- In 1995, completed architectural and engineering master plan for Station through year 2030.



GOAL *of the Geneva Proposal*

To improve the competitiveness and profitability of New York growers and processors of fruits and vegetables while safeguarding the environment and ensuring consumers access to wholesome, high quality, and economical food.

New York State
Agricultural Experiment Station
Geneva, New York

"Agricultural Progress Through Research"

CORNELL
UNIVERSITY

College of Agriculture
and Life Sciences

November 1995