Food Science Geneva – Facilities, Extension Programs & Renovations

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Questions to AC

• The following slides illustrate the extension and applied work that is being done at FS Geneva (we moved the research programs to Ithaca). We need to “brand” the programs into a cohesive center that represents all the activities and opportunities that exist. What is the best way to achieve this?

• The NYS Food Venture Center has name recognition already, will it make sense to use an expanded name to cover all the programs, such as “The NYS Food and Beverage Venture(s) Center”?

• Are there activities that must remain and perhaps some that are not as important anymore?
Geneva Food Science Programs

- **Enology** – Anna Katharine Mansfield, Christopher Gerling, Ben Gavitt, Luann Preston-Wilsey, Pam Raes

- **Produce Safety Alliance and Good Agricultural Practices** – Betsy Bihn, Gretchen Wall, Michele Humiston

- **Safety and Quality of Fruit and Vegetable Products** – Randy Worobo, Sarah Lincoln

- **NYS Food Venture Center (includes pilot plant)** – Olga Padilla-Zakour, Elizabeth Sullivan, Andy Humiston, Shannon Prozeller and John Churey

- **HPP Validation Center (new in summer 2016)** – Randy Worobo, John Churey
New High Pressure Processing Laboratory to open Summer 2016: National HPP Validation Center

- Supported by Hiperbaric, LiDestri, Suja, Wegmans
- NYS – $600,000 from Senator Nozzolio
NEW DEVELOPMENTS & INITIATIVES

- Agricultural Sciences Research Laboratory Renovation (current Food Research Lab) - about $45-50 million
- First phase of building renovation for Pilot Plant – $13 million total, $7 million committed from NYS (Senator Nozzolio and Gov. Cuomo)
- Expanded use of Pilot Plant in partnership with the Cornell Agriculture and Food Technology Park & Start-Up NY
- Small scale commercial production options for tenants of the Park
- Need: a true Conference Center in Geneva – proposed improvements to meeting room in Jordan Hall included in renovation plans

Cornell Agriculture and Food Technology Park, Geneva, NY
http://thetechnologyfarm.com/
Fruit & Vegetable Processing Pilot Plant
10,000 sq ft – To be Renovated in 2016

Research, Teaching, Extension & Economic Development

Processing capacity
1 to 100 gal/day
10 to 1000 lb/day

23 food companies used the facility in 2014
NEW DEVELOPMENTS & INITIATIVES

• Proposed Extension Associate Position in Plant Based Fermentations to complement Enology and FVC
• Program would support the growing beer, cider and other fermented products industries
• Offer training and technical support
• Position will help to consolidate a strong food science extension presence in Geneva
Geneva Food Research Lab

Food Research Laboratory established in 1960 - 2 floors dedicated to research labs: food safety, processing, quality
Fruit and Vegetable Processing Plant
To be renovated in 2016

Fruit & Vegetable Processing Pilot Plant: 10,000 sq. ft.
Processing capacity: 1 to 100 gal/day, 10 to 1000 lb/day
Equipment for canning, pasteurization, UV treatment, blanching, peeling, cutting, dehydration, freezing, freeze-drying, juicing, pureeing, concentration, filtration, etc.
Exhaust/Heating/Cooling Tunnel
Continuous Pasteurizer and Bag Filler
Equipment to package and stabilize

Batch Pasteurizer

Carbonator

Capper
Retorts for sterilization of cans, glass and flexible containers
Flexible Space to Resemble Commercial Processing
Cornell Food Science: Enology Extension

- Cornell Enology Extension Lab (CEEL)
- New York Wine Analytical Laboratory (WAL)
Cornell Enology Extension Lab

- 65% of NY wineries attended a CEEL event during 2012-15
- 22,008 contact hours resulted from B.E.V. NY (2014 & ‘15)
- 12 new courses offered in EnoCert
New York Wine Analytical Laboratory

- From 2011-2014, the lab has received ~745 samples from 90 unique clients each year, interacting with 25 to 40% of NY farm wineries directly.

- Along with analytical results, the WAL also provides advice and consultation to help remediate problems and avoid them in the future.

- The WAL analyzes 76 samples from across the state each week throughout harvest season and sends the data to the industry.

http://grapesandwine.cals.cornell.edu/extension/new-york-state-wine-analytical-laboratory
NYS Wine Analytical Lab: Partnership with the NY Wine and Grape Foundation

http://grapesandwine.cals.cornell.edu/extension/new-york-state-wine-analytical-laboratory

<table>
<thead>
<tr>
<th>Year</th>
<th>Samples</th>
<th>Analyses</th>
<th>Clients</th>
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<tbody>
<tr>
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<td>247</td>
<td>2847</td>
<td>47</td>
</tr>
<tr>
<td>1999</td>
<td>450</td>
<td>4319</td>
<td>54</td>
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<tr>
<td>2000</td>
<td>321</td>
<td>3721</td>
<td>51</td>
</tr>
<tr>
<td>2001</td>
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<td>2002</td>
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<td>65</td>
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<td>2004</td>
<td>524</td>
<td>5124</td>
<td>65</td>
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<td>2005</td>
<td>382</td>
<td>4020</td>
<td>68</td>
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<tr>
<td>2006</td>
<td>572</td>
<td>8212</td>
<td>95</td>
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<td>2008*</td>
<td>446</td>
<td>6729</td>
<td>104</td>
</tr>
<tr>
<td>2009</td>
<td>346</td>
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<tr>
<td>2010</td>
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<td>5720</td>
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<tr>
<td>2011</td>
<td>822</td>
<td>8946</td>
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<td>6302</td>
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<tr>
<td>2014</td>
<td>618</td>
<td>5576</td>
<td>98</td>
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<tr>
<td>Mean</td>
<td>514</td>
<td>5534</td>
<td>73</td>
</tr>
</tbody>
</table>

Table 1: NYSWAL Analyses Load, 1998-2013

*Data for 2007 is unavailable.

Table 2: Distribution of 2011 wine analyses at NYSWAL by topic of concern

<table>
<thead>
<tr>
<th>% Total</th>
<th>Topic</th>
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</thead>
<tbody>
<tr>
<td>29</td>
<td>Sterility, yeast counts, sterile bottling</td>
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<tr>
<td>14</td>
<td>SO₂</td>
</tr>
<tr>
<td>11</td>
<td>H₂S, reduced sulfur off-note, ascorbic acid</td>
</tr>
<tr>
<td>10</td>
<td>Stuck fermentations</td>
</tr>
<tr>
<td>9</td>
<td>Malolactic fermentation, malic and lactic acids</td>
</tr>
<tr>
<td>9</td>
<td>Filtration</td>
</tr>
<tr>
<td>7</td>
<td>Titratable acidity, acid reduction, cold stability</td>
</tr>
<tr>
<td>5</td>
<td>Protein stability</td>
</tr>
<tr>
<td>4</td>
<td>Requests for bench trials (tannins, fining, blending, H₂S amelioration)</td>
</tr>
<tr>
<td>2</td>
<td>Yeast Assimilable Nitrogen (YAN)</td>
</tr>
</tbody>
</table>
Vinification and Brewing Laboratory

2,000 sq. ft. – grape processing, controlled alcoholic fermentation, distillation
National GAPs Program

- Since 1999, supported by > $2.4 million in external funding
- Developed novel 2-day GAPs training and farm food safety plan writing workshop that has become national model
  - Since 2009, 773 individuals trained from 413 farms in NY
- Developed GAPs Online Produce Safety Course
  - Since 2008, 1165 course participants in 61 courses
- Developed award-winning extension publications
  - Over 250,000 copies distributed nationally and internationally
  - Newest publication in 2014: Farm Food Safety Decision Trees
- Conduct research on long-term impact of extension training on farm viability and market maintenance

www.gaps.cornell.edu
• Since 2010, supported by over $4.9 million in external funding
• Main Goal: helping fresh produce growers meet regulatory expectations of Food Safety Modernization Act’s Produce Rule
• Created curriculum all produce growers subject to the Produce Rule, nationally, will have to take per FSMA requirements
• Collaborators in 44 states including Land Grant Institutions
• Two successful pilot trainings hosted for Train-the-Trainer and Grower Training in 2014
• Program set to launch in January 2016

producesafetyalliance.cornell.edu
Safety and Quality of Fruit and Vegetable Products – Randy Worobo

- Microbial food safety, quality & sanitation
- Trained and certified > 500 cider processors in juice safety
  => 97% compliance rate with federal Juice HACCP regulations in NYS, highest in the country
- From 2012-2014: 52 workshops and certification trainings for 3,456 food processors and inspectors (state and federal)
- Lead scientist for the HPP Validation Center
CORNELL’S FOOD VENTURE CENTER

- CALS Extension Program
- Established in 1988
- Funding:
  - CALS
  - Federal grants (NECFE)
  - State grants (NYDAM, FVI)
  - Subsidized fees

**Mission:** provide comprehensive technical assistance to farmers, entrepreneurs and food companies pursuing new food products for the marketplace, to enhance food safety and promote economic development
CORNELL’S FOOD VENTURE CENTER

• Direct Technical Support: one-on-one counseling for entrepreneurs, farmers and processors developing new foods
• Education and Outreach: workshops, website, educational materials
• Regulatory Compliance: NYSDAM, FDA and USDA

• **Process Authority Service:** New product safety evaluation and approval
• Product process development and technology transfer – via pilot plant
Processing Authority Service – Ensure Safety and Regulatory Compliance of Foods

• Based on regulations, a Processing Authority is a person or institution that has expert knowledge, experience and adequate facilities (equipment and resources) to make determinations about the safety of a food process and formulation

• In New York State and the Northeast, there are only a handful of recognized Processing Authorities

• They are required to maintain product confidentiality
Support to Food Entrepreneurs: 2014

- 7,000 requests for assistance from NY, Northeast and beyond.

- 435 businesses received comprehensive assistance for commercialization of 1273 food products

- Analyzed 1410 food sample prototypes for product safety and technical feasibility

- Education & outreach: 10 workshops and conferences with 292 participants

Other Extension and Outreach events attended by 2,500 people
Projected Job Creation

- 1539 businesses assisted generating
- 770 full-time jobs
- 1539 part-time jobs
Safety Evaluation of New Food Products Outside NYS, 2012-2014 (NY 2,212 )

- MA
- NJ
- OH
- VT
- CT
- PA
- RI
- IL
- MD
- MI
- FL
- VA
- NH
Sample of Products Produced With FVC/NECFE Assistance
CherryPharm Case

Sponsored Research: John Davey and Cornell University - conducted in 2005

• To develop a high quality cherry juice product that retains high levels of healthful compounds present in Montmorency cherries, such as anthocyanins and other phenolic compounds, along with the process and package technology to produce it. Effective in reducing strength loss and pain due to exercise-induced muscle damage.

ORIGINAL ARTICLE

Efficacy of a tart cherry juice blend in preventing the symptoms of muscle damage

D A J Connolly, M P McHugh, O I Padilla-Zakour

Produced at Cornell Agriculture and Food Technology Park

Initial target market: athletes, active lifestyle enthusiasts, aging population

Today: sold via website and through national chains – Wegmans, WholeFoods, Costco
TODAY: 14 products, $5 million annual sales, 18 jobs
Stony Brook WholeHeartedFoods – at Cornell Agriculture and Food Technology Park

John B. Martin and Sons Inc.

2006 Extension Project. Production Started in 2009

Today: 9 successful products, growing company

Kelly and Greg Woodworth