

The Role of The New York State Food Venture Center in Supporting Food Entrepreneurship

Olga Padilla-Zakour

Department of Food Science & Technology
New York State Agricultural Experiment Station, Cornell University
Geneva, NY

The New York State Food Venture Center (FVC) is an extension program of the Department of Food Science & Technology at the Geneva Experiment Station, which has been in operation since 1988. It started as a joint activity of the Department of Food Science & Technology and the New York State Department of Agriculture and Markets in response to significant changes in the New York state food industry. The trend of fewer but larger food companies, due to mergers and acquisitions, dispersed sparingly throughout the state, opened opportunities to small processors and entrepreneurs to start food manufacturing ventures and to utilize local resources (Table 1). There was a need to support the increasing number of small processors as well as providing technical expertise to the very important remaining large food companies. The NYS Department of Agriculture and Markets initially pro-

vided economic support to the program and, therefore, the assistance given to food entrepreneurs was free of charge. Cornell has maintained the program with nominal charges despite state budget cuts. The program continues to be of outstanding value to the small-scale food industry segment.

Mission

The mission of the FVC is to promote the establishment of new food processing concerns in New York State and the region by facilitating technology transfer, establishing an understanding of the requirements for safe food processing, providing training and continuous educational opportunities, encouraging successful business planning, and guiding entrepreneurs through the licensing and permit procedures.

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Food processing adds value to products as consumers look for quality and convenience and promotes economic sustainability of communities by its multiplier effect. Fruit products can be manufactured at the small-scale level with only a modest investment in equipment. Process development can be accomplished with the assistance of the NYS Food Venture Center.

sustainability of communities by its multiplier effect. In 1990, the average income multiplier due to capital expansion in food processing was 4.2, that is, if the demand for a processed food rises by an additional \$1,000, then an additional \$3,200 of income is generated by stakeholders in that food industry and all other economically linked industries. As a reference, the income multiplier for crop agriculture in 1990 was 1.6. The economic impact of the food industry in New York State is shown in Table 2. Fruits and vegetables are the main components in most of the product categories.

Assistance

The FVC provides technical expertise in a variety of areas related to food manufacturing. The scope and depth of the assistance reflects Cornell's strength in food science. The center utilizes faculty and staff from the Cornell Institute of Food Science as the primary resource for information. A brief description of the most important activities performed by the FVC is described below.

Process development. Many products are developed from home recipes and, therefore, an industrial process has to be developed to successfully manufacture a safe product in commercial settings. Scale-up and process optimization can be accomplished by scheduled tests

TABLE 1

Change in the number of food and kindred product establishments in the Northeast.*

Year	Number of employees				
	1-4	5-9	10-19	20-49	50-99
1987	1113	636	707	780	458
1994	1381	703	698	740	420
Percent change	+24.0	+10.5	-1.2	-5.1	-8.3

*From Markley, K. and Hilchey, D. 1999. Adding value for sustainability. Community Agriculture Development Series.

at the Geneva Experiment Station pilot plant. This 10,000 square foot facility is devoted to the preservation and processing of fruit and vegetable products (see Table 3 for equipment listing).

Guidance in government regulations regarding food processing at the state and federal levels, including expla-

nations of the New York State Department of Agriculture and Markets, FDA, and USDA requirements to introduce specific new food products into the marketplace as well as labeling requisites.

Food safety review of new products. In many cases, New York state requires a written letter of approval (called "sched-

ule process") that describes product formulation, critical control points to be monitored and documented, along with specific processing steps for the production of safe and stable products. This letter must be issued by a recognized Process Authority, which in this case, is represented by the director of the FVC. This is an invaluable service to small processors that do not have access to R&D budgets that are normally used to test and develop safe new products within the company. Annually, the center issues approximately 60-80 letters of approvals to food entrepreneurs comprising more than 300 food products.

Formulation changes. Not all products can be manufactured commercially with the same recipe used for food products prepared and consumed at home. The center helps entrepreneurs find alternative options such as ingredient substitution, appropriate concentration of critical components, and processing choices for the desired shelf-life under commercial distribution and storage.

Packaging and processing options. Some products can be packaged in different containers such as plastic or glass bottles, which means that the processing requirements and shelf-life could be different depending on the material selected. In addition, some packaging and processing techniques are not suitable for small scale processing or are cost prohibited.

Analytical evaluation. The FVC laboratory can assist the entrepreneur's decisions on product development and formulation by evaluating critical control points such as pH or acidity, water activity (water available for microbial growth), oxygen and carbon dioxide composition in the headspace of modified atmosphere packaged products, and pasteurization schedules.

Resource networking. Referral to service providers within the state such as ingredient and equipment suppliers, nutrition labeling analysis, microbiological laboratories, co-packers and others.

Training. Each year the FVC offers an FDA/USDA required canning course for processors involved with thermally processed foods packaged in hermetically sealed containers, such as canned vegetables and pickled (acidified) products. Specialized hands-on workshops for small scale processing are also conducted in the pilot plant.

Continuous education. The FVC started a newsletter last year to address this need. A variety of topics are cov-

TABLE 2

Value added and shipment value for New York State Food Manufacturers -1992.*

Categories	Annual Value-Added Millions \$	Total Annual Value of Shipments Millions \$
Breads, rolls	1,034	1,514
Canned fruits and vegetables	772	1,393
Beer	664	1,247
Carbonated beverages	495	1,489
Confectionary	335	737
Miscellaneous specialty products	329	668
Frozen specialty products	251	435
Breakfast foods	245	354
Frozen fruit and vegetable	133	278
Cookies and crackers	131	208
Flour, wheat	123	574
Sauces and pickles	107	178
Wine and brandy	106	382
Flour mixes	100	154
Pasta	75	126
Dehydrated fruit and vegetables	21	45

*Value-added is calculated by subtracting the cost of materials from the value of shipments adjusted for merchandising and inventories. From "Food Processing -An Industrial Powerhouse in Transition" Ed. J. Vonnor and W. Schiek, Wiley-Interscience Publications, New York, 1997.

TABLE 3

Equipment available at the Fruit and Vegetable Processing Technology Pilot Plant, Geneva, NY (partial list).

High Pressure Cookers Vertical still retorts FMC steritort FMC Simulator - still, water spray, hydrostat	Pasteurizers - Continous flow Tubular and Plate Ultra High Temperature Ultraviolet
Low Pressure Cookers Applesauce line Heat exchangers Steam injection system Exhaust tunnel	Filters Plate and frame filter Drum filter Membrane cross-flow filter (UF/MF) Wine filter
Freezers Blast freezer Walk-in chambers	Blanchers Steam belt and cooling Vacuum blanch chamber
Dehydrators Cabinet hot air driers Freeze drier Drum drier	Kettles Steam jacketed in 2.5 to 200 gal capacities Agitated, with vacuum for concentration
Juice Extractors Rack and frame hydraulic press Belt press Bladder press Accordion press Continuous screw press	Packaging units Continuous filler Pouch sealer - atmospheric, vacuum, gas Can seamers Clean fill system Pouch form-fill-seal
Juice Concentrators Scraped surface Unipektin evaporator with essence recovery Reverse osmosis unit	Preparation equipment Peelers, cutters, slicers, crushers, stemmers Mills, pulpers, finishers, vibrating screens Pumps, tanks, etc.



These fruit and vegetable presses are located on the floor of the Fruit & Vegetable Processing Pilot Plant at NYSAES, and available for use by FVC clients. From left to right: Good Nature Accordian, Orchard Equipment Rack & Frame, and Frontier Continuous Belt.

ered in quarterly issues, including processing, food safety, regulations, and business/marketing information. The newsletter is distributed to more than 400 processors and to cooperative extension offices and interested parties free of charge.

Impact

To date, the FVC has answered more than 2,000 requests for assistance and has helped in the establishment of approximately 370 new food manufacturers in the state.

From 1996 to 1998, the FVC received over 1,000 requests for assistance, of which 750 were specific to new or improved products. New York businesses accounted for 95 percent of the requests. From the original 750 requests, 197 entrepreneurs received safety reviews and approvals for more than 900 new or improved products. Farm-based ventures accounted for six percent of the total. New food products include barbeque sauces, marinades, tomato based sauces, dressings, pickled vegetables, preserves,

beverages, flavored vinegars, salsa, smoked fish, beef jerky, sausages, gourmet mustards, and soups.

Value Added Processing of New York fruits

According to New York State Agricultural Statistics for 1998, the New York fruit crop totaled 630,350 tons as utilized production for a total value of \$160 million. These figures include the major fruits: apples, grapes, tart and sweet cherries, peaches, pears, strawberries, blueberries, and red raspberries. Popular processed fruit products derived from these fruits are shown in Table 4.

A company developing new products must take into consideration the consumer's perspective, that is, the demand for specific products that satisfy consumer needs. Some of the most important factors for consumers are convenience, taste, quality, nutritional and health benefits, and value. From the manufacturer's point of view, there are five major motivations for the introduction of new products: to respond to changing consumers, to maintain inter-

est of intermediaries, to take advantage of new technologies, to counter competitive thrusts, and to transform commodities to value-added. It is also important to understand that the key decision criteria used by buyers when selecting new products includes gross margin, competition, quality/uniqueness, category growth and terms of trade.

In the case of fruit products, there are currently definite advantages as consumers are encouraged to increase their consumption of fruits and vegetables to achieve a healthier diet. The government's Dietary Guidelines for Americans recommends two to four servings of fruit every day. Furthermore, canned or frozen fruits can be considered "healthy" based on FDA's recent ruling. In 1998, FDA approved the use of the term "healthy" for frozen or canned fruits and vegetables. In the past, the term was restricted to raw produce, but research has shown that there is very little difference between canned, frozen, and raw fruits and vegetables.

Most fruit products are classified as acid or high acid foods due to the fact that

TABLE 4

Processed fruit products and uses.

Category	Uses
Juices <ul style="list-style-type: none"> • Pasteurized for safety only (refrigerated), packaged in glass or plastic bottles • Pasteurized for safety and spoilage, packaged in glass, plastic or metal containers • Concentrated 	Retail sales, as ingredients for beverages, sauces, dressings, bakery products, etc.
Fermented products <ul style="list-style-type: none"> • Wine • Hard cider • Other fruit wines • Fruit spirits 	Retail sales mainly and specialty gourmet products
Canned fruit <ul style="list-style-type: none"> • In juice or syrup, as sole fruit or mixed, packed in metal cans, glass jars or plastic bowls 	Retail sales, food service, as ingredients
Frozen fruits <ul style="list-style-type: none"> • Whole or sliced, packed with or without sugars 	Food Service, as ingredients, retail sales
Pulps and sauces <ul style="list-style-type: none"> • With or without sugars, in bulk containers or retail packages 	As ingredients, food service, retail sales
Preserved by high sugar content <ul style="list-style-type: none"> • Preserves • Jams Jellies • Butters 	Retail sales, food service
Dried fruits <ul style="list-style-type: none"> • Whole or sliced, with or without added sugars 	As ingredients for a variety of uses, food service and retail sales
Fresh-cut fruits, refrigerated	Retail sales and food service
Fruit syrups	As ingredients, food service, retail

the final pH is below 4.6. From the regulatory point of view this is an important point because acid foods do not present the risk of botulism, and therefore do not need to be processed at temperatures above 212°F to achieve preservation. Fruit products can be manufactured at the small-scale level with only a modest investment in equipment, keeping in mind that a fair amount of manual labor would be required. Setting up a separate kitchen in the farm for fruit processing can be a good way to utilize product not suitable for the fresh market. Fruit with good quality but with minor appearance defects, or fruit that is too large or too small can be processed into specialty, farm branded, gourmet products that carry local recognition. There are also other alternatives for local processing, such as using approved kitchens located in the community that have additional processing capabilities (from restaurants, community centers or churches). Process development can be accomplished with the assistance of the NYS Food Venture Center at the Fruit and Vegetable Processing Pilot Plant.

Olga Padilla-Zakour is an Assistant Professor of Food Processing and also the Director of the New York State Food Venture Center in the Department of Food Science and Technology at the New York State Agricultural Experiment Station, Geneva, NY.

