

Mobile/Individual Quick Freeze (IQF) Unit Fact Sheet

Mission

The mobile quick freeze unit will address increased utilization of Vermont fruit and vegetables by Vermont Food companies and Vermont schools. Accomplishment of these goals will increase market opportunities for Vermont Growers and increase utilization of local produce in Vermont processed foods and by Vermont schools. (Text from MOU with the Dept. of Tourism)

Funding

RBEG Grant – Obligation date: 6-27-07 signed by Anson Tebbits. Seven year term. Per David Robinson, USDA Rural Development, the seven year term of the grant expires June 30, 2014.

Initial funding

- \$19,908 - From USDA RBEG grant – 7 year life span, began FFY'07 will end June 30, 2014
- \$20,000 - From ACCD Dept of Tourism – MOU signed by Steven Cook
- \$39,908 - **Total cash funds for physical unit**

- \$ 5,500 - In-kind matching from VAAFM
- \$45,408 - **Total costs related to the unit**

Notes

- The initial USDA RBEG grant did not provide funding for research into “possible final operational structures for the IQF.”
- Most of the issues regarding use of the IQF related to lack of suitable electrical outlets, preparatory or post-freezing logistics, or minimal freezer storage capacity within the unit itself.
- Institutions with sufficient walk in freezer space were able to accomplish tasks without use of the IQF.
- Dave Robinson/USDA RD appears to be amenable with VAAFM executing a no-cost transfer of the unit (and thus the RBEG grant) to a statewide non-profit via a competitive RFP.
- He has also mentioned the possibility of USDA funds being available to upgrade the unit.
- Steve Cook, deputy commissioner, Dept of Tourism, is also agreeable to a no-cost transfer of the unit to a statewide non-profit via a competitive RFP. If there were a sale, they would want a percentage of the sales.

IQF Unit Details

- VIN: #40LWB18208P152227, bearing VT Registration: A025
- Freezing equipment sits inside an 8 x 18' cargo trailer.
- Sites *without* access to additional processing facilities can use the IQF to freeze berries and other produce which do not requiring preparation (such as blanching). Freezing unit can be paired with kitchens or other processing space to expand what is frozen.
- The freezer is flexible in the size of product it can handle, although the original design was for berries.
- Freezing unit is designed to process 600 pounds of berries per hour. Larger products take longer to freeze.
- Trailer includes freezer room to store approximately 800 pounds of berries; on-trailer space is considered only temporary. The amount of berries stored may reduce the hourly freezing capacity due to space limitations.
- User provides the power source for the IQF. A 120 volt, 30 A. and a 230 v., 50 A. single phase feed are needed. Trailer comes with 50' power cords. If the user *does not* have appropriate plugs, an electrician can install them.

- Trailer has cold and hot water inlets with garden hose connectors for the hand washing sink and a dump valve for gray water. Note: product must be washed in *potable* water

Green Mtn College findings

- The unit's true utility lies in its function as a temporary-stationary unit. The unit may be used for two or three consecutive growing seasons to jumpstart a pilot project, but it is not suitable for established or larger-scale endeavors.
- The unit is not ideal for highway travel due to the heavy compressor being placed atop the trailer. Ideally the compressor, the trailer's single heaviest component, would be placed lower, perhaps near the trailer hitch to allow for easier, safer and more efficient hauling.
- The unit is not adequately insulated, as demonstrated by the excessive condensation which accumulates on the outside of the freezer section of the unit when in-use. With adequate insulation, the unit would prove more effective by dropping to and subsequently maintaining a lower and more consistent temperature, regardless of outside conditions.
- A poorly placed internal wall presents a physical challenge as there is neither an easy nor effective way to move racks of produce from outside to inside the unit and vice versa. This impedes the flow of product through stages of processing, freezing and packaging.
- The unit's roller conveyor, intended to bring produce into the unit, is problematic. Because the unit sits on wheels about sixteen inches above the ground when extended, the belt reaches a height of about four-feet outside the unit. The conveyor has proven too inconvenient and uncomfortable to use when loading any significant amount of produce.
- The fan inside the unit is poorly placed at the end of the conveyor. The fan could prove useful, but its placement means that trays need to be loaded incredibly slowly into the unit and require at least one person at each end of the belt loading the trays, with subsequent loading onto racks.

Lessons Learned (from Helen Jordan's final notes, May 2010)

- Farmers must be properly consulted before any building is done when developing a similar project. There must be extensive feasibility studies to determine what makes the most sense for farmers.
- Most involved believe the IQF will work best as a stationary unit located at a central place that has infrastructure to provide space for preparation and perhaps long-term storage, as well as some labor.
- Potential locations include food venture centers, food banks, institutions, warehouses, and organizations like LACE in Barre, VT.
- A stationary unit is not as convenient to farmers, but once it's in place it can be more easily adapted.
- Mr. Norder believes that ideally there will be about six units set up around the state for producers to use. Multiple units will also help ease demand during peak harvesting weeks.
- The food-processing scene in Vermont is changing very rapidly. It is radically different today than two years ago; it is difficult to project into the future.
- There are not many of producers interested in producing fruit for the processing market, and not many able to produce a continuous supply at high enough quantities, but there is a lot of potential.
- Any future units should be more versatile, with blanching or canning capabilities as well.
- Brian Norder noted that if he could re-design the unit he would add a mounting compressor and an on board generator.

Recommendations

Management: The ideal management of the IQF would be conducted by an independent entrepreneur willing to develop contacts with producers and processors for efficient operation of the equipment. If that is not possible the next best model would be to award management to a non-profit organization with close contacts to producers and an identified need for frozen food. (Helen Jordan's summary document)

Mobile/Individual Quick Freeze (IQF) Unit Specifications

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Mobile Individual Quick Freeze Unit Specifications

Trailer

8'x18' cargo trailer, tandem axle, rear door ramp with standard side door and portable ramp and reinforced roof for compressor units.

Walls and ceiling, 090 FRP panels, 2" foam insulation panels with foil vapor barrier

Antibacterial strip doors

Air curtain units one 48", one 36"

Floor—stock plywood with DH floor enamel and floor drains, esp under drying area

Lighting and Electrical

All fixtures, outlets and connections NEMA type rated

Washdown fluorescent fixtures, 4

Freezer lights with shields, 2

Washdown drying fans, 2

Demand hot water heater for hand sink

Breaker panel, power pigtailed cable, outlets and conduit

Fixtures and Equipment

Floor mount, knee operated hand sink

Drying rack with slides for screens

Rubbermaid tray dollies, proserve system with locking bars, 8

Poly trays for drying, 24

Custom drying-freezing racks, eg. type 304SS, 120

First aid kit and fire extinguisher

Boot dips, 2

Washdown hose and faucet with vacuum breaker

Water inlet hookup

Refrigeration

Cooler compressor and fan coil unit, installed

Freezer, compressor, condensing unit and vertical high velocity fan coil unit, installed

Sliding freezer door

Mobile Quick Freeze Unit – Successes

Initial Use of Unit

- 2008 Season – The IQF made stops at:
 - Blueberry Ridge (North Troy, VT)
 - Green Mountain College (Poultney, VT)
 - Champlain Orchards (Shoreham, VT)
 - Pete’s Greens (Craftsbury Center, VT)

Green Mountain College

Overview

- 15-20 producers and organizations expressed interest in using the unit in 2010.
- Over 10,000 lbs of produce was frozen using the flash freeze unit during the 2011 growing season.
- Unit was used on and off site by:
 - GMC and farm-to-school partners for inclusion in their food service,
 - Local farmers for inclusion in their CSA shares or for sale at local farmers markets,
 - Community gleaning initiatives for donation into the charitable food system,
 - Correctional department inmates for use in their cafeterias, and
 - Private company interested in co-packing produce to sell to coops and small supermarkets.

Details

- University of Vermont Extension, Windham County Local Food Network
 - 3 public schools, froze 525 lbs of with student volunteer labor
- University of Vermont Extension, -VT Dept of Corrections
 - Two VT Community High Schools
 - 2,000 lbs of prison-grown produce processed
- Sunrise Orchards/VT Refrigerated Storage partnership
 - 2,000 lbs of blueberries frozen for the Neighboring Food Co-ops Association Farm to Freezer program.
- Kilpatrick Family Farm, Maple Wind Farm, Ameer Farm
 - Frozen product for farms’ CSA programs
- Charitable Food System: Rutland Area Farm & Food Link (RAFFL) (as part of their ‘Grow a Row’ program), Salvation Farms (as part of their ‘Vermont Commodities’ project)
 - Twenty local farms participated
 - 14,000 lbs of produce processed
 - 13,000 lbs distributed to 13 charitable food sites
 - 1,000 lbs processed by private entity for product testing
- Green Mtn College “Center of the Plate” initiative
 - Two local farms participated
 - 800 lbs zucchini/summer squash
 - 300 lbs broccoli
 - 250 lbs cauliflower
- College-Grown produce for Green Mtn College Dining Hall
 - 2011 – 1,946 lbs of tomatoes processed
 - 2012 – 3,053 lbs of produce (tomatoes, kale, mustard greens, chard, salsa, pesto) processed