Sustainable Adapted Year-Round Production of Chemical-Free Strawberries

Final Report for FNC03-466

Project Type: Farmer/Rancher
Funds awarded in 2003: $5,600.00
Projected End Date: 12/31/2005
Matching Non-Federal Funds: $14,525.00
Region: North Central
State: Ohio
Project Coordinator:

Mike Neeley

Project Information

Summary:

PROJECT BACKGROUND
Bramble Creek Farms is a 46-acre chemical-free operation specializing in producing and marketing blackberries and raspberries. We planted a few seedless Concord grapes several years ago and they bore a small amount of fruit in 2005. About 4 acres of the farm are planted in primarily thornless blackberries and red, gold and black raspberries. All brambles are planted in the same 10-acre field on raised beds covered with landscaping fabric and mulch (to minimize weeding) in 100-foot rows. Hand-harvested berries are used at our bed and breakfast and sold fresh to restaurants and individual consumers. Berries are also processed into jams and jellies and sold to individuals and commercial buyers.

Strawberries seemed a natural “season-extending” fruit for our farm. The local marketplace for fresh, in-season berries is dominated by a handful of large producers who offer retail and you-pick opportunities. Information obtained through Ohio State University made the product appear profitable, especially during the off season. Although Ohio weather made outdoor planting risky, even impossible, greenhouse production presented an interesting possibility. Access to a producing gas well provided an affordable source for heating a year-round operation. Creating seasonality in a year-round operation was part of the problem to be studied. Was the process and product sustainable at least on an annual basis. Another major hurdle confronting the two aging farmers at Bramble Creek was our inability and unwillingness to take on hand-and-knee production. The second element studied during the project term involved container planting on raised platforms.

PROJECT DESCRIPTION AND RESULTS
Process: This is the second year for this project and many facts were revealed as we attempted to continue what was started in 2004. During the fall of 2004, several versions of the “hardening off” process were attempted. (Results were detailed in 2004 report.)

Those plants that survived and prospered from this experimentation were the basis

for 2005 planting. We started out the winter with 152 pots containing two to four individual ‘Ozark Beauty’ plants with nearly 100 miscellaneous plantings of ‘Cavendish,’ ‘Sparkle’ and ‘Fort Laramie.’ The plants were strong, deep green and prospering in mid-December. (A detailed log of daily conditions and observations was kept.)

This year’s project demonstrated the absolute necessity for a reliable heat source. In mid-January, nearly all plants were blooming, many had green berries, and we had picked the first ripe one. On January 24, the gas to the two furnaces shut off. The temperature in the greenhouse plummeted overnight to 27 degrees. The entire crop was lost, even the dirt in the pots was frozen.

The plants never fully recovered, even though we continued to work with them through the following summer. Those plants that produced did so sporadically and the fruit was stunted, malformed and seedy.

With our strawberry crop down for the winter and a greenhouse with space we did not want to waste, we experimented with growing salad greens. Greens require much less labor and are much more forgiving of temperature fluctuations. Overall temperature demands are much lower, requiring less fuel consumption and for a shorter period of time.

In the interest of studying the opportunities on the “back side” of the outdoor strawberry season, we purchased an Aluminet shade cloth purported to not only reflect the heat in summer, but retain it in winter. Temperature during the summer in the greenhouse was 5 to 9 degrees lower than during the same weather in 2004. We haven’t had enough time in winter 2005 to effectively study the cold-weather benefit. We’re also concerned about light, which also appears to impact plant productivity.

PEOPLE

In addition to the people involved in this project in 2004 who continued their support, we also more heavily involved members of Innovative Farmers of Ohio. During a hosted field day, individuals contemplating fruit production toured indoor and outdoor facilities and participated in hands-on production projects. A graduate student from Ohio University chronicled the interactions by photographing the participants and their activities and producing a “movie.” This project served as a springboard for his doctoral thesis on the life and times of a group of local farm women calling themselves The Gravel Road Gang.

RESULTS

We proved one of our theories. You can grow strawberries in dirt in Ohio in the winter without chemicals. You can “trick” the plants into dormancy and trigger another production cycle without waiting 12 months. That’s great. At issue, however, is the volume necessary and the financial investment required to make this system profitable. We learned you need more than one greenhouse full of plants to produce sufficient amounts of berries to sell them. We never were able to increase the yield to that level, so never had the opportunity to secure a viable off-season market for strawberries. Intuitively, we know it’s out there. Being able to consistently support that market is a large hurdle.

As discussed previously, implementing and maintaining a reliable source of heat, capable of providing average daily temperatures of 70-75 degrees is at the center of the dilemma. In Ohio during January, your system may be called upon to maintain an interior temperature 60 to 70 degrees higher than the outdoor temperature. A daunting task. We discussed the alternative of installing a propane-fueled back-up system to the current gas well-supported system. This is an expensive alternative, and based on the current production capacity of the greenhouse, one that is not

profitable. In November 2005, we installed a different type of furnace cap vents. Perhaps the furnaces shut off last winter because the pilot lights were blown out by wind coming in thru the exhaust system? So far, so good. We had a big wind storm November 28 and the furnace was still lit the morning of November 29. This doesn't address the erratic nature of a gas well, which could still wreak havoc if and when the supply of gas to the furnaces is interrupted. (It's only a matter of time.)

Our solution to this heating dilemma is to put less pressure on the system overall by growing a "cycle" of crops that more effectively use changes in seasonal temperatures to assist in growth and production. For example, grow salad greens (which prosper at 50-55 degrees) during the coldest months, bring strawberries on early in May (field strawberries are available Memorial Day) and accelerate other vegetables and brambles that traditionally produce in late summer. Part of the goal is to be the first one into a market, and the last one out.

DISCUSSION

An unexpected output of this grant project was the flexibility and multi-faceted use of the raised plant stand system. Initially, the plant stand system was our answer to our own physical limitations. Neither of us can physically do hand and knee work anymore. Up to and including 2004, we experimented with several methods of container farming. One key point revealed itself consistently: The average adult can comfortably work on a surface 40-45 inches off the ground. These can be constructed relatively easily from scrap materials (like old pallets.) This work surface makes production possible regardless of physical limitations. A disabled wheelchair-bound person could use this system at a lower level. In our greenhouse, rows separating the plant stands are lined with pea gravel. The gravel works well for a mobile person and sloughs off water run-off. Another surface – even hard-packed earth - would be required for a person in a wheelchair. This system has far more applicability beyond an agricultural environment.

One minor lesson learned related to controlling heat later in the growing season. The Aluminet shade cloth appears to have helped lower the average daily temperature, although the jury is still out on the reversal in winter. This product is also more expensive than a traditional shade cover, although it has a multi-year guarantee and does not require installation and removal each year. Combining this with the misting system should keep the temperatures under control during the hottest months. However, the misting system increases humidity levels, and the chance of mildew. We need to work on this again in summer 2006 to come up with a misting schedule that helps lower the temperature without making the environment too wet and encouraging mold.

OUTREACH

In 2005, we participated in a field day sponsored by Innovative Farmers of Ohio. Press releases about our field day, among others, were distributed to media throughout the state of Ohio, including agricultural publications. Information on the field day was also provided to members of IFO and related organizations through a newsletter and was available on the organizations' websites. Brochures about field days for the season were sent throughout the state and linked through websites. Ohio State county extension agents were notified, and in the greater Washington County area (where we farm) the information was passed on via emails on a listserv, a press release to the local media, and the extension office's quarterly newsletter. Individuals involved in farming organizations, currently farming other crops, and generally interested in this project received individual phone calls or emails from us, specially requesting their attendance and participation.

Throughout the year, we continued to provide tours of our facilities to interested visitors (many non-farming guests at our bed and breakfast) and community

members. This SARE project is also featured on our newly designed website www.bramblecreekfarms.com

Cooperators

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Research

Participation Summary