SARE Report- Farmer/Grower Grant

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Title: Indoor Raspberry Production
Grant # FNE02-427
Goals:

There were three goals to the raspberry project.

1. To provide income from the farm during a time when operations are usually shut down.
2. To provide consumers with a local product, raspberries, when normally during these off months, supply of this product is imported.
3. To make use of farm/greenhouse during a time when normal operations are shut down

Update:

We farm 25 acres of ground. Our operation consists of custom beef, strawberries, raspberries, blackberries, peaches and a full line of vegetables. We use a 32x96 greenhouse for plug plants. We have added gooseberries, red, black and champagne currants and two varieties of elderberries. We have our own produce market stand which operates seven days a week during the months May through October. We also do two farmers markets weekly for a four hour period each. We do not spray chemical pesticides or herbicides. We "co-op" with other local farmers for products sold in our markets.

Cooperators for our particular raspberry project were Scott Rowe through our County Extension Office. He made several visits to our farm and provided us with plant analysis tests through the University of Maryland. He also helped set up an Open House tour early in the spring for our raspberry production.

Bob Rouse from the University of Maryland, Wye Research Center, has retired and was not replaced due to budget cut backs at the State level.

Joe Fiola, formally of Rutgers University, New Jersey has re-located and taken a position with the University of Maryland, Small Fruit Specialist and is heading up the Viticulture Program in Maryland at this time. Neither, Joe Fiola or Bob Rouse were available for consultation during our project thus far.

We have had contact with Entomologist, Mike Embrey, for field bee pollination, field management, and small fruit updates and advice. His services were made available to us through the University of Maryland, Wye Research Center.

Project Outline:

We initially purchased bare root plants of the Tullameen variety of raspberry. We planted 800 plants in one gallon pots in "pot-to-pot" spacing, double rowed, with five foot spacing between. The potted plants were initially grown outside lined next to the greenhouse on ground that was covered with filter cloth and chip stoned. Irrigation and fertilization were provided through trickle drip irrigation tape, with emitters spaced every 12 inches. Initially, a 60-90 day, slow release fertilizer was used to sustain plants through the spring and early summer. From summer through fall of the first year, fertilization was provided with water soluble fertilizer.

When the plants were dormant during the winter months, we pruned them back to a height of approximately 40 inches. We moved the one gallon potted plants inside the greenhouse early March. Due to the unusual severe cold months of the winter, 2002-2003, we were unable to bring the plants inside late December as originally planned. The

plants were spaced double row, "pot-to-pot" on a five foot center. We fertigated with drip tape inside the greenhouse with the same layout as outside. The plants were supported by metal fence posts and string using a basket weave process. The raspberry plants were protected by natural and beneficial insect controls. Pollination was provided by a colony of bumble bees. Fruits were harvested in May and June 2003, and the flora-canes were pruned from pots afterward. The primacane plants were transported in their pots outside to the area that was previously used for the outdoor operation.

Findings:

We were extremely happy with the successful growth results of the first year plants. However, after moving the plants inside and after pollination had occurred we developed problems with the aphids and two-spotted spider mites. We purchased natural biological controls to combat these pressures. The aphid pests were successfully overcome with lady bugs. The two-spotted mite situation was treated by numerous methods including the persimilis bug. Conditions persisted to a point where we could not effectively contain the pest. We lost 90% of our plants due to this condition.

Conditions that affected the outcome were the following:

We feel the time of year for our harvest contributed to the losses we incurred. The months of May and June were too warm for this raspberry greenhouse operation. If we were able to harvest our product during the months of March thru May, the disease pressures would have been limited and not conducive to the conditions we encountered.

We also thought that plant pot spacing should have been single-row, five foot centers between instead of the double rows so to provide more air circulation and maintain drier conditions.

We also experienced some boytritis and we culled the moldy berries.

The combination of all three conditions kept us busy combating the aphids and the spider mites. An aggressive, pro-active position must be taken on the spider mites before they take hold. The biological agents used were not able to control the pests so therefore losses were experienced.

Economic Findings:

We did not show a profit for our first year due to the tremendous loss we experienced. We would have harvested two ½ pints of fruit on the average per plant if all conditions were perfect. The raspberries were very large and extremely flavorful. The taste was so delicious we received many inquiries as to the variety and type of raspberry we had available. We were able to sell our fresh, locally grown raspberries at our local farm markets for $3.99 ½ pint with no complaints. We could have sold ten times the amount we did if they had been available. The highlight of harvesting this time of year was that we offered strawberries with raspberries which does not usually happen at the same time of the growing season. Generally, locally grown raspberries are not available when locally grown strawberries are harvested.

We would like to continue our raspberry production as we think this is a viable program when all factors for success are present. Our local newspaper did an article on our project and our Open House tour at the beginning of the harvest season. The write up sparked a local interest in our farm and demand for our products.

GREENHOUSE RASPBERRY OPERATIONS

Lockbriar Farms