Developing Sustainable Production Practices for Ribes (Currants and Gooseberries) FNE 99-262

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II. Goals of the project.

1. Improve the propagation and field planting techniques for Ribes.
2. Develop a stylet oil (summer oil) spray program to prevent mildew and blossom blight. Look for an effective way to control leaf spot (anthracnose).
3. Test four alley cover crop/interplant mulching systems.
4. Develop additional recommendations for the culture of Ribes that become obvious or are uncovered through consulting with other growers in the world..
5. Cooperate with Ron Prior and his work on the health benefits of black currants.

III. Updated information on the farms since project initiation:

Micosta Enterprises

Micosta Enterprises continues with the same three acres of production area at the home farm. NOFA certification has been dropped because the limited use of non-certifiable pesticides being used to control difficult to manage pests such as leaf spot on Ribes, peach scab, and brown rot. Plantings of Ribes have been expanded, and cuttings of varieties are made available to the public as needed.

Blue Roof Farms (Ray Tousey)

Plantings of Ribes have been expanded to a commercial scale. Gooseberries, red currants, and black currants are being produces for fresh market sales, and some value-added products. Initial trials of cordon training were done here, as well as pesticide trials, and about three acres are now in production.

Mountain Range Farms (Clara and Paul Kellner)

Five acres of red and white currants have been commercially planted. The commercial trials of using cuttings to fill in between plants were used to expand their planting. Plants are cordon-trained and IPM grown.

IV. Cooperators and their roles in the project:

Rodolfo Lopez: Do propagation trials with rooting of cuttings
Ray Tousey: Pesticide and mulching trials
Paul and Clara Kellner: Commercial trial for plant comparisontrial for one year cuttings vs one year planting stock

V. What was done in the project:

A summary of the activities of the project follows. The numbers correspond to the project goals

listed in item II.

1. Propagation and field planting
a. Cuttings were collected for the propagation trials for two seasons, both in September and in January. The original list of twelve cultivars was expanded to include additional cultivars from Oregon and New York. Cuttings harvested in September were placed basal end down in containers of water during the rooting period. Cuttings harvested in January were placed in the refrigerator and wrapped in a paper towel, and inside of a sealed plastic bag. Cuttings were kept moist and observed to check percentage rooting in March. Results were tabulated for common varieties.

b. Observations of cuttings versus plants used as field planting stock were made in 1999. The purpose of the plot was to compare planting of cuttings in the fall, to planting one year plants in the spring. Cuttings of black currants seemed to take off almost as quickly as the one-year plants, so we decided to do a trial. A field planting trial was set up in Fall of 1999 at the Craft farm in Western NY, and the Jutkofsky farm in Eastern NY. Both of these plots were lost in drought, so a replacement trial was set up at Mountain Range Farm in Fall, 2002, and this planting was successful. The Mountain Range Farm trial involved red, pink, and white currants in a five acre commercial planting.

2. Disease control- A trial using stylet oil and copper to control Ribes fungus diseases was set up at Blue Roof Farm. Eight common cultivars were represented and four types of applications, each with five plants. They include: a. control, b. only a prebloom and postbloom spray, c. a prebloom, postbloom, and additional spray every two weeks, d. a prebloom and postbloom spray, and additional sprays as needed. A 2% concentration of stylet oil was used with the four pound rate of C-O-C-S copper. When the spray combination of copper and oil was ineffective the same reps were set up with Nova fungicide.

3. The mulching trial was to be set up in the disease control plot, but the cooperating farmer decided that the trial would not be useful. He said that since extensive work has been done with apples and other crops, that he would rather not set up the trial. He uses plastic within the rows, and creeping fescue in the alleys, and after four years is satisfied with the system. The commercial field planting described in part 1 uses plastic within the planted row.

At Micosta an additional trial was done using straw as a mulch on a rep of 150 plants, and white on black plastic on another group of 150 plants. Strawberries were planted in the alley strips. Fifty each red currants, black currants, and gooseberries were included in the trial. (The strawberry test was done because of reported problems with black vine weevil being attracted to the strawberries and damaging the Ribes.)

4. Our technical advisor had the opportunity to travel to New Zealand, and Europe and to specialize more in Ribes culture. He is a resource for the industry and has produced some useful fact sheets, and continued applying for grants and doing research

5. Samples of black currant fruits were supplied to Ron Prior for initial tests to identify

phytochemicals present. This was an initial step for studying health benefits.

VI. Results and accomplishments

Results for the experiments described in part V are listed below. The numbers correspond to the numbers listed above.

1. Propagation and field planting.

a. For the group of cuttings taken in September, the following is a summary of results.

Black currants: all varieties initiated roots in six to ten days.

Red currants: all formed callus, and some rooted in ten to fourteen days.

Gooseberries: The cuttings rooted within one month. The cuttings of European-type gooseberries did not root, while American-types did.

TABLE

Black Currant Cultivars	
Ben Alder	100%
Ben Lomond	100%
Titainia	100%
Tsema	100%
Red Currants	
Blanka	100%
Red Lake	100%
Redstart	100%
Gooseberries	
Captivator	100%
Invicta	0%

b. For the group of cuttings taken in January, the following is a summary of the results.

Black currants: initiated roots or were callused by March.

Red currants: about 75% of the red currants had roots or callus by March.

Gooseberries: only about 25% of the gooseberry cuttings produced callus or roots.

TABLE (% rooting)

Black Currant Cultivars (From NY)	
American Black	20%
Black Down	90%
Black September	100%
Boskoop	90%
Consort	100%
Crusader	100%
Invigo	100%
Mendip Cross	50%

Noir de Bourgon	55%
Silver Gieters	60%
Silver Schwartz	60%
Willoughby	50%

Red Currant Cultivars

(From NY)	
Cascade	N/A
Cherry	100%
Fredonia	100%
Jonkeer van Tets	95%
Red Lake	90%
White Pearl	75%
White Imperial	70%

(from Oregon)	
Blanka	30%
Cascade	33%
Cherry	100%
Diploma	38%
Fay	29%
Heros	100%
Laxton#1	100%
Mason's	55%
Minn. 71	85%
Minn. 52	80%
Mulka	100%
NY 68	100%
NY 53	0%
NY 37	78%
NY 72	45%
Perfection	56%
Pomona	62%
Portal Ruby	56%
Primus	90%
Prince Albert	62%
Rolan	50%
Rondon	75%
Rosetta	100%
Rovada	100%
Rubina	40%
Stanza	70%
Stephens	25%
Tatran	50%
Versailles	22%

Viking	100%
Weisse Aus Juraburg	100%
White Imperial	100%
White Currant 1301	60%
White Dutch	100%
White Versailles	100%
Wilder	50%
Zitaxia	50%

Gooseberries
(From NY)

Glendale	0%
Green Hansa	63%
Joselyn	0%
Jumbo	33%
Leppa Red	40%
Mountain	0%
Oregon Champion	40%
Pitkiw	30%
Poorman	29%
Sylvia	0%
Welcome	50%

b. Red, white, pink, and black currants planted directly in the moist ground in September through October all rooted.

Figure 1

Figure 2

Figure 3

Figures 1,2, and 3 show cuttings in their first year of growth between one-year plants that were planted the spring before. They lag only one year behind the mother plants they came from.

Recommendations: Hardwood cuttings are best taken in the Fall whether planted directly in the ground, or held in cold storage for spring planting. Gooseberries are not easily rooted from hardwood cuttings in the Northeast, and could be more successfully rooted by layering or stooling.

If cuttings must be made in winter, they can be taken in January or February, wrapped in a moist paper towel, and placed in a zip-closeable storage bag. Minimum refrigerator temperatures should be 38-40 F to slowly initiate callus and root growth. Don't hold at 40 F after April, because fungus will begin to develop, and roots may grow too long. Planting in April is ideal, but if rooted cuttings must be held, hold them at 33F. Rooting hormones are not necessary.

Commercial planting in the field would be best done between September 15 and October 15 so that plants have time to root before the ground is too cold. If planting is done in October, and the weather is cooling rapidly, cuttings could be placed in water at room temperature for 5-7 days to develop callus and root initials. Abundant water is beneficial in the soil at planting to promote good rooting. Mulch can help to conserve water if it is dry.

Cuttings can be placed directly through plastic or organic mulch in their permanent spot in the field. It is a good idea to have some spare nursery-row grown plants planted at the same time cuttings are planted in a field. That way, there will be similar-sized plants available to fill in skips.

2. Disease control

After two years, the oil and copper spray became less effective than when the planting was young. Stylet oil controlled mildew, but neither stylet oil nor copper controlled anthracnose nor white pine blister rust. Nova fungicide was tried in the reps described above, and the prebloom/postbloom sprays followed by as-needed applications of spray effectively controlled all three fungus diseases. Further work with additional fungicides is being done as a follow-up.

Recommendations:

If mildew is the only problem, then stylet oil can be used to eradicate the disease with prebloom, postbloom, and as-needed sprays. If white pine blister rust and anthracnose are a problem, all three diseases can be controlled by Nova prebloom, postbloom, and as-needed sprays. Further recommendations will become available by spring of 2005.

3. Cover crop and interplant trial

The formal mulching and cover crop trial was discontinued as described previously. A five acre planting of plants using black plstic mulch, and one using white on black mulch showed no difference in affecting plant growth when one year plants were planted. Black plastic may heat up the ground more, and might have a deleterious effect on new cuttings by overheating in a hot year. After four years of observation, black root weevil did not become a problem when strawberries were planted in alleyways.

4. Some additional recommendations for cultivating Ribes

These tips were gleaned from growers and scientists in Europe and New Zealand.
a. Ribes plants benefit from organic mulch and drip irrigation.
b. Excessive nitrogen fertilizer can cause excessive vegetative growth and reduce yield.
c. White pine blister rust immune cultivars are available and desirable in the Northeast. Black currants are generally the most suceptible to white pine blister rust, while gooseberries are very resistant, and red currants a little less resistant.
d. Pruning, harvest, and spraying can be mechanized, and as little as 30 hours of labor will be necessary to maintain an acre of black currants in a year.
e. Ribes have a long storage life, and can be held for as long as six weeks at 32 F, and still maintain flavor.

5. Results of Ron Prior's work

Ron prior showed that black currants have twice the antioxidant capacity of blueberries, and that the antioxidant capacity varies by cultivar. The results were presented at the National Berry Conference 2000 in Primm, Nevada. The results are available on a power point presentation, and are being incorporated into further work being done under another SARE grant.

VII. Site conditions affecting results

a. Drought destroyed the first two trials of field - planted cuttings.
b. The planting recommendations for cuttings for September 15-October 15 are for the mid-Northeast. Moving further north may shorten the window, while moving further south may lengthen the window.
c. Insect populations and fungus pressure varies from site to site, and year to year. Black root weevils could be a problem elsewhere, and copper might be effective against anthracnose where there is less disease pressure for example.

VIII. Economic Findings

Ribes have not been widely planted in the Northeast. Prices for half-pints of currants or gooseberries for the fresh market can range from $18-36 per flat. The fruit is easy to sell to gourmet or ethnic stores, in farmers' markets, the restaurant trade, and in farm stands. Value added products have great potential for Ribes.

IX. Next steps for developing the industry

A SARE research and education grant has been proposed by participants in this farmer grant. Areas to be included are:
a. developing value-added products,
b. fungus control measures,
c. health benefits studies,
d. feasibility study,
e. plant selection and chance seedling trials,
f. dessert gooseberry classification,
g. CA storage of Ribes.

X. Why farmers plan to use the practice investigated

a. The practice of planting cuttings September 15-October 15 has been adopted because of the high success rate, with Fall planting being more successful than Spring planting.
b. Direct field cutting of plants is economically feasible and adopted by local farmers as an inexpensive way to plant a field.
c. Nova fungicide has been placed in the Cornell Pest Management Guidelines as a control of fungus diseases because it has been shown effective.

XI. Outreach Program
a. Various articles have been written by the project's technical advisor (see enclosed)
b. Meetings for growers and extension educators were attended and presentations that included our results were done.
1. Alberta Hort Congress, Edmunton, November, 19992. NE Fruit Agents' Training, Michigan, November, 1999
3. NE Fruit and Vegetable Grower Meeting, Sturbridge, December, 1999
4. NY Hort Society Meeting, Rochester, January, 2000
5. NY Berry Grower Ass. Mtg., Syracuse, Feb., 2000 and Albany, March, 2000
6. NE Black Currant Training, Hudson, March, 2000
7. HV Ribes Club Training, Hudson, April, 2000
Additional meetings have followed in 2001, 2002, and 2003 including results form this and two other SARE grants..

XII. Name and Date
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