

# NCR-SARE Youth Educator Grant Project

## Final Report Form

Please use this form to write the final report on your project. Use as much space as necessary to answer the questions. You are not restricted to the space on this form. The report may be prepared on a computer or handwritten (please write or print clearly) and needs to be submitted to the North Central Region - Sustainable Agriculture Research and Education (NCR-SARE) Office by March 31, 2013. The final payment of your grant will be awarded when NCR-SARE receives and approves your final report and final budget summary.

### 1. PROJECT IDENTIFICATION

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- Project Title: Direct Marketing Raspberries for a Healthy Community
- Project Number: YENC10-027
- Project Duration: March 18, 2011 – March 31, 2013
- Date of Report: March 22, 2013

### PROJECT DESCRIPTION AND RESULTS

#### BACKGROUND

The Lighthouse Youth Center at Paint Creek horticulture program began in 2006 when students built their greenhouse, and each year a new phase or learning opportunity is introduced. The students currently raise a variety of edible and decorative plants along with tilapia. Much of the produce and fish is used in the Center's kitchen or sold at local farmers' markets.

#### GOALS

The goal of the project was to teach the students to use classroom learning and hands-on experience to develop a positive set of skills to take home and to share their knowledge with their community as well as to make a modest profit.

#### PROCESS

Using product development strategies that have been refined with each new phase of the horticulture program, the Lighthouse Youth Center at Paint Creek Youth Educator and students began the project by consulting the Ross County Ohio State University Extension Educator about product choices. The Extension Educator stated that researchers have reported significant anti-oxidant benefits in black raspberries and, more significantly, no one in the area was growing black raspberries for commercial sale to the local market. The students researched sources to identify black raspberry plant varieties, to prepare the soil, and to market the product. Based on

their research, students selected three varieties of berries to support their horticulture project. Each group of students worked with one plant variety for the duration of the program. Students decided that these varieties were suitable for the winter hardiness zone (Zone 5B) in Ross County, Ohio:

**Jewel (Bristol x Dundee)** Released from the Cornell Small Fruit Breeding Program in Geneva, New York. It is one of the most popular black raspberry varieties. It produces excellent yields of superb quality berries. The fruit is glossy black in color, a large size, and has a rich raspberry flavor. It is an excellent choice for use in jams and jellies. Jewel is winter hardy and a very reliable choice. Zone 5-8

**Mac Black** Mac Black is a late-season variety that will extend the black raspberry season. Ripening after Jewel, Mac Black berries have excellent flavor, good size and production. Mac Black will benefit from a trellis system. Zone 5-8

**Bristol** Released from the Cornell Small Fruit Breeding Program in Geneva, New York. This black raspberry plant is a high-producing early variety whose upright growth and cluster formation make its berries very easy to pick. It has medium to large, firm, glossy fruit with the best black raspberry flavor. Moderately hardy but very vigorous, Bristol shows tolerance to powdery mildew. Zone 5-8

To maximize yields, students chose a site with full sun and great drainage, avoiding low areas. Raspberries were not planted where tomatoes, potatoes, peppers, or eggplant were grown within the past four years, because these crops carry a root rot called *Verticillium* that could also attack black raspberries. Students also removed any wild raspberry plant within approximately 600 feet of the growing area to reduce the risk of spreading diseases.

During the growing season, students provided the necessary care for the black raspberry variety their group selected. At the end of the season, the students compared yields, disease problems, and sales of the three varieties. Based on the knowledge accumulated through the project, students identified the most effective variety for future cultivation.

During the project, the students were assigned to four small research groups. Two of these small groups researched the health benefits of black raspberries and reported to the whole group of students and staff. The information gathered in this research was used in marketing the product. The students developed a brochure (A copy is included with this report.) and a poster board demonstrating these benefits and used these items in their vendor's booth at the Ross County Farmers' Market. The other two research groups examined the marketability and profitability of raspberries. This research included information presented in articles by other growers as well as a review of the sales data from booth sales at the Ross County Farmers' Market.

Professional staff including the Horticulture Specialist, the Science Teacher, and the Director of Program Services collaborated on this project. Project participants also worked with the local OSU Extension Office and relied on the laboratory available to Crop Production Services for soil samples and fertilizer application.

## PEOPLE

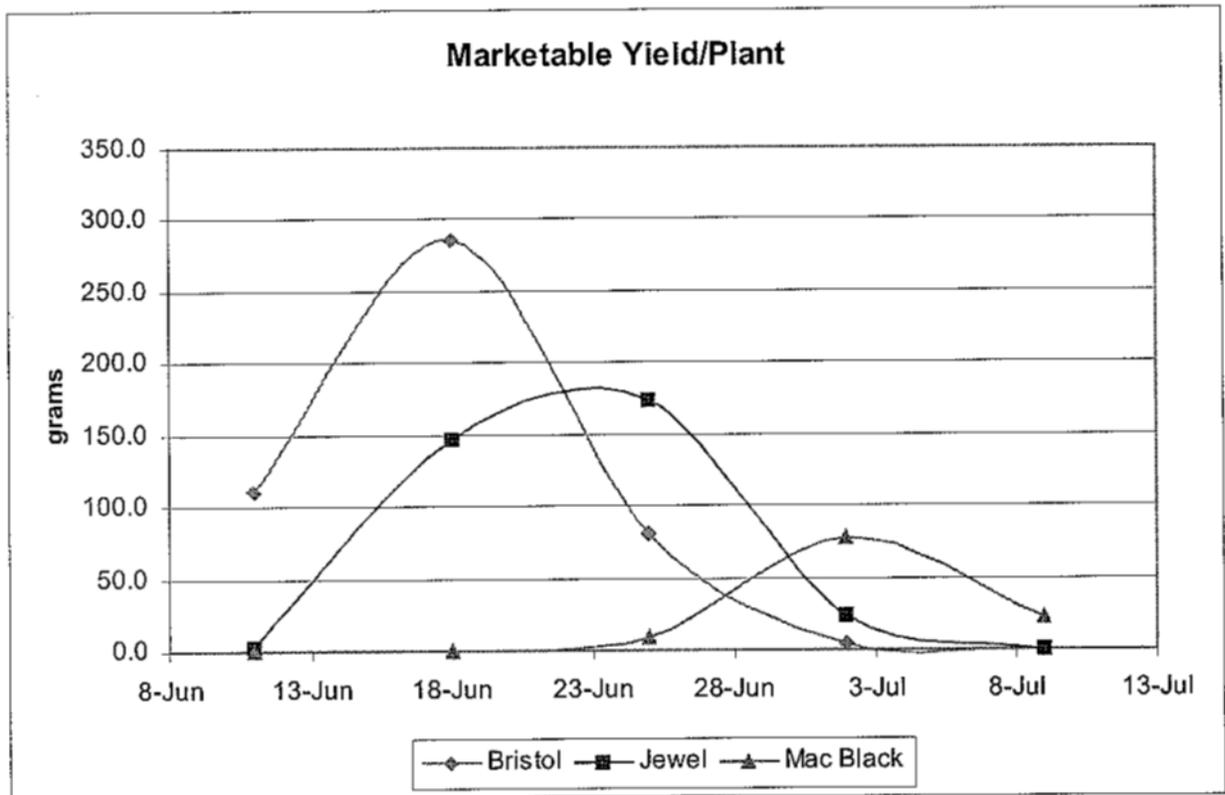
- *Rodney Throckmorton, Paint Creek Horticulture Specialist*, provided project development and oversight.
- *Brad Bergerfurd, OSU Extension at Piketon, Ohio* offered soil, weed control, and planting advice.
- *Joe Turner, Paint Creek Science Teacher*, taught students about the chemical reactions in the soil from weather, fertilizer, and plant management.
- *Mark Ingles, Director of Program Services*, served as needed in an advisory capacity.

## RESULTS

Using information and data from their research, students built trellises for the plants, established the planting beds and plants and maintained the crop during the growing season. Students discovered there were many types of trellises and recommendations for different types of trellises for various types of berries such as blackberries, yellow, black, purple and red raspberries. Students also wanted a design that would fit the budget for the project. The internet was a handy tool as well as the advice from the horticulturist at the Piketon O.S.U. Research Center. Students used 7-foot steel T posts every 15 feet with one strand of 14 gauge wire 3 feet off the ground on each side of the plant row, 3 feet on center. The longer post supported bird netting for the brambles. In order to set the post in a straight line, students set the end posts first and then ran a string from one end to the other before setting the rest and stretched the wire using a wire stretcher and come-along (cable puller).

Using advice from the horticulturist at the Piketon O.S.U. Research Center, students decided to space the plants 32” from each other in the row and space the rows 12’ apart. They used a two bottom plow and a scraper blade to make the raised beds. Due to having a very wet spring, planting was delayed until the first of June. To keep the plants in a dormant stage until they were put in the ground, the teams stored them in a refrigerator, keeping the roots moist but not wet. Before planting, students incorporated the proper amount of fertilizer into the soil. One to two hours before planting, the plant roots were soaked in water and an additive called Agri-Gel that helps maintain root moisture. Next, students used a hoe to make a trench two inches deep the length of the row. Students took special measures not to cover the roots with more than two inches of soil so suckers would develop from the roots. Students were cautioned to cover the roots immediately, keeping them from air as much as possible. An extensive period of rainfall in the spring of the first year delayed the planting season; the weather in the summer months produced a severe drought. As a result the first harvest of berries was too poor to analyze, and students determined that the plants would need another season to get established. For the first season, students were able to control the weeds by hand hoeing them, making sure not to go too deep and disturb the roots.

To optimize learning for the students, the professionals used data from other studies. In the following graph, the average total yield per plant for the Bristol variety was 484 grams, for Jewel it was 348 grams, and for Mac Black it was 110 grams. This information gave students a perspective of the life span of the project, and they resolved to move forward with plans for the second year.



During the second season, weed control was more difficult, and the project members decided to use Poast herbicide to control post-emergent grass herbicide. Students pulled the broadleaf weeds by hand.

This year, the students have followed the adjusted protocol and applied Casoron 4G pre-emergent herbicide in February. Because mulching was optional in the first and second season, students elected to bypass this application. Students expect to produce a long season of black raspberries this year.

## DISCUSSION

Students learned several important lessons:

1. Prepare the planting site in the fall prior to the spring planting; this will prevent late planting due to the soil being too wet to work.
2. Order the plants when you are ready to plant them.
3. Make sure to remove any wild raspberry plants within 600' of the planting site.
4. When planting commercially in Ohio, it is best to diversify by planting three different varieties, Mac Black, Bristol, and Jewel. Each will perform differently under different weather conditions and also will help you lengthen your marketing season.
5. Have the soil analyzed the first year and every other year thereafter to maximize your yields.
6. Water correctly; this is also a large factor in having a good yield.
7. There are many methods but chemical herbicide work best when growing black

raspberries commercially.

8. Use netting to protect your crop from birds.

## **OUTREACH**

Using a student-designed brochure and poster board display, students advertised their product at area farmers' markets. As reported in the progress report in 2012, the Chillicothe (OH) *Gazette* published a glowing article about the Paint Creek Horticulture program. Copies of the article and the brochure are included with this final report.

## **PROGRAM EVALUATION**

The NCR-SARE Program Youth Educator Grant was a boon to the Paint Creek Horticulture program. Boys who participated in the greenhouse project have said many times they like the work. Many of these young men have experienced numerous failures and roadblocks in their young lives, and the horticulture program is often the first success they have had in a long time. The generosity of this grant gave the boys one more skill that they can take home as they reenter their communities.