

## Allee Demonstration Garden

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### Introduction

The focus of the organic demonstration garden in 2000 was to conduct a third year trial on the use of copper wire in tomatoes for disease management, the most important problem in organic tomato production. There have been numerous reports about the successful use of copper wire and other organically approved methods, such as spraying with hydrogen peroxide, from growers nationwide. Results from the 1998 and 1999 Allee garden copper wire trials included increased tomato fruit production from plants containing the copper wire insert. Heirloom tomatoes were grown for the trial. The top five producers from the 1998 and 1999 trials were selected for the 2000 project.

### Materials and Methods

Eight plants each of five heirloom varieties were grown: Garden Peach, Spanish Sun, Springfield, Green Zebra, and Pineapple. All tomatoes were transplanted the last week of May. Tomatoes were caged with concrete reinforcement wire (5' x 2' diameter) and covered with black plastic mulch with grass-hay around the perimeter. Drip irrigation was used on an as-needed basis. Two plants of each variety were planted side-by-side. One plant did not receive any treatments (untreated) and the other plant received a copper wire insert into the stem of the tomato. When the treated plant's stem reached the diameter of a pencil, a 3-inch piece of 16-gauge copper wire was inserted through the center of the plant's stem (leaving equal amounts of copper wire on either side of the

stem) approximately a half-inch above the soil line. All tomatoes in the trial were sprayed weekly with 3% undiluted hydrogen peroxide as a preventive against fungal attack. Fruit yield was recorded at each harvest date until August 22, 2000. Leaves were analyzed for copper content at the end of the growing season.

### Results and Discussion

A total of eight plants of five varieties were used in the trial. A description of the varieties is contained in Table 1. The 2000 growing season in this area was virtually of drought proportions. From June 1 through August 30, approximately 4" of rain fell in the area. Even with the irrigation, tomatoes exhibited signs of stress throughout the growing season. Many blossoms dropped and fruit production was not as great as in 1998 and 1999. Disease became a problem midway through the growing season. Bacterial Speck was the diagnosis. With the exception of Green Zebra, in all varieties, there were greater fruit yields from plants treated with the copper wire and hydrogen peroxide (Table 2). Plants treated with hydrogen peroxide and the copper wire insert also seemed to maintain greater leaf mass compared with the untreated plants. Copper analysis showed no significant differences in copper levels between the treated and untreated plants. The untreated leaves contained 12 ppm copper, and the tomatoes treated with the copper wire contained 14 ppm copper. We expect to continue this trial as a replicated experiment in 2001 in order to assist organic growers with new techniques for improved disease management.

**Table 1. Description of tomato varieties.**

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**Garden Peach:** 75-85 days, heirloom, indeterminate. Abundant clusters of small yellow tomatoes with a pink blush. Skin is somewhat fuzzy resembling a peach. Flavor excellent—sweet and mild. Constant supply of uniform tomatoes with no breaks in production.

**Springfield:** 75 days, heirloom, indeterminate. Medium sized red/orange tomato. Smooth texture with a sweet flavor. Good producer.

**Pineapple:** 85 days, heirloom, indeterminate. Bicolor red and yellow fruit. Very large beefsteak tomatoes. Streaked with red both inside and out. Rich, sweet flavor. Good producer.

**Green Zebra:** 78 days, heirloom, determinate. Bright green, with stripes of a still lighter green. Small, round 2-4 oz. fruits have excellent flavor. Vigorous.

**Spanish Sun:** 78 days, heirloom, determinate. Deep red, medium to small tomatoes. Great flavor. Steady producer.

**Table 2. Copper wire tomato stem trial yields.**

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| Variety      | Total Weight (lb)-Not Treated | Total Weight (lb)-Treated |
|--------------|-------------------------------|---------------------------|
| Garden Peach | 112.5                         | 133.5                     |
| Pineapple    | 113                           | 147                       |
| Springfield  | 66.5                          | 97                        |
| Green Zebra  | 82                            | 78.5                      |
| Spanish Sun  | 87.5                          | 95.5                      |