

**Title:**

Strawberry Tip Production

**Extension / Outreach Proposal:**

Southern Region Small Fruit Consortium Extension / Outreach Proposal

**Investigators and Cooperators:**

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**Objectives:**

- 1) To evaluate the potential of Mid-South strawberry producers growing their own strawberry tips for plug plant production.
- 2) To evaluate the economic feasibility of Mid-South producers growing their own strawberry tips.

**Justification:**

In light of disease problems experienced during the past two strawberry seasons, many annual plasticulture strawberry producers are becoming apprehensive about tips and plants for another season.

Due to disease problems faced this planting season, several growers have switched plant or tip suppliers. Some of these growers received plants or tips infected with Phytophthora and/or Anthracnose. As a matter of fact, of the tips I received to use this fall, the 'Sweet Charlie' tips were infected with Phytophthora, while the 'Chandler' and 'Camarosa' tips were infected with both Phytophthora and Anthracnose. Other producers had already fumigated, bedded, and installed the drip tape and plastic when they received a call that they would not be receiving any plants this year. This was a result of Anthracnose being detected in nursery plants. In order to plant any strawberries, some of these growers had to switch to fresh dug, bare root plants. A couple of growers did not have the irrigation required to "start" fresh dug, bare root plants, and therefore were unable to set any plants this fall.

However, just changing plant or tip suppliers does not alleviate all of the anxiety. Due to demand for plants, the other primary supplier of tips tried to fill several additional tip orders and sent tips that were too small and/or of poor quality. There is serious concern that there will not be enough tips and/or plants to meet all of the needs of the 2004 planting season. This concern and apprehension has resulted in some growers asking what they can do to avoid this problem in the future. More specifically, some producers are asking what can be done to avoid dependence on Canadian grown tips.

Another issue that is driving this concern is the availability of 'Sweet Charlie' tips at the right time of year. Since 'Sweet Charlie' matures 5 to 10 days earlier than 'Chandler', several producers like

to grow a few 'Sweet Charlie' plants (20 to 30% of their total production) in order to have berries earlier in the season. Experience growing 'Sweet Charlie' has shown that it will not yield with 'Chandler'. However, if 'Sweet Charlie' is planted approximately 2 weeks earlier than the recommended planting date for 'Chandler' then it will set more fruiting crowns and produce more acceptable yields. However, to do this means that the producer has to receive 2 shipments of plants or tips. Most plant or tip suppliers do not want to deliver small quantities, therefore they will ship them using a commercial delivery service, which is quite expensive.

### **Methodologies:**

Four locations were selected for this project: 1) the University of Tennessee Plateau Experiment Station located on the Cumberland Plateau near Crossville; 2) Valley Home Farm near Wartrace; Bradley Kountry Acres near White House; and Malchow Produce near Cookeville. Registered and Certified bare-root dormant plants of 'Chandler' and 'Sweet Charlie' were purchased from North Carolina and planted into white plastic mulch at each location in early May. The trial at the Plateau Experiment Station also evaluated black plastic mulch. Blooms were removed from plants at 2 of the locations, while the other two locations did not remove blooms from the plants. Tips were harvested in July and August and stored in coolers at 33 to 34 degrees F until time for hooking. The tips were hooked in early to mid-August. Plug plants produced from some of these tips are now planted in a replicated trial at the Plateau Experiment Station to compare them to purchased tips and plug plants. Two of the producers also have plants grown from purchased tips with which to compare the productivity of the plants from tips they grew themselves.

### **Results**

Heavy and persistent rain made weed control between rows very difficult. Chemical weed control failed due to the excessive moisture, and wet soils prevented cultivation. The Plateau Experiment Station site used Telone C-35 as a fumigate prior to planting; and experienced serious weed pressure around the plants, reducing productivity. Weed control under the plastic was acceptable at all locations using methyl bromide as a pre-plant soil fumigant. 'Sweet Charlie' plants did not produce as many tips as did 'Chandler' plants (approximately 10 tips/plant vs. 15 or more tips/plant, respectively). Calculated expenses indicated that it was slightly cheaper to grow your own tips than to purchase tips (\$70/1,000 vs. \$75 to \$80/1,000, respectively). See Tables 1 and 2 for a brief budget of tip production. However, the extra labor required to produce their own tips was a significant burden on two of the producers. Observations taken during tip harvest revealed that one person could harvest and grade about 250 tips/hour.

Tip health was comparable to purchased tips. One case of anthracnose was found in one producers propagation bed. This case was attributed to a worker picking in anthracnose infested berries without proper decontamination prior to harvesting and grading tips.

### **Conclusions**

Tennessee and other Mid-South producers can feasibly produce their own tips. However, due to the extra labor requirements and sanitation requirements, it may not be for everyone. Growers will likely adopt this practice to ensure disease free plants and timeliness of tip production. It is not likely that anyone will grow their own tips to save money. Of the three producers involved, one said they would definitely do it again, one said they would never do it again, and the third is still trying to decide if they will do it again next season.

### **Impact Statement**

Mid-South strawberry growers can economically produce their own tips in order to ensure disease free plants and having plants at the desired time.

**Table 1. Strawberry Tip Production Costs per 1,000 Plants (10,000 to 15,000 Tips)**

<b>Input</b>	<b>Unit</b>	<b>Price (\$ / unit)</b>	<b>Total Cost (\$)</b>
Certified Plants	1,000	\$100.00/1,000	\$100.00
Plastic Mulch	1,000 ft	\$0.035/ft	\$35.00
Fumigant	27.5 lb	\$2.70/lb	\$75.00
Drip Tape	1,000 ft	\$0.016/ft	\$16.00
Pre-Plant Fertilizer	75 lb	\$0.13/lb	\$10.00
Water Soluble Fertilizer	50 lb	\$0.225/lb	\$12.00
Pre-harvest Labor	20 hr	\$8.00/hr	\$160.00
<b><i>Subtotal</i></b>			<b><i>\$408.00</i></b>
<i>Harvest &amp; Grading Labor</i>	<i>40 hr/10,000 tips</i>	<i>\$8.00/hr</i>	<i>\$320.00</i>
<b><i>Total</i></b>			<b><i>\$728.00</i></b>

**Table 2. Production Costs/1,000 Tips at Various Tip Yields**

<b><i>10 Tips/Plant</i></b>	<b><i>15 Tips/Plant</i></b>	<b><i>20 Tips/Plant</i></b>
<i>\$73/1,000 tips</i>	<i>\$60/1,000 tips</i>	<i>\$53/1,000 tips</i>