

## **2003 Strawberry Plasticulture Winter Protection Study**

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Plasticulture strawberry production is a relatively new innovation for Ohio growers. One of the main advantages of the system is a potentially earlier harvest providing a competitive edge in the market place relative to conventional matted row production systems. Another potential advantage is reduced environmental impact arising from a simpler pest management system. In certain settings there is the potential for higher yields relative to traditional matted row production systems. Challenges include: higher per acre cost, acclimation of suitable varieties to Ohio, and general lack of experience with the system among producers, researchers and Extension personnel.

This trial compared four winter protection methods: straw, 0.9 and 1.5 oz floating row cover, and a no-cover control.

### **METHODS:**

'Chandler' strawberry tips, obtained from where Strawberry Hill Inc., Bunn NC, were planted in 50 cell trays containing Metro Mix 360 soilless media and placed in the greenhouse at Southern States Community College on August 9<sup>th</sup>. Tips were grown for four weeks with an average day temperature of 75 degrees F and an average night temperature of 65 degrees F. Planting media was kept continually moist with a mist system to promote root development. The resulting plugs were transplanted to the field (OSU Enterprise Center, Hillsboro) using a three-point hitch water wheel planter and watered in with Peters 20-20-20 starter fertilizer. The soil is a Haubstadt Silt loam. Field preparation included pre-plant application of 60 units each of nitrogen, phosphorus, and potassium, plowing, disking. A raised bed was formed with a Redick Fumigation bed shaper and covered with black plastic mulch. Trickle irrigation tape was installed under the mulch. Strawberry plants were planted in double rows with 12 inches between rows and planted on September 13, 2002.

The floating row cover was put in place on November 12<sup>th</sup>, straw was put down on November 26<sup>th</sup>. The plant growth was monitored throughout the winter. To control weed growth between rows, annual rye grass was seeded prior to berry planting. The rye grass was then killed off in the spring with an application of Poast EC (sethoxydim) at 2.5 pints/ac + 2 pint of a crop oil concentrate. A standard commercial fungicide program was followed to control disease.

Petiole nitrate levels were monitored and calcium nitrate injected through the trickle tape in the Spring as necessary and through harvest to maintain optimum plant growth and berry production.

### **RESULTS:**

There were no statistically significant differences among treatments for marketable pounds per plant, marketable pounds per acre, marketable fruit per acre or average fruit weight either in the early harvest

(Table 1) or total season (Table 2). Early yields ranged from 1764 - 3134 lbs per acre and total season yields ranged from 7204 - 11235 lbs per acre. Average fruit weight for the season ranged from 1.29 oz. to 1.36 oz.

**Table 1. Early Harvest (May 21-May 30)**

<b>Early Season Harvest</b>				
<b><u>Treatment</u></b>	<b><u>Marketable lbs./plant</u></b>	<b><u>Marketable lbs./acre</u></b>	<b><u>Marketable fruit/acre</u></b>	<b><u>Average Fruit Wt. (Oz.)</u></b>
Control	0.17	3134	62955	1.54
Straw	0.1	1764	37955	1.43
.9 oz. Cover	0.14	2502	57045	1.38
1.5 oz. Cover	0.15	2717	61364	1.32
<b>LSD</b>	<b>NSD</b>	<b>NSD</b>	<b>NSD</b>	<b>NSD</b>

**Table 2. Total Harvest (May 21 - June 17)**

<b>Total Season Harvest</b>				
<b><u>Treatment</u></b>	<b><u>Marketable lbs. per Plant</u></b>	<b><u>Marketable lbs. per Acre</u></b>	<b><u>Marketable Fruit per Acre</u></b>	<b><u>Average Fruit Wt. Oz.</u></b>
Control	0.62	10806	246818	1.36
Straw	0.64	11235	267045	1.35
.9 oz. Cover	0.41	7204	187045	1.22
1.5 oz. Cover	0.51	8890	207955	1.29
<b>LSD</b>	<b>NSD</b>	<b>NSD</b>	<b>NSD</b>	<b>NSD</b>

## **DISCUSSION**

While the Winter of 02-03 was significantly colder than the Winter of 02-03, we did not see any yield advantage from covering the plants. This was probably due to the fact that there was significant snow cover throughout the season insulating the plants and preventing winter injury, desiccation and heaving. Growing conditions during the Spring were excellent with mild temperatures and adequate rainfall.

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