

Extending local strawberry production using day neutral cultivars and low tunnel technology

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Opportunities to produce strawberries for five months of the year now exist with the merging of new day neutral cultivars, particularly Albion, with low tunnel technology using plastics that exclude much of the ultraviolet and infrared radiation. Studies were conducted 1) with various day neutral cultivars, 2) with various plastic covers, 3) with varying planting dates, and 4) with grower-cooperators. After four years of research, the following procedure is recommended for growing and producing day neutral strawberries.

Establish raised beds (18 inches or wider) in late fall or early spring so they can be planted as soon as possible in spring. Each bed should have a trickle irrigation line attached to a fertilizer injection system. Cover each bed with white plastic, and plant Albion in a staggered double row, with plants 9 – 12 inches apart in each row. Use a tool that will insert roots into the bed while disturbing the plastic as little as possible.

Fertilize the planting with 2 lbs of actual nitrogen per planted acre per week for the first few weeks after planting. Remove the flowers for the first three weeks, or until vigorous new leaves appear from the crown. Plant grass seed between the rows, or lay a landscape fabric or straw mulch to prevent mud from splashing on the berries.

Install tunnels when plants begin to throw new flower trusses. Cover the tunnels with 4 to 6 mil plastic, preferably with a type that excludes ultraviolet light and reduces infrared radiation. Dubois Agrinova (<http://www.duboisag.com/>) sells kits with plastic that has predrilled holes for ventilation when the plastic is lowered. The cost for the tunnel kits is \$450 per 100 foot of row. This cost is recovered in the first year.

At least one side of the plastic should remain up under normal weather conditions to allow for pollination and to prevent heat build-up. Infrared-inhibiting plastic does provide some shade which is beneficial for the plants, so allow them to be shaded by the plastic if possible. Lower the sides when the weather is cold or stormy. A benefit of the plastic is the near elimination of Botrytis gray mold from water exclusion and inhibition of spore germination from the reduction of UV light.

Once plants begin to set fruit, increase the nitrogen to 5 lbs/acre per week. Failure to provide weekly applications of nitrogen was a major reason why our grower-cooperators had lower yields than expected.

Harvest the fruit at least twice a week. Peak yields will occur in late August, with production occurring through October. Fruit quality from Albion has been excellent. Fortunately, spotted winged drosophila damage has been minimal provided that fruit is harvested regularly and not left rotting in the field.

Once the temperature falls below 40F, lower the tunnels. If the temperature falls below 30F in mid-October, cover the entire field with row cover for the night. This will extend the harvest season should the weather warm again.

Once harvest is over, lower or remove the plastic and cover the beds with straw. Albion does not overwinter well in cold weather. Remove the straw in late March/early April and allow these plants to fruit again. The tunnel can be used to protect from late spring frost.

Over the course of the first year with an April planting date, we harvested 20,000 lb/acre, which is as much as a good June-bearing cultivar will produce in one season. Average berry size of Albion was 15 grams, which is the size of a medium king fruit on a June-bearer. Flavor is excellent. Production peaked in early September with two quarts (four pints) of berries per 10 feet of row, but in October plants consistently produced about a quart of berries every 10 feet of row until a hard frost.

In spring of the second year, a large flush of fruit is produced about the same time as that of early June-bearers. Tunnels can be used to accelerate flowering if desired. Spring yields can be almost as much as the previous year's yield. We have not found it to be economical to hold over these plants into a second summer and fall. Rather, we grow them for about 15 months and then remove them.

We found that, while attractive, growers may not be able to "fit" such a crop into their farm operation since day neutrals require constant attention. Plastic has to be raised and lowered, plants have to be fertilized weekly, and once harvest begins, it lasts for months. However, the rewards can be great. Growers have reported gross sales of \$50,000 per acre from Albion in New York State. Given that the cost of materials for an acre is about \$44,000, sales can pay for the materials in the first year. In the second year, costs include plants, fertilizer, labor and harvest. Conservatively, this can be \$20,000, but with sales approaching \$50,000, the margins are quite good.

We believe that this technology will transform strawberry production in the Northeast over the coming decade.