

Plasticulture Strawberry Season and Market Extension Systems Field Research Studies 2014

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Plasticulture strawberry production is becoming more popular as a way for Ohio growers to extend the strawberry harvest and marketing season, thus capturing a great profit from the demand for local strawberry production. One of the main advantages of the system is a potential earlier harvest providing a competitive edge in the market place relative to conventional matted row production systems. Other potential advantages include higher yield and reduced environmental impact from a simpler pest management system, enhance food safety and fruit quality issues and reduced harvest labor costs due to increased harvesting efficiency. Challenges include: lack of experience with the system among growers, Extension personnel and researchers, production costs, winter protection techniques and adaptability of suitable varieties to Ohio's climate.

Objectives of research study:

These 2014 field research trials investigated potential season extension improvements in plasticulture strawberry production. Previous research has identified a functional and profitable system, but new variety testing, new season extension techniques and winter row cover management still need to be explored and optimized to maximize grower financial returns.

Scope of Research:

Trials were established at the OSU South Centers/Piketon Research & Extension Center at Piketon, Ohio (lat. 39.07° N, long. 83.01° W, elevation 578 m). At each harvest yield data and fruit quality attributes were observed and recorded. Plant growth characteristics, fruit quality attributes, insect and disease susceptibility and tolerance and winter injury percentages were monitored and recorded.

Methods:

Fall 2013 planting

Strawberry tips were stuck on August 13, 2013 into 50 cell plug trays containing Metro Mix 360 soilless media and placed on weed mat under mini wobblers during the month of August. Planting media was kept moist using an electronically timed misting schedule to promote root development. The resulting plugs were transplanted to the field on September 12, 2013 by waterwheel transplanter and watered in with 20-20-20 water soluble starter fertilizer. Strawberry plants were planted in double rows with 12 inches between plants. Field preparation included application of 60 units of nitrogen, phosphorus, and potassium pre-planting, and formation of a raised bed. Chateau herbicide

was applied prior to the bed being covered with black plastic and trickle irrigation under the mulch. Beds were formed 6 foot on center with a commercial bed shaper. The initial row cover treatments were applied on November 19th. The second row cover treatments were applied on January 16th. Plant growth was monitored and recorded throughout the winter. To control weed growth, annual rye grass was seeded between the rows of plastic prior to planting. The rye was killed off in the spring with an application of Poast EC at 2.5 pints / ac plus 2 pint of a crop oil concentrate. To control disease, a standard commercial fungicide program was followed. Calcium nitrate was injected through the drip tape beginning in early and continued through harvest in an attempt to maintain optimum plant growth and berry fruit quality.

Outcomes & significance of outcomes:

Table 1. Plasticulture Strawberry Cultivar Evaluations

Cultivar	Marketable lbs. per Acre	Marketable Fruit per Plant	Marketable lbs. per Plant	Average Fruit Weight (oz.)
Benicia	10826	16.72	0.74	0.71
Camarosa	9293	19.82	0.64	0.51
San Andreas	8570	12.82	0.59	0.73
Camino Real	7098	10.32	0.48	0.75
Chandler	6789	12.25	0.46	0.61
Albion	4810	7.62	0.33	0.69
Radiance	3420	7.58	0.23	0.49
Festival	3311	7.74	0.228	0.47
LSD	2756	4.66	0.18	0.06

Table 2. Winter Protection Evaluations

Treatment	Marketable lbs. per Acre	Marketable Fruit per Plant	Marketable lbs. per Plant	Average Fruit Weight (oz.)
1	7171	12.47	0.49	0.63
2	6598	11.91	0.45	0.61
3	6568	11.06	0.45	0.65
5	6354	11.10	0.43	0.63
6	6000	9.80	0.41	0.67
4	5266	8.75	0.36	0.65
LSD	1850	3.29	0.12	0.06

Table 3. Winter Protection Row Cover Treatments

Treatment Number	Row Cover Treatment applied
1	.9 ounce applied October
2	1.25 ounce applied October
3	.55 ounce applied October plus .55 ounce applied January
4	.9 ounce applied October plus .55 ounce applied January
5	1.25 ounce applied October plus .55 ounce applied January
6	1.25 ounce applied October plus .9 ounce applied January