

Strawberry Research Studies 2018

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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 2018 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.

Scope of Research:

This study was conducted at the Ohio State University (OSU) South Centers/Piketon Research & Extension Center at Piketon, Ohio (lat. 39.07° N, long. 83.01° W), elevation 578 feet. The experimental soil is designated as a DoA—Doles silt loam, with 0–3% slopes. It is a deep, nearly level and somewhat poorly drained soil. Typically, the soil surface is a brown, friable silt loam about 20 cm deep and beneath this the subsoil is about 18.5 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 2017 planting

Strawberry tips were stuck on August 9, 2017 into 50 cell plug trays containing Metro Mix 360 soilless media and placed on stone under mini wobblers during the month of August. Planting



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media was kept moist using a electronically timed misting schedule to promote root development. The resulting plugs were transplanted to the field on September 15, 2017 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 rows and plants. Field preparation included application of 60 units of nitrogen, phosphorus, and potassium pre-planting, and formation of a raised bed. Prowl H20 herbicide was applied prior to the bed being covered with black plastic and trickle irrigation under the mulch. Beds were formed with a commercial bed shaper. After transplanting to the field two applications of calcium nitrate was applied through the drip tape 5.25 pounds was applied each fertigation. The floating row cover was put in place on December 11th. Plant growth was monitored and recorded throughout the winter. To control disease, a standard commercial fungicide program was followed. Calcium nitrate was injected through the drip tape beginning in early April and continued through harvest in an attempt to maintain optimum plant growth and berry fruit quality. Greenhouse Towers were planted on November 21st using plug plants that was started in August. Towers consisted of 6 pots with four plants per pot. Pots were filled with a Metro Mix 360 soilless media. Fertilizer was applied at each irrigation cycle throughout the growing period. Greenhouse harvest began February 2nd with the last harvest August 20th.

Outcomes & significance of outcomes:

The cultivar evaluation study looked at sixteen different strawberry cultivars. Total marketable pounds per acre ranged from 946 lbs. (Berrielle) to 12,603 lbs. (Albion). Marketable fruit per plant ranged from 2.71 fruit (Sweet Ann) to 17.57 fruit (Chandler). Average fruit weight ranged from 0.12 oz. (Berrielle) to .98 oz. (Scarlet).

The day neutral cultivar evaluation study looked at five cultivars harvested spring and only four being harvest in the summer. Spring total marketable pounds ranged from 946 lbs. (Berrielle) to 12603 lbs. (Albion). Marketable fruit per plant ranged from 2.71 fruit (Sweet Ann) to 13.81 fruit (Albion). Average fruit weight ranged from .12oz. (Berrielle) to .93 oz. (Sweet Ann). Summer total marketable pounds ranged from 787 lbs. (Sweet Ann) to 2136 lbs. (San Andreas). Marketable fruit per plant ranged from 2.11fruit (Sweet Ann) to 7.48 fruit (Cabrillo). Average fruit weight ranged from .27 oz. (Cabrillo) to .35 oz. (Albion).

The greenhouse strawberry study looked at two cultivars grown in towers. Total marketable pounds ranged from 9180 lbs. (San Andreas) to 9378 lbs. (Albion). Marketable fruit per plant ranged from 10.71fruit (San Andreas) to 11.21 fruit (Albion). Average fruit weight ranged from .47 oz. (San Andreas) to .48 oz. (Albion).

Table 1: Yield from Day Neutral Evaluation Spring Harvest 2018.

<i>Cultivar</i>	<i>Fruit per Plant</i>	<i>Pounds per Plant</i>	<i>Pounds per Acre</i>	<i>Average Fruit wt. (ounces)</i>	<i>Soluble Solids</i>
<i>Albion</i>	13.81 A	0.72 A	12603 A	0.84 A	5.25 A
<i>San Andreas</i>	11.8 A	0.63 BA	11002 BA	0.84 A	5.75 A
<i>Cabrillo</i>	12.36 A	0.56 B	9902 B	0.72 A	5.5 A
<i>Sweet Ann</i>	2.71 C	0.14 C	2600 C	0.93 A	6.75 A
<i>Berrielle</i>	6.92 B	0.05 C	946 C	0.12 B	4.5 A
<i>LSD</i>	2.68	0.013	2283	0.21	3.11

*Treatment with the same letter are no significantly different.

Table 2. Yields from Day Neutral Evaluation Summer Harvest 2018.

<i>Cultivar</i>	<i>Fruit per Plant</i>	<i>Pounds per Plant</i>	<i>Pounds per Acre</i>	<i>Average Fruit wt. (ounces)</i>
<i>Albion</i>	2.28 BC	0.048 B	842.7 B	0.35 A
<i>San Andreas</i>	5.57 BA	0.115 A	2008.2 A	0.32 BA
<i>Cabrillo</i>	7.48 A	0.122 A	2136.1 A	0.27 B
<i>Sweet Ann</i>	2.11 C	0.045 B	787.2 B	0.34 A
<i>LSD</i>	3.32	0.058	1024	0.05

*Treatment with the same letter are no significantly different.

Table 3: Yield from Cultivar Evaluation 2018.

<i>Cultivar</i>	<i>Fruit per Plant</i>	<i>Pounds per Plant</i>	<i>Pounds per Acre</i>	<i>Average Fruit wt. (ounces)</i>	<i>Soluble Solids</i>
<i>Chandler</i>	17.57 A	0.64 BA	11235 BA	0.58 FE	6.75 BA
<i>Camino Real</i>	16.01 BA	0.72 A	12616 A	0.73 DC	4 C
<i>Flavor Fest</i>	13.77 BA	0.59 BAC	10340 BAC	0.68 DE	6.75 BA
<i>Fontiras</i>	11.79 BCD	0.65 BA	11336 BA	0.88 BA	5 BAC
<i>Ruby June</i>	12.68 BC	0.54 BDC	9378 BDC	0.67 DE	6.5 BAC
<i>Sweet Charlie</i>	7.82 EFD	0.2 EFG	3531 EFG	0.42 G	7.25 A
<i>Festival</i>	13.73 BA	0.44 DC	7730 DC	0.51 GF	6.75 BA
<i>Sensation</i>	9.31 ECD	0.37 ED	6465 ED	0.64 DFE	7 BA
<i>Scarlet</i>	4.06 FG	0.25 EF	4385 EF	0.98 A	6 BAC
<i>Lucia</i>	4.5 FG	0.2 EFG	3518 EFG	0.71 DCE	7.5 A
<i>Camerosa</i>	17.8 A	0.71 A	12429 A	0.64 DFE	7.25 A
<i>San Andreas</i>	11.8 BCD	0.63 BA	11002 BA	0.84 BC	5.75 BAC
<i>Cabrillo</i>	12.36 BC	0.57 BAC	9902 BAC	0.72 DC	5.5 BAC
<i>Sweet Ann</i>	2.71 G	0.15 FG	2600 FG	0.93 BA	6.75 BA
<i>Berrielle</i>	6.92 EFG	0.05 G	946 G	0.12 H	4.5 BC
<i>Albion</i>	13.81 BA	0.72 A	12603 A	0.84 BC	5.25 BAC
<i>LSD</i>	4.32	0.17	3003	0.13	2.53

*Treatment with the same letter are no significantly different.

Table 4: Yields from Greenhouse Strawberry Production 2018.

<i>Cultivar</i>	<i>Fruit per Plant</i>	<i>Pounds per Plant</i>	<i>Pounds per 2,700 sq. ft.</i>	<i>Average Fruit wt. (ounces)</i>	<i>Soluble Solids</i>
<i>Albion</i>	11.21 A	0.33 A	9378 A	0.48 A	7.44 A
<i>San Andreas</i>	10.71 A	0.32 A	9180 A	0.47 A	7.56 A
<i>LSD</i>	1.52	0.04	996	0.02	1.89

*Treatment with the same letter are no significantly different.

