

# Plasticulture Strawberry Season and Market Extension Systems and Cultivar Evaluation Field Research Studies 2013

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Plasticulture strawberry production is being adopted by Ohio growers as a popular way to extend the strawberry harvest and marketing season, thus capturing a great profit from the high demand for local strawberries. 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 modified pest management system, enhanced food safety and fruit quality issues, and increased harvest labor efficiency. Challenges include: lack of experience with the system among growers, Extension personnel and researchers, along with higher planting costs, lack of enhanced winter protection techniques, and adaptability of suitable varieties to Ohio's climate.

## **Objectives of research study:**

The research objective was to investigate potential season extension improvements in plasticulture strawberry production. Previous research has identified a functional and profitable system, but new variety testing, enhanced season extension techniques, and winter row cover management and winter protection need to be further explored and optimized to maximize grower financial returns.

## **Scope of Research:**

Replicated field research trials were established at the Ohio State University South Centers/Piketon Research & Extension Center at Piketon, Ohio (lat. 39.07° N, long. 83.01° W, elevation 578 m). Yield data, plant growth characteristics, fruit quality attributes, insect and disease susceptibility and tolerance, and winter injury symptoms were monitored and recorded.

## **Methods: Fall 2012**

Strawberry runner tips were stuck on August 2, 2012 into 50-cell plug trays containing Metro Mix 360 soilless media and placed on a weed mat under mini wobbler micro sprinklers throughout the month of August. Planting media was kept continually moist using an electronically timed misting schedule to promote root and plant development. Resulting plug plants were transplanted to the field on September 5, 2012 except Albion cultivar plug plants that were transplanted on September 6, 2012. Additional experimental cultivars were obtained from the Rutgers University strawberry breeding

**Comment [JB1]:** Is this a certain cultivar? You mention Albion cultivar a little later in the paragraph.

**Comment [JB2]:** Need something here in place of "was" .... Maybe "Albion cultivar plug plants were transplanted...."

program and were hand-transplanted into a non-replicated observation trial on September, 24, 2012. All plug plants were transplanted by hand and watered in with 20-20-20 water soluble starter fertilizer. Strawberry plants were spaced in double rows with 12 inches between rows and plants. Field preparation included a pre-plant broadcast application of 60 pounds of nitrogen, phosphorus, and potassium prior to formation of raised beds. Chateau herbicide was applied prior to the bed being covered with black plastic and drip irrigation applied under the mulch. Beds were formed and plastic and drip irrigation was applied with a commercial bed shaper plastic layer combination unit. Plant growth was monitored and recorded throughout the winter.

### Spring 2013

To control disease, a standard commercial fungicide program was followed. Calcium nitrate was applied through the drip tape beginning in early April and continued through harvest to maintain optimum plant growth and berry fruit quality.

#### Outcomes & significance of outcomes:

Even though there were some below average winter temperatures the week of January 20th to 26<sup>th</sup> with many areas having limited snowfall during this time period, it was an exceptional harvest year for plasticulture strawberry growers throughout most of Ohio in 2013. Yields were some of the highest reported in research trials and by growers since this production technique began in Ohio in 2000. Fruit quality and brix levels were also some of the best and highest in many years.

The plasticulture strawberry industry is growing steadily in Ohio. An estimated 100-plus acres of Ohio plasticulture berries were planted in 2012 with many “new” growers planting throughout Ohio. These field experiments helped to continue reducing production risk, maximizing yields, and improving grower returns by extending the strawberry harvest and marketing season for Ohio.

A plasticulture strawberry twilight meeting and field day was conducted on May 16, 2013 to showcase the field research trials and to share preliminary research results with over 50 growers, industry representatives, and Extension faculty and staff.

2013 Winter Protection Yield Data, Piketon Ohio.

Treatment	Marketable Fruit/Plant	Marketable lbs./Plant	Marketable lbs./Acre	Average Fruit Weight (oz.)
3	41.367 A	1.62 A	23522 A	0.62807 A
4	39.644 A	1.5017 AB	21805 AB	0.61724 A
5	38.248 A	1.4711 AB	21360 AB	0.60874 A
1	35.158 A	1.3266 AB	19262 AB	0.60806 A
6	34.111 A	1.2929 B	18773 B	0.60552 A
2	33.8 A	1.2787 B	18567 B	0.60545 A
LSD	9.67	0.3181	4619	0.0665

2013 Row Cover Treatments.

Treatment	Row Cover Weight
1	.9 oz. alone applied October
2	1.25 oz. alone applied October
3	1.25 oz. applied October plus .9 oz. applied January
4	.55 oz. applied October plus .55 oz. applied January
5	.9 oz. applied October plus .55 oz. applied January
6	1.25 oz. applied October plus .55 oz. applied January

2013 Cultivar Yield Data Piketon Ohio.

Cultivar	Marketable Fruit/Plant	Marketable lbs./Plant	Marketable lbs./Acre	Average Fruit Weight (oz.)	Brix
Albion	43.65	1.62	28342	.59	7.00
Chandler	38.10	1.45	25284	.61	6.16
Polomar	20.00	1.03	17963	.82	5.00
Stella	20.16	.90	15750	.71	7.66
Camerosa	21.90	.82	14396	.60	6.83
San Andres	13.91	.67	11715	.76	8.00
LSD	<b>10.76</b>	<b>.41</b>	<b>7268</b>	<b>.08</b>	<b>NA</b>