Organic Strawberries- plasticulture vs matted row, 2018 & 2019 SARE Farmer Trial at Red Fire

NORTHEAST SARE
Sustainable Agriculture Research & Education

RED FIRE FARM
Organic Produce, Plants & Flowers

Weeds are always one of the top worries when it comes to growing organic strawberries.

Strawberries are a low growing plant that loves to be easily outcompeted by weeds.

Without herbicides, many hours of cultivating, hoeing and hand weeding can be spent, and still at harvest more often than not the weeds are on the verge of overtaking the field.

SARE Farmer Grant FNE-18-913

System Modifications and Varieties for Extending the Organic Strawberry Plasticulture Ripening Season in Massachusetts.

- **Project Summary:**
- **Based on when strawberries grown with the traditional matted row system ripen, local consumers expect locally grown strawberries to be ripe all of June and extending into early July. Organic strawberry growers find that due to the low growing non competitive growth habit of strawberry plants, the matted row production system can be very costly to establish and maintain due to the need for multiple hoe & hand weeding passes. Fall planting of the Chandler variety as plugs into black plastic mulched beds, combined with winter row cover (instead of straw mulch) has emerged as an alternative growing system for organic growers, and has proven to require much less weeding labor than matted row. However, even though Chandler is rated as a midseason variety by most strawberry plant nurseries, in this plasticulture system growers find that early ripening starting in mid May, but ending by the 2nd week of June is the norm. This schedule leaves a hole in ripe berries for late June & early July, weeks when consumers expect abundance! The goal of this project is to find ways to modify the strawberry plasticulture system both by trying different varieties to see if they will grow well and ripen later when grown with the plasticulture system, and also by using other horticultural system modifications to delay ripening in the plasticulture system. Results will be shared with other farmers at a twighlight meeting, at organic farmer winter conferences, and via newsletters read by organic produce farmers.**

First the Basics:

June bearing strawberries can be grown in New England using two basic systems:

Matted Row is the traditional way that strawberries are historically grown in New England

&

Plasticulture is emerging as a popular alternative production system, especially for organic growers due to the weed suppression help of the plastic.

Prior to planting a field to strawberries with either system, a good weed suppressive cover crop is essential. Sorghum Sudan is believed to suppress strawberry root diseases. Buckwheat is a good catch crop to use prior to fall planted plasticulture fields. Rye with vetch is also a common option.

For the blocks that became the 2018 planted plasticulture blocks in the SARE trial, an early spring planted oat/ pea cover crop was established and allowed to grow to flower prior to preparing the field for planting in August.

Rotation:

Due to the build up of soil diseases, organic strawberries seem to need 6 years or longer before repeating strawberries into the same field space!

-brassicas are considered a beneficial preceeding crop for strawberries. I often follow cabbage, broccoli or salad brassicas. Mustard cover crops are also reported to be useful for biofumigation.

-Solanacious crops and raspberries are not good rotational crops for strawberries, as they share some of the same soil born diseases.

Typical Schedule For Matted Row Production at Red Fire Farm:

-bare root plants transplanted in mid May. Plants spaced with 1 row in center of bed, 12” in row spacing using water wheel transplanter.

-rows mechanically cultivated every 7 -10 days all summer and fall. First use basket weeder when plants are small for first pass, then mostly lilliston rolling cultivator as plants get bigger.

-flowers trusses pinched off of mother plants in early summer.

-in addition to mechanical cultivation, hoeing and hand weeding is done as needed all summer and fall (usually a pass is needed every 2 weeks.)

-runners allowed to peg down and fill out beds in late summer and fall so strips of plants are 18-24” wide.

Even with Weekly Tractor Cultivation, Matted Row Strawberries require hoe or hand weed work in order to get out the in row weeds from between the runners.

In 2018 we measured the time spent hoeing and hand weeding on a matted row block. It took 5 passes over the course of the summer and fall with an average of 9 labor hours per pass, for a total of 45 hours of hand weeding labor per acre for the season.

-plants are mulched with straw in Nov, Dec or January depending on the weather.


Matted Row Strawberry Block in Mid Jan

-after overwintering, mulch is pulled back from plants in early spring. Important to leave some strands of straw between plant crowns to assure that ripening fruit does not rest direct on the soil.

Matted row patch at bloom

-additional hand weeding is often required prior to the start of the harvest season.

-plants typically bloom heavily with concentrated sets of berries that ripen over the course of June depending on the variety.

-we frequently spray serenade optimum & pyganic in order to try and reduce botrytis grey mold & tarnished plant bug.

PYO Harvest Season Has Arrived on a Matted Row Field:

-after harvest is done around Mid July, we determine if plantings are good enough to attempt to renovate. Often patches have so many weeds coming in that we don't even attempt the renovation for a 2nd year, but if patch looks like we might win, then renovation is attempted.

-Renovation involves mowing, narrowing rows, cultivating, & fertilizing.

-Often after renovation passes are made, weeds still overcome the planting, and patch is turned under in late summer.

-In recent years only about 1/3 of our matted row plantings are successfully overwintered for a 2nd season of yielding, and if they make it this far, 2nd year berry size and quality is often not very good.

Plasticulture Strawberry Growing System Overview:

-plantings are usually started from plugs. Plugs are propagated by specialized Canadian growers who collect disease free tips from mother plants. At Red Fire Farm we grow most of our plug strawberry plants by purchasing tips and rooting them under a mist system in our greenhouse.

-For our location in western MA, I think the optimal timing for transplanting plugs into plastic beds is the last week of August or first week in Sept. Can be hard to get tips in time and get the plugs fully grown for this schedule.

Misting Schedule:

-Stick tips into 50's about 5-6 weeks prior to transplant date (mid July).

-Mist for 10 seconds every 5 minutes for first 4 days.

-Mist for 30 seconds every 12 minutes for days 5-15.

-After this, decrease mist duration but still every 12 minutes.

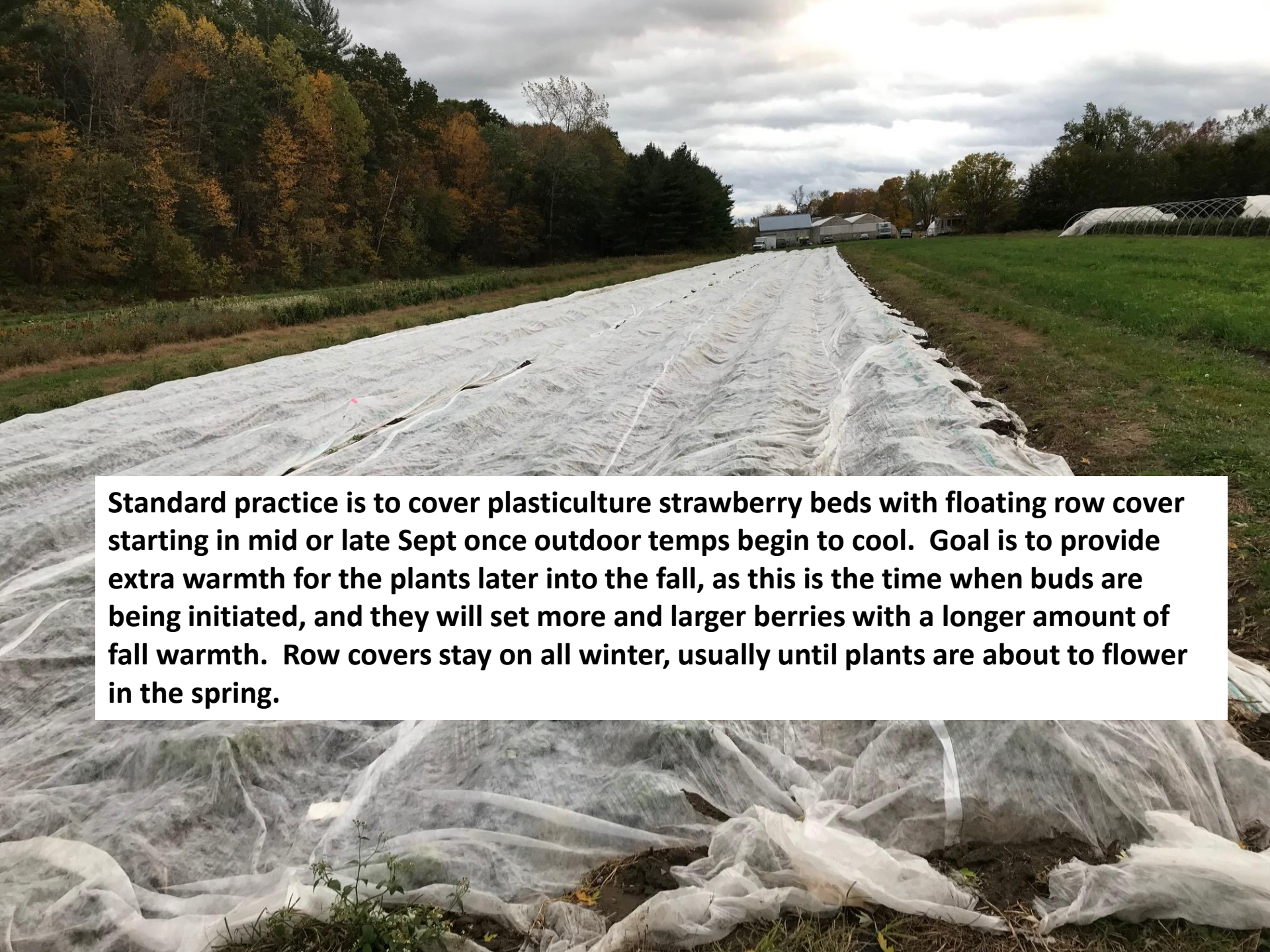
-Discontinue all mist after about 3-4 weeks and let plants harden.

-Plasticulture plug started strawberries are spaced at 2 rows per bed with 12” in row spacing. This is twice the plant density compared to matted row.

-With plasticulture the goal is to grow the mother plants into large crowned plants, but not to allow runners to peg down. Runners should be cut or cultivated off before they root.

-Plasticulture strawberry varieties need to have lots of yield potential per plant, since yield success will relay on lots of berries or weight per plant. This is in contrast to matted row where good yields per acre can be achieved even with low or modest per plant yields, simply by having a high population density of daughter plants.

Plug started strawberry beds on 10/17/19, about 7 weeks after they were transplanted.



Standard practice is to cover plasticulture strawberry beds with floating row cover starting in mid or late Sept once outdoor temps begin to cool. Goal is to provide extra warmth for the plants later into the fall, as this is the time when buds are being initiated, and they will set more and larger berries with a longer amount of fall warmth. Row covers stay on all winter, usually until plants are about to flower in the spring.

The same plasticulture strawberry block in mid winter on 1/11/20 during a midwinter thaw.

Weed Control must be maintained with the plasticulture system. Usually the holes need little if any weeding prior to harvest, but edges & isles of the black plastic beds must have a weed management strategy. Cultivation can be done in the fall after planting, or mulch can be installed. One way or another, some type of mulch needs to be in place prior to harvest season, in order to assure that berries don't ripen onto dirt or suffer soil splash.

Mulching isles with straw or hay is one option.

Weed mat seems to provide the most reliable weed suppression, but does cost a lot to install and remove. Also puddles can form in isles as weed mat slows water drainage slightly. Also weed mat prevents using cultivators to cut away runners.

One question that we had as part of the SARE study, is if our organic seeking PYO customers would be turned off by a field full of plastic mulch. In 2019 we harvested a half acre of strawberries for our pick your own customers for the first time. We found that customers did not seem to mind the plastic one bit. This tour of politicians also was happy to see this field of easy to pick tasty berries! Basically if customers are turned into a field with an abundance of berries that taste good and pick quickly, then they will be happy!

One variation on the plasticulture system is to establish plants on plastic beds using bare root plants instead of plugs. Timing for planting bare root plants onto plastic is early to mid July. At this time of year with hot weather the bare root plants may easily die if not watered enough immediately after transplanting.

Using bare root plants with this timing can result in large crowns, and bare root plants are less expensive than plugs, but plants also try to make lots and lots of runners that must be cut off.

The bed at left was established using bare root plants that were kept in storage at the nursery until July 10th 2018.

strawberries - June bearing (budget assumes annual system with May planting, June harvest following year, then done)

(per acre b **matted row, all year 1 steps now verified and adjusted based on 2018 hours actuals**

		# passes	labor hours for activity per acre	machinery time per acre for activity		total labor hours for activity	total machine hours for activity	
Field labo	primary tillage pass	1	1	1		1	1	
	perfecta	2	1	1		2	2	
	bed form	1	2	2		2	2	
	lay plastic mulch / drip		3	3		0	0	
	stalize	2	0.75	0.75		1.5	1.5	
	apply lime	1	0.5	0.5		0.5	0.5	
	apply fertilizer, pre plant & top dress	3	2.25	2.25		6.75	6.75	
	set transplants (1 row)	1	25.5	8.5		25.5	8.5	
	set transplants (2 row)	0	35	20		0	0	
	set transplants (3 row)	0	78	26		0	0	
	direct seed	0	1	1		0	0	
	mechainical cultivivation	14	1	1		14	14	
	hoe / handweed labor	5	9			45		(Only inlcudes year 1 hoe / handweed passes, sometimes matted
	flower truss removal	1	11			11		row strawb need a weeding pass in May prior to harvest!)
	other crop care hand labor	1	10			10		
	mow spray gaps / headlands	2	0.25	0.25		0.5	0.5	
	scout for pests / check fields	20	0.08			1.6	0	
	spray for pests	3	2	2		6	6	
	row cover application / clean up	0	4	0		0	0	
	mulch with straw	1	40	2		40	2	(1 day of work for crew of 5 people)
	irrigate	1	1.5	1.5		1.5	1.5	
	harvest labor	1	233	0		233	0	**assume harvest rate of 2 min per LB for 7000 LB**
	packing & storage labor	1	2	0		2	0	(this is the key assumption!)
	post harvest mow	1	1.5	1		1.5	1	(24 minutes per quart flat,
	clean up plastic	0	10	1		0	0	18 minutes per pint flat
	post harvest harrow	2	1	1		2	2	are maximum harvest times per flat !!)
	plant cover crop	1	2	2		2	2	
General M	repairs	1	80			80	0	
	training & supervision	1	3			3	0	
	recordkeeping	1	3			3	0	
	other ??							
						495.35	51.25	
	machine hours estimated @$28 per hr (not including operator wage)						28	(this is based on online resource from univ of IL for 90 acre tractor)
	labor estimated at average of $15 per hour					15		
						7430.25	**1435**	

We kept careful data on establishment costs comparing the matted row vs plasticulture blocks in 2018. Adjusted to a per acre basis, these enterprise budgets show the costs and returns of each system.

		amt per ac	unit	cost each	cost per acre	
Materials Cost:						
	transplants	7106	plants	0.15	1065.9	(assume $12 per tray, so 36's =.37, 50's = .27, 72's = .18, 1
	seed cost per acre				0	see tp cost
	fertilizer materials (LB)	2000	LB	0.5	1000	
	plastic mulch	0	bed ft	0.03	0	(cost per foot)
	straw mulch	250	bale	5.5	1375	250 bales per acre @ $5.5 bale
	entrust		oz	37.5	0	
	pyganic	12	oz	4	48	
	organic fungicides	12	oz	4	48	
	packaging materials / bins	438	quart flats	1.5	657	
	labeling	3504	quart pulps	0.2	700.8	
	cover crop seeds	150	LB	1	150	
	row cover	0	bed ft	0.12	0	
	other supplies				0	
					5044.7	
		# hours	$ per hr	cost per acre		
Marketing	sales labor per acre	20	15	**300**		
		# miles	$ per mile	cost per acre		
	transportation	840	1	**840**	(assumes driving labor is part of per mile transportation cost)	
	fm display materials					
	advertising cost					
	Total Estimated Variable Costs Per Acre		**14749.95**			
Fixed Overhead Costs:						
	land					
	buildings					
	insurance					
	office expense					
	property taxes					
	utilities					
	fees & permits					
	other		assume harvest vehicle is $333 per acre per year, so this added into overhead.			Also added a buffer of
	other spread sheet says overhead is about 135,000 per year for above items, so assuming 100 planted acres = $1350 per planted acre.					
	Total Estimated Fixed Costs Per Acre		**2000**			
			price sold			
Yield Per A	7,000 LB		4.5	Total Sales per Acre	**31500**	
	(assume 1.5 lb per qt, sales price of $7 per quart)			Total Production Cost Per Acre	**16749.95**	
				Net Per Acre	**$ 14,750**	

Matted Row Establishment Costs About $13,910 per acre in year 1 (even with all the weeding and cultivating passes.)

	strawberries - June bearing (budget assumes annual system with May planting, June harvest following year, then done)						
(per acre basis)	**plasticulture, July planted bare root (based on 2018 actuals)**						
		# passes	labor hours for activity per acre	machinery time per acre for activity	total labor hours for activity	total machine hours for activity	
Field labor & equ	primary tillage pass	1	1	1	1	1	
	perfecta	2	1	1	2	2	
	bed form	0	2	2	0	0	
	lay plastic mulch / drip	1	4	4	4	4	(very variable rate of laying at different sessions)
	stalize	0	0.75	0.75	0	0	
	apply lime	1	0.5	0.5	0.5	0.5	
	apply fertilizer, pre plant & top dress	3	2.25	2.25	6.75	6.75	
	set transplants (1 row)	0	25.5	8.5	0	0	
	set transplants (2 row)	1	54	18	54	18	
	set transplants (3 row)	0	78	26	0	0	
	direct seed	0	1	1	0	0	
	mechainical cultivivation	0	1	1	0	0	
	hoe / handweed labor	1	10		10		
	flower truss removal	1	10		10		
	remove runners by hand, 1st pass	1	7		7		
	remove runners by hand, 2nd pass	1	60		60		
	other crop care hand labor	1	10		10		
	install weed mat	1	40		40		
	mow spray gaps / headlands	2	0.25	0.25	0.5	0.5	
	scout for pests / check fields	20	0.08		1.6	0	
	spray for pests	3	2	2	6	6	
	row cover application / clean up	2	7	0	14	0	
	mulch with straw	0	40	2	0	0	(1 day of work for crew of 5 people)
	irrigate	1	1.5	1.5	1.5	1.5	
	harvest labor	1	233	0	233	0	**assume harvest rate of 2 min per LB for 7000 LB**
	packing & storage labor	1	2	0	2	0	(this is the key assumption!)
	post harvest mow	1	1.5	1	1.5	1	(24 minutes per quart flat,
	clean up plastic	1	10	1	10	1	18 minutes per pint flat
	remove weed mat	1	20		20		(weed mat removal # is a guess, not yet based on actuals as of
	post harvest harrow	2	1	1	2	2	are maximum harvest times per flat !!)
	plant cover crop	1	2	2	2	2	
					0	0	
					0	0	
General Manager	repairs	1	80		80	0	
	training & supervision	1	3		3	0	
	recordkeeping	1	3		3	0	
	other ??						
					585.35	46.25	
	machine hours estimated @$28 per hr (not including operator wage)					28	(this is based on online resource from univ of IL for 90 acre tractor)
	labor estimated at average of $15 per hour				15		
					8780.25	**1295**	

Materials Cost:		amt per a	unit	cost each	cost per acre		
	transplants	14212	plants	0.15	2131.8		
	seed cost per acre				0	see tp cost	
	fertilizer materials (LB)	2000	LB	0.5	1000		
	plastic mulch	7106	bed ft	0.03	213.18	(cost per foot)	
	weed mat	8500	bed ft	0.06	510	(.17 per foot for 4' wide weed mat is new co	
	straw mulch	0	bale	5.5	0	250 bales per acre @ $5.5 bale	
	entrust		oz	37.5	0		(does this cost incl
	pyganic	12	oz	4	48		
	organic fungicides	12	oz	4	48		
	packaging materials / bins	438	quart flats	1.5	657		
	labeling	3504	quart pulps	0.2	700.8		
	cover crop seeds	150	LB	1	150		
	row cover	14212	bed ft	0.12	1705.44		
	other supplies				0		
					7164.22		
		# hours	$ per hr	cost per acre			
Marketing Cost:	sales labor per acre	20	15	**300**			
		# miles	$ per mile	cost per acre			
	transportation	840	1	**840**	(assumes driving labor is part of per mile transportation cost)		
	fm display materials						
	advertising cost						
	Total Estimated Variable Costs Per Acre		**18079.47**				
Fixed Overhead Costs:	land						
	buildings						
	insurance						
	office expense						
	property taxes						
	utilities						
	fees & permits						
	other		assume harvest vehicle is $333 per acre per year, so this added into overhead.				Also ad
	other spread sheet says overhead is about 135,000 per year for above items, so assuming 100 planted acres = $1350 per planted acre.						
	Total Estimated Fixed Costs Per Acre		**2000**				
			price sold				
Yield Per Acre	7,000 LB		4.5	Total Sales per Acre		**31500**	
	(assume 1.5 lb per qt, sales price			Total Production Cost Per Acre		**20079.47**	
	of $7 per quart)						
				Net Per Acre		**$ 11,420.53**	

Plasticutlure beds established using July planted bare root plants cost $17,240 per acre in variable costs to establish.

	strawberries - June bearing (budget assumes annual system with May planting, June harvest following year, then done)						
(per acre basis)	**plasticulture, late Aug planted with plugs (based on 2018 actuals)**						
		# passes	labor hours for activity per acre	machinery time per acre for activity	total labor hours for activity	total machine hours for activity	
Field labor & equ	primary tillage pass	1	1	1	1	1	
	perfecta	2	1	1	2	2	
	bed form	0	2	2	0	0	
	lay plastic mulch / drip	1	4	4	4	4	(very variable rate of laying at different sessions)
	stalize	0	0.75	0.75	0	0	
	apply lime	1	0.5	0.5	0.5	0.5	
	apply fertilizer, pre plant & top dress	3	2.25	2.25	6.75	6.75	
	set transplants (1 row)	0	25.5	8.5	0	0	
	set transplants (2 row)	1	54	18	54	18	
	set transplants (3 row)	0	78	26	0	0	
	direct seed	0	1	1	0	0	
	mechainical cultivivation	0	1	1	0	0	
	hoe / handweed labor	0	10		0		(but will they need spring hole weeding? sometimes this is needed)
	flower truss removal	0	10		0		
	remove runners by hand, 1st pass	1	38		38		
	remove runners by hand, 2nd pass	0	60		0		
	other crop care hand labor	1	10		10		
	install weed mat	1	40		40		
	mow spray gaps / headlands	2	0.25	0.25	0.5	0.5	
	scout for pests / check fields	20	0.08		1.6	0	
	spray for pests	3	2	2	6	6	
	row cover application / clean up	2	7	0	14	0	
	mulch with straw	0	40	2	0	0	(1 day of work for crew of 5 people)
	irrigate	1	1.5	1.5	1.5	1.5	
	harvest labor	1	233	0	233	0	**assume harvest rate of 2 min per LB for 7000 LB**
	packing & storage labor	1	2	0	2	0	(this is the key assumption!)
	post harvest mow	1	1.5	1	1.5	1	(24 minutes per quart flat,
	clean up plastic	1	10	1	10	1	18 minutes per pint flat
	remove weed mat	1	20		20		(weed mat removal # is a guess, not yet based on actuals as of 11/27/18)
	post harvest harrow	2	1	1	2	2	are maximum harvest times per flat !!)
	plant cover crop	1	2	2	2	2	
					0	0	
					0	0	
General Manager	repairs	1	80		80	0	
	training & supervision	1	3		3	0	
	recordkeeping	1	3		3	0	
	other ??						
					536.35	46.25	
	machine hours estimated @$28 per hr (not including operator wage)					28	(this is based on online resource from univ of IL for 90 acre trac
	labor estimated at average of $15 per hour				15		
					8045.25	**1295**	

Materials Cost:		amt per ac	unit	cost each	cost per acre	
	transplants	14212	plants	0.4	5684.8	(.54 per plant is for plants purchased and shipped from NOVA.
	seed cost per acre				0	see tp cost (Goodson tips cost .142 each, then .25 pe
	fertilizer materials (LB)	2000	LB	0.5	1000	
	plastic mulch	7106	bed ft	0.03	213.18	(cost per foot)
	straw mulch	0	bale	5.5	0	250 bales per acre @ $5.5 bale
	weed mat	8500	bed ft	0.06	510	(.17 per foot for 4' wide weed mat is new
	entrust		oz	37.5	0	(does
	pyganic	12	oz	4	48	
	organic fungicides	12	oz	4	48	
	packaging materials / bins	438	quart flats	1.5	657	
	labeling	3504	quart pulps	0.2	700.8	
	cover crop seeds	150	LB	1	150	
	row cover	14212	bed ft	0.12	1705.44	
	other supplies				0	
					10717.22	

		# hours	$ per hr	cost per acre	
Marketing Cost:	sales labor per acre	20	15	**300**	
		# miles	$ per mile	cost per acre	
	transportation	840	1	**840**	(assumes driving labor is part of per mile transportation cost)
	fm display materials				
	advertising cost				
	Total Estimated Variable Costs Per Acre		**20897.47**		

Fixed Overhead Costs:					
	land				
	buildings				
	insurance				
	office expense				
	property taxes				
	utilities				
	fees & permits				
	other		assume harvest vehicle is $333 per acre per year, so this added into overhead.		Also a
	other spread sheet says overhead is about 135,000 per year for above items, so assuming 100 planted acres = $1350 per planted acre.				
	Total Estimated Fixed Costs Per Acre		**2000**		
			price sold		
Yield Per Acre	7,000 LB		4.5	Total Sales per Acre	**31500**
	(assume 1.5 lb per qt, sales price of $7 per quart)			Total Production Cost Per Acre	**22897.47**
				Net Per Acre	**$ 8,602.53**

Plasticulture established with late Aug transplanted plugs cost $20,057 per acre to establish. This is when weed mat was used to mulch between the beds.

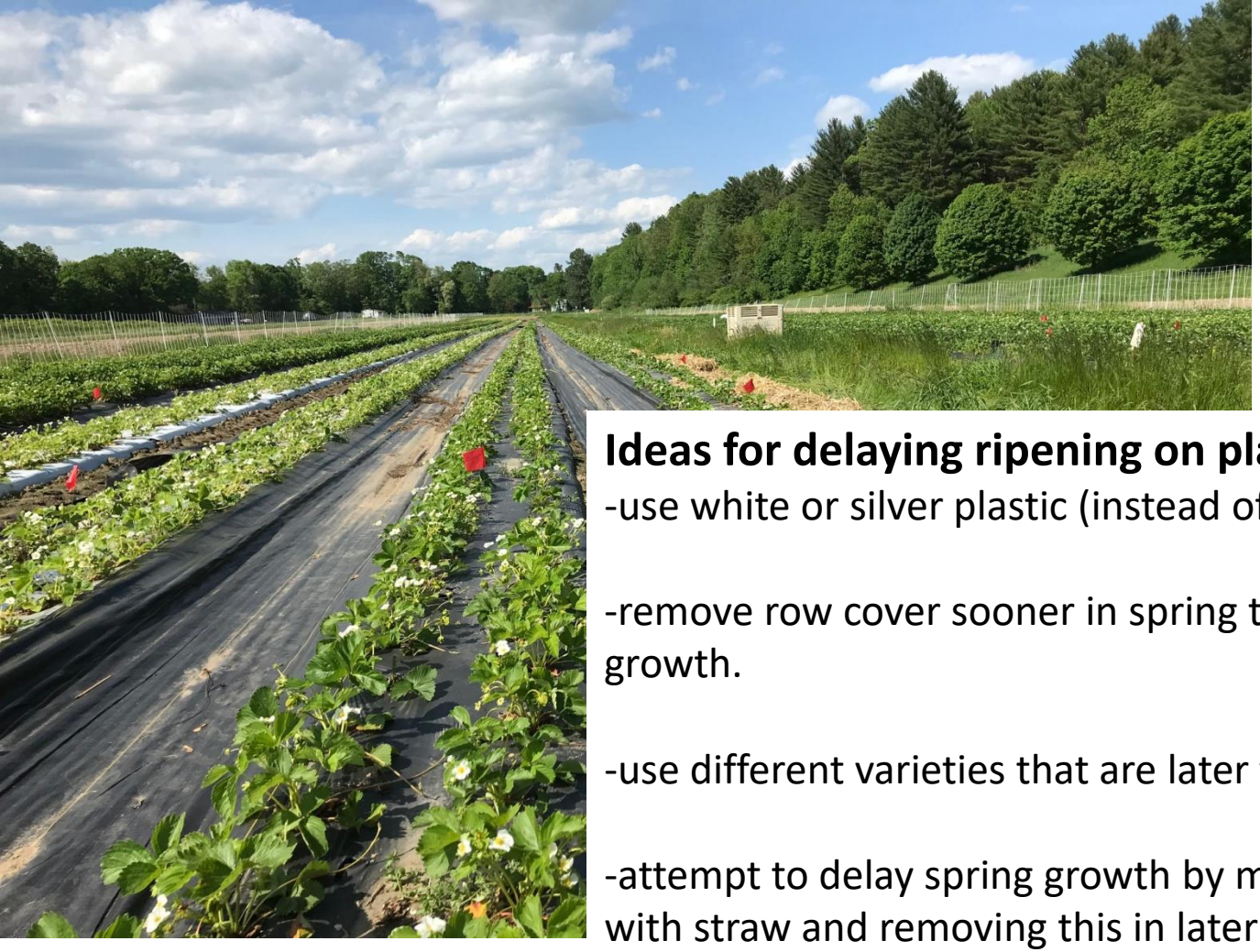
Original Premise of the SARE Study:

-Assumption was that growing organic strawberries using plug propagated beds planted in Late August was less trouble, much less cultivating and weeding, and thus a less expensive and more profitable system for growing berries.

-Problem was that the Chandler strawberry variety planted on plastic in this system usually ripened starting in late May (up to 3 weeks sooner than early matted row varieties), but finished ripening most seasons by mid June.

-The early berries are great, but our PYO and other Strawberry customers expect strawberry season to continue until at least the 4th of July.

-SARE sponsored study to figure out if there were viable ways to manipulate the plasticulture system to get some berries to ripen and peak in late June and into July.



Ideas for delaying ripening on plasticulture:

-use white or silver plastic (instead of black) to keep soil cooler.

-remove row cover sooner in spring to delay early spring growth.

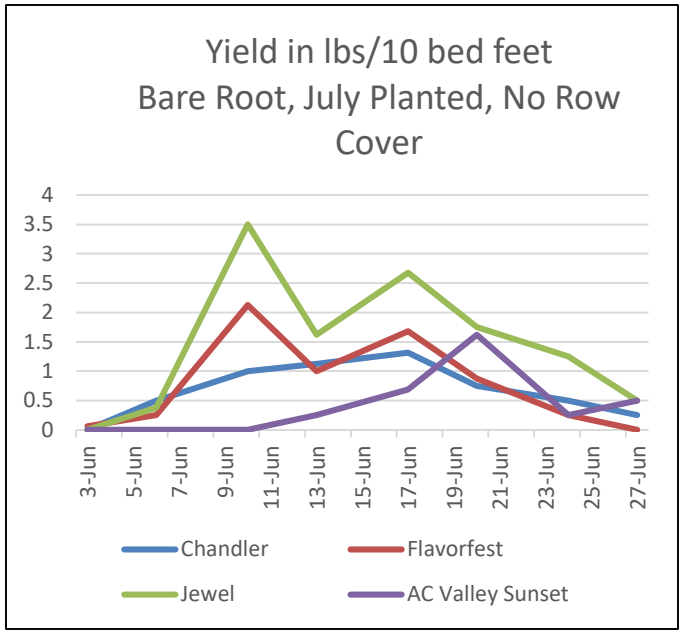
-use different varieties that are later to ripen

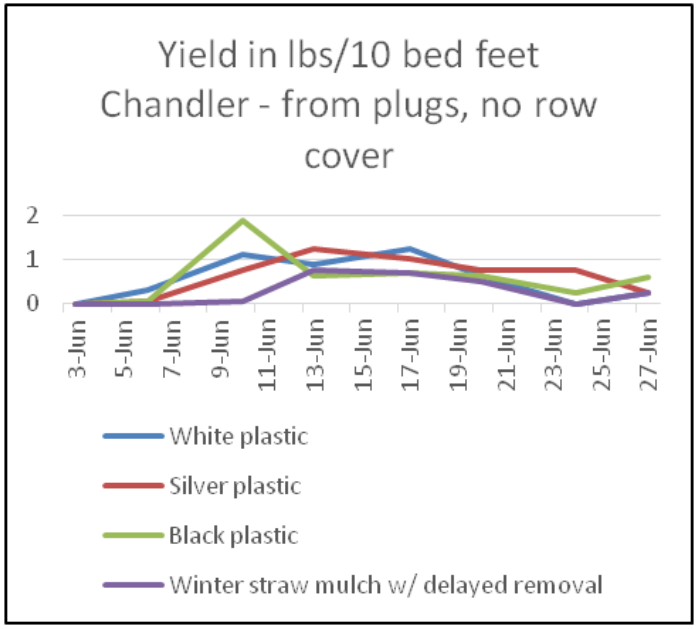
-attempt to delay spring growth by mulching over the plants with straw and removing this in later April, to delay plants from breaking dormancy and starting spring growth.

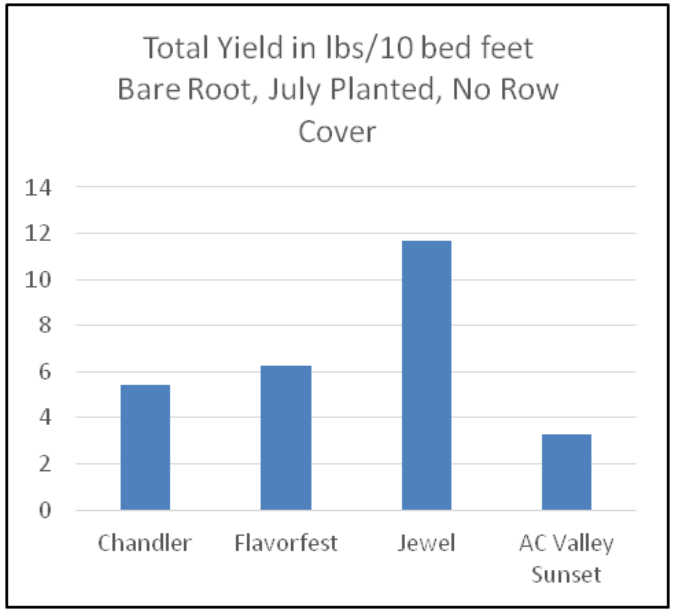
-does bare root vs plug started beds make a difference in ripening time?

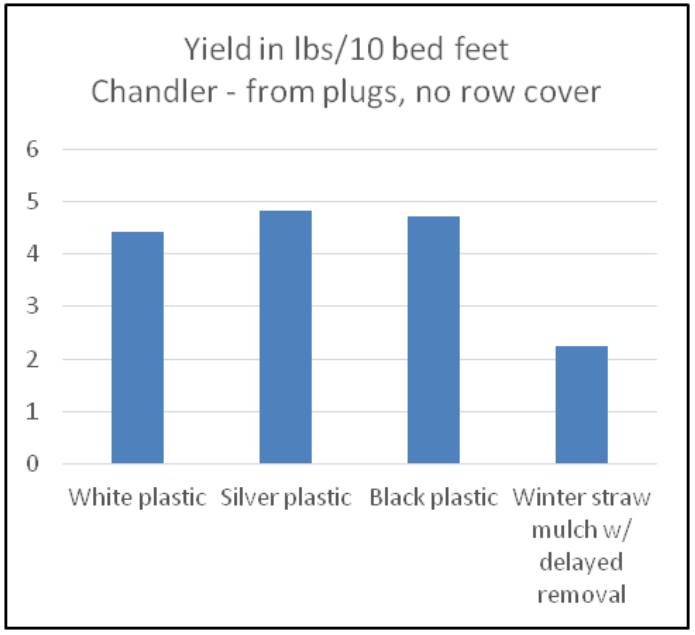
We set up a trial to compare all of the above ideas, and contrasted to a matted row planting for comparison.

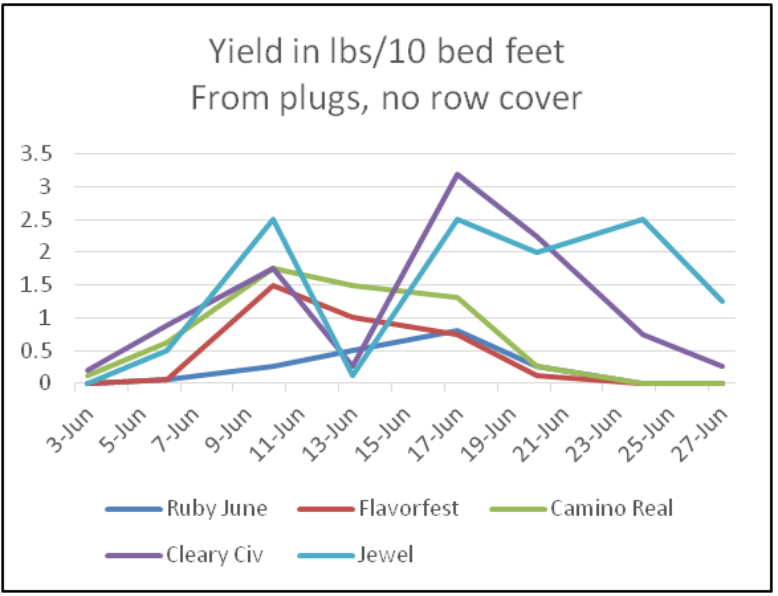
Our trial ended up with 29 different treatments. Before harvest season began a 10 bed foot section of each treatment was identified and flagged. Then at each harvest day, these sections were harvested separately, and the berry weight was recorded before adding the berries to the general harvest to be sold.

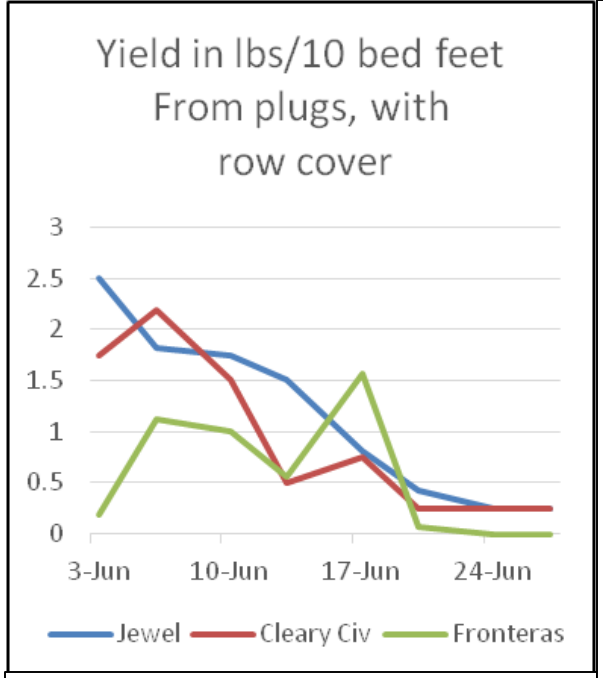

Yield in lbs/10 bed feet
Bare Root, July Planted, No Row Cover
4
3.5
3
2.5
2
1.5
1
0.5
0
3-Jun
5-Jun
7-Jun
9-Jun
11-Jun
13-Jun
15-Jun
17-Jun
19-Jun
21-Jun
23-Jun
25-Jun
27-Jun
Chandler
Flavorfest
Jewel
AC Valley Sunset

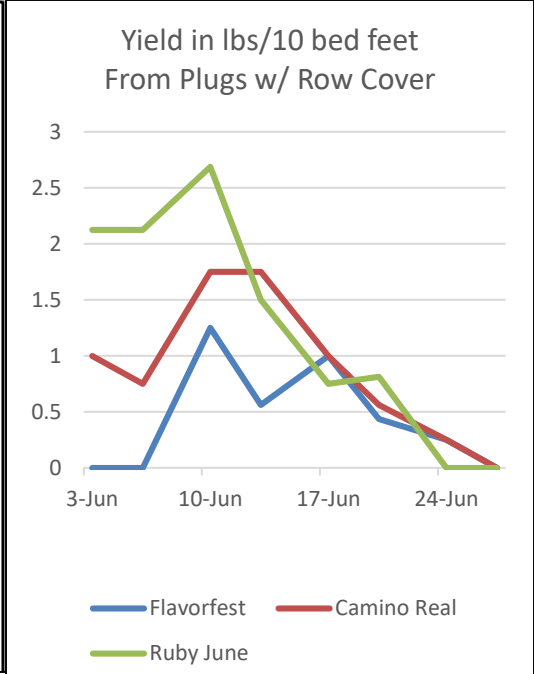

Yield in lbs/10 bed feet
Chandler - from plugs, no row cover
2
1
0
3-Jun
5-Jun
7-Jun
9-Jun
11-Jun
13-Jun
15-Jun
17-Jun
19-Jun
21-Jun
23-Jun
25-Jun
27-Jun
White plastic
Silver plastic
Black plastic
Winter straw mulch w/ delayed removal

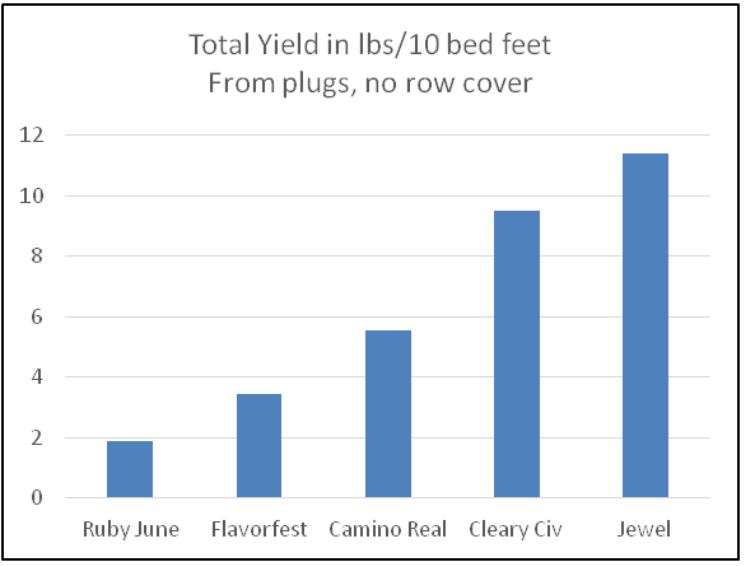

Total Yield in lbs/10 bed feet
Bare Root, July Planted, No Row Cover
14
12
10
8
6
4
2
0
Chandler
Flavorfest
Jewel
AC Valley Sunset

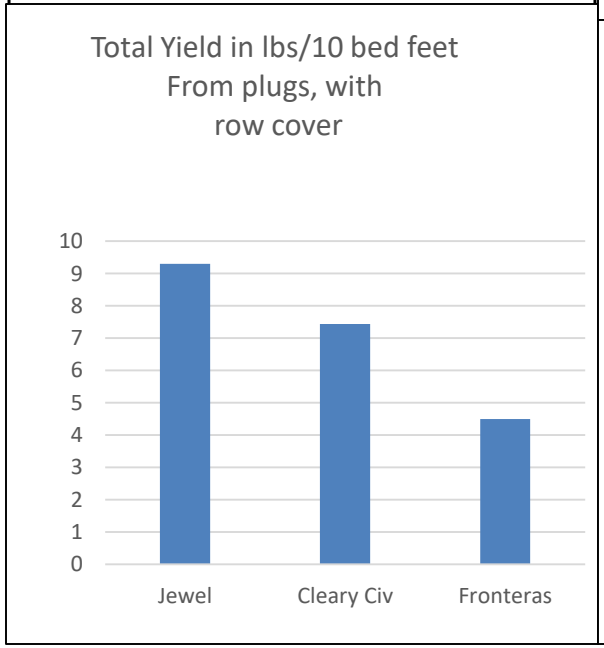

Yield in lbs/10 bed feet
Chandler - from plugs, no row cover
6
5
4
3
2
1
0
White plastic
Silver plastic
Black plastic
Winter straw mulch w/ delayed removal

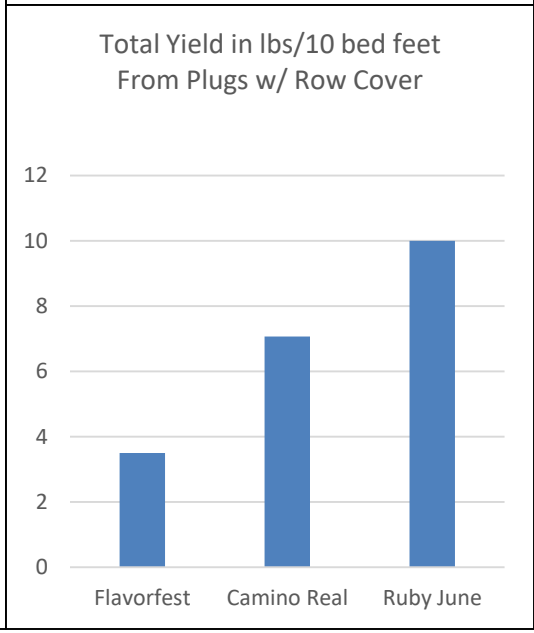

Yield in lbs/10 bed feet
From plugs, no row cover
3.5
3
2.5
2
1.5
1
0.5
0
3-Jun
5-Jun
7-Jun
9-Jun
11-Jun
13-Jun
15-Jun
17-Jun
19-Jun
21-Jun
23-Jun
25-Jun
27-Jun
Ruby June
Flavorfest
Camino Real
Cleary Civ
Jewel

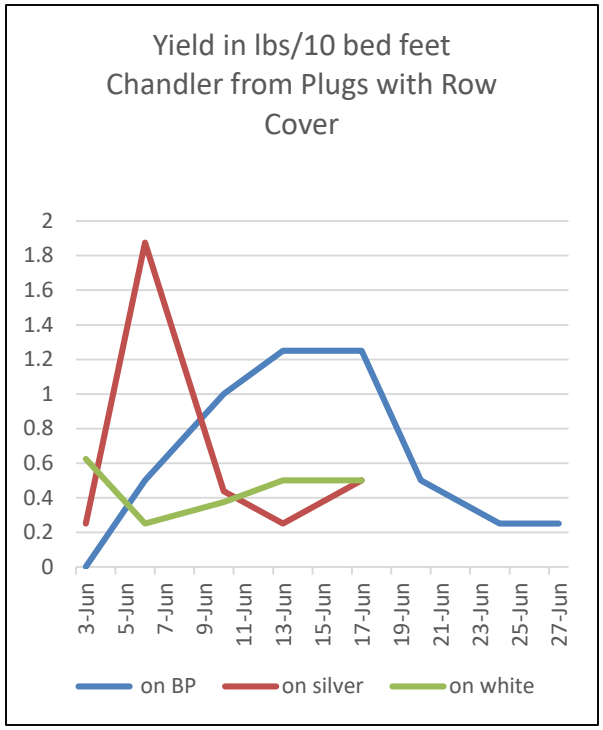

Yield in lbs/10 bed feet
From plugs, with
row cover
3
2.5
2
1.5
1
0.5
0
3-Jun
10-Jun
17-Jun
24-Jun
Jewel
Cleary Civ
Fronteras

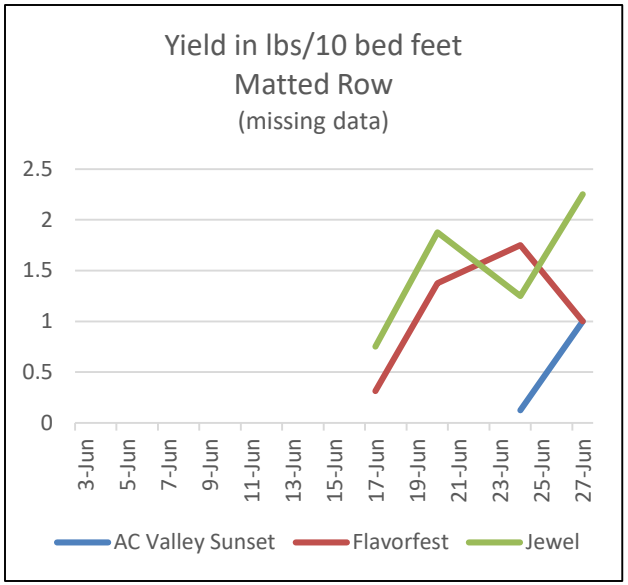

Yield in lbs/10 bed feet
From Plugs w/ Row Cover
3
2.5
2
1.5
1
0.5
0
3-Jun
10-Jun
17-Jun
24-Jun
Flavorfest
Camino Real
Ruby June

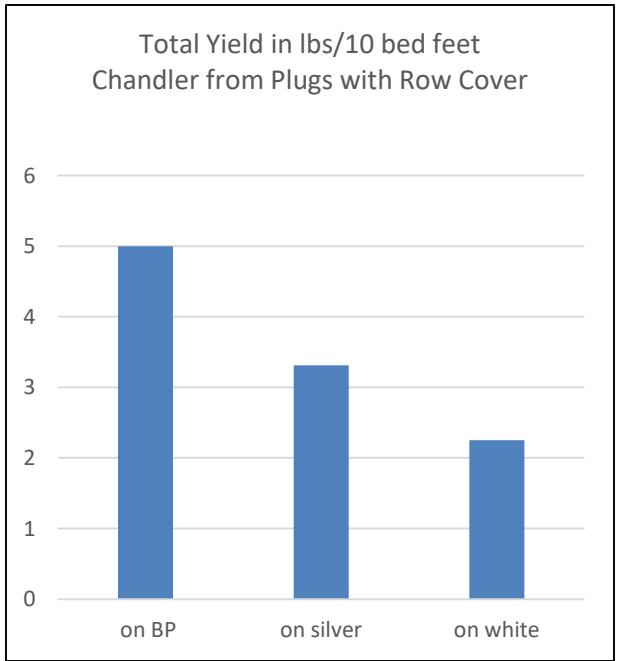

Total Yield in lbs/10 bed feet
From plugs, no row cover
12
10
8
6
4
2
0
Ruby June
Flavorfest
Camino Real
Cleary Civ
Jewel

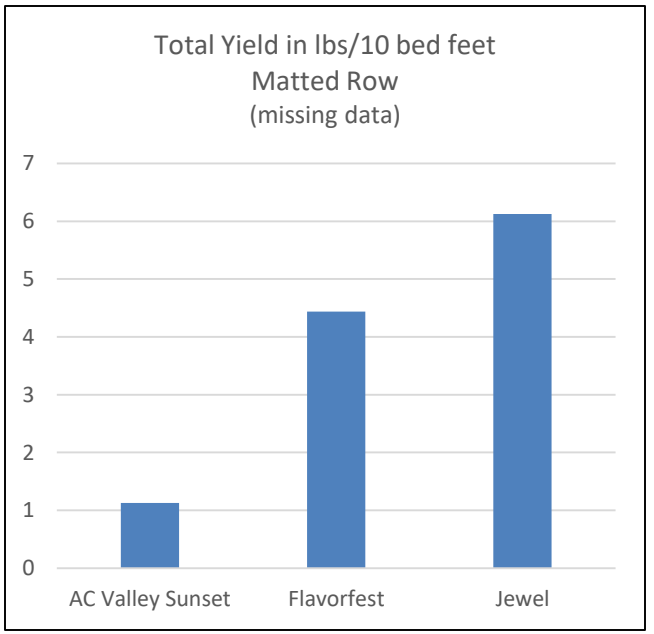

Total Yield in lbs/10 bed feet
From plugs, with
row cover
10
9
8
7
6
5
4
3
2
1
0
Jewel
Cleary Civ
Fronteras


Total Yield in lbs/10 bed feet
From Plugs w/ Row Cover
12
10
8
6
4
2
0
Flavorfest
Camino Real
Ruby June


Yield in lbs/10 bed feet
Chandler from Plugs with Row Cover
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
3-Jun
5-Jun
7-Jun
9-Jun
11-Jun
13-Jun
15-Jun
17-Jun
19-Jun
21-Jun
23-Jun
25-Jun
27-Jun
on BP
on silver
on white


Yield in lbs/10 bed feet
Matted Row
(missing data)
2.5
2
1.5
1
0.5
0
3-Jun
5-Jun
7-Jun
9-Jun
11-Jun
13-Jun
15-Jun
17-Jun
19-Jun
21-Jun
23-Jun
25-Jun
27-Jun
AC Valley Sunset
Flavorfest
Jewel


Total Yield in lbs/10 bed feet
Chandler from Plugs with Row Cover
6
5
4
3
2
1
0
on BP
on silver
on white


Total Yield in lbs/10 bed feet
Matted Row
(missing data)
7
6
5
4
3
2
1
0
AC Valley Sunset
Flavorfest
Jewel

Must take the yield data from this study with a grain of salt!

1)The plasticulture field suffered fall deer browse damage when they ripped through the row cover and ate surprising amounts of leaves before I realized what was happening. (we then installed a deer fence around the patch, but damage was already done.) Yield plots were selected in spring form areas that appeared to have minimal damage.

2) Harvest crews doing the yield harvesting were stressed crew leaders that had a lot of other things to get done in June. They may have made some mistakes and did miss some trial plots on some harvest days.

3) This was not a replicated trial.

How Did The Different Varieties Taste?

We often sell berries by variety both by keeping varieties separate for on the shelf sales, and also by labeling our pick your own fields by variety.

In addition to finding varieties that grow well, we also want to keep our customers interested and let them develop their favorites.

As part of the SARE study we introduced our customers to a handful of new varieties that we had never harvested prior to 2019, including:

-Ruby June

-Fronteras

-Camino Real

-Cleary Civ

Also of course:

-Chandler

These new varieties were compared to many of our matted row standby varieties such as :

-Cavendish **-AC Wendy** **-Jewel** **-Mayflower**

-Earliglow **-Sparkle** **-Flavorfest** **-Yambu**

Each year we cut up all the varieties at our annual Strawberry Soiree event, and we ask people to taste them all and rate their favorites.

2019 results were the first year ever that Jewel rated as a major flavor winner.

All other recent years Chandler was by far the taste favorite.

The Strawberry Soiree

GREAT STRAWBERRY ELECTION

VARIETY	VOTE RESULT
CAVENDISH	
CLANCY	
EARLIGLOW	
YAMBU	
SPARKLE	
MAYFLOWER	
DENDY	
VORFEST	
FRONTERAS	
CLEARY	
JEWEL	
RUBY JUNE	
CAMINO	
CHANDLER	

With a little check mark for your top 2 strawberry varieties. (2 votes per person, because it can be hard to choose ☺)

Thanks For Voting!

Totals will be tallied and winners will be announced at dinner and in the farm email ☺

After Conducting this study, some of my major take homes are:

-Don't give up on matted row, as there does not seem to be a good way to get lots of ripe berries in later June using the plasticulture system, despite using different varieties & manipulations.

-Besides, matted row per acre establishment is not as expensive after all (despite the weeding!)

Cleary CIV at left

-Grow more Cleary CIV. This was by far the earliest to ripen variety, and in my opinion consistently one of the very best flavored.

-Also grow even more Jewel! In both plasticulture and matted row, this appears to be a top yielding variety, and in 2019 it even tasted amazing!

When it comes to plasticulture,

-Don’t bother with any color of plastic other than black.

-Try to figure out less expensive isle weed management than weed mat. In 2010 I went back to cultivating and will apply hay in early spring.

-Does not seem like July planted bare root into plastic is worthwhile. To busy then, plants die easily from dryness & yields not amazing.

Thank You To Northeast SARE for Providing Farmer Grant Funding to Offset the Costs Of This On Farm Research Project!


TIME
TO BE
HERO

real Organic project

Keep the integrity in organic! Grow plants in soil! Lets keep hydroponics out of organic & no “organic” CAFO’s. Consider becoming Real Organic Certified & teach your customers that not all organic is the same!

Ryan Voiland

Red Fire Farm

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413-467-7645