Low-Input Practices to Improve Okra Yield in Cold Climates

Cornell Cooperative Extension | Cornell Vegetable Program

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NORTHEAST SARE
Sustainable Agriculture Research & Education

Okra Production & Challenges

- Start indoors 6-8 weeks before last frost
- Plant after soil is at least 65-70 degrees
- **Transplant date: June 1- June 14**
- Grows best at 75-90 degrees
- Typical time to harvest: 50-65 days

- Spacing in row: 12 – 24 in
- Spacing between row: 24 – 36 in

Plant June 5
Start harvest Aug 1 (56 days)

How many days over 80 do we have left?

How long before nights fall below 55?

Soil Temp for Germ.	Days to Emergence	Seed Depth	Soil Temp. for Trans.	Plant Spacing	Row Spacing	Min. Germ.	Seed Life	Seeds per gram	Fertilizer Needs
70-90°F	7-15	1/2"	65°F	12-18"	36"	65%	2 years	≈14-17	Medium

Territorial Seed Co.


Clemson Spineless – 55-56 days


Jambalaya – 50-55 days


Cajun Jewel – 50-65 days

Annie Oakley – 50-52 days
Northern adapted
Tolerates tight spacing
Hard to find (BFG)

Variety	Days	Comments
BUFFALO BILL 91	43	Buffalo Bill 91 is a new, early, hybrid okra with a vigorous, open, somewhat short, plant. Pods are dark green and stay tender to a larger size than Clemson Spineless. The leaf petioles (leaf stems) are nearly spineless, so, like a spineless zucchini, Buffalo Bill 91 is more comfortable to harvest. Growers from the mid-Atlantic north and through the mid-west will be able to harvest weeks before Clemson Spineless. Well branched plants contribute to an overall excellent yield. Although okra isn't known to be a transplant crop, it can work, and this would be very good for home garden plant sales.

Can we lengthen the harvest window?

Can we do it without breaking the bank?

Add more growing season?

Make crop grow faster?

Reduce other costs?

Shorten time to harvest?

Grow bigger plants to get more yield?

The Trial Design

	42” bed
Rep III (64 feet)	Plot 304
	Plot 303
	Plot 302
	Plot 301
Rep II (64 feet)	Plot 204
	Plot 203
	Plot 202
	Plot 201
Rep I (64 feet)	Plot 104
	Plot 103
	Plot 102
	Plot 101

Treatment color codes

- Bare Ground
- Row Cover Only
- Black Plastic only
- Black Plastic + Row Cover

Variety
Buffalo Bill ’91
(43 day)
Wil: Jambalaya
(50-55 day)

Bare Ground
Our standard practice comparison

Row Cover - for first 3 weeks
Increases air temp, esp. at night
Reusable, lowers cost
Agribon-19, 83” x 500’ roll
Hoops every 5’

Black Plastic Mulch – no trickle
Increase soil temp
Allow for earlier planting*
Faster crop development?
5’ wide roll = 42” bed

Combo – no trickle irrigation
Are two better than one?

Planted: June 7

Picture: June 20

June 20. Thirteen days after transplanting.

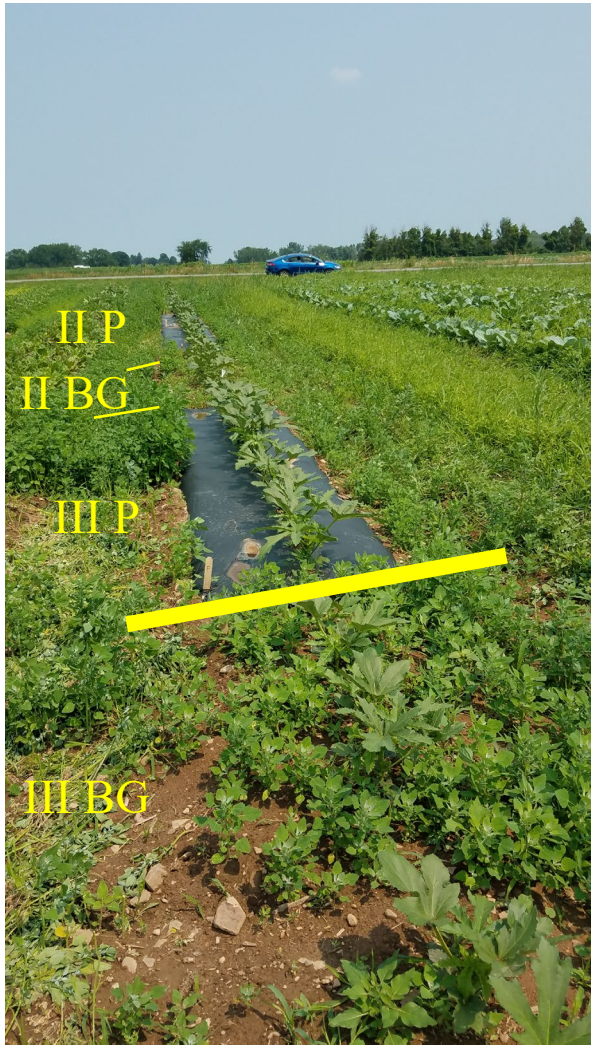
Bare ground. Small, just starting 1st lobed leaf. Damping off losses and stress

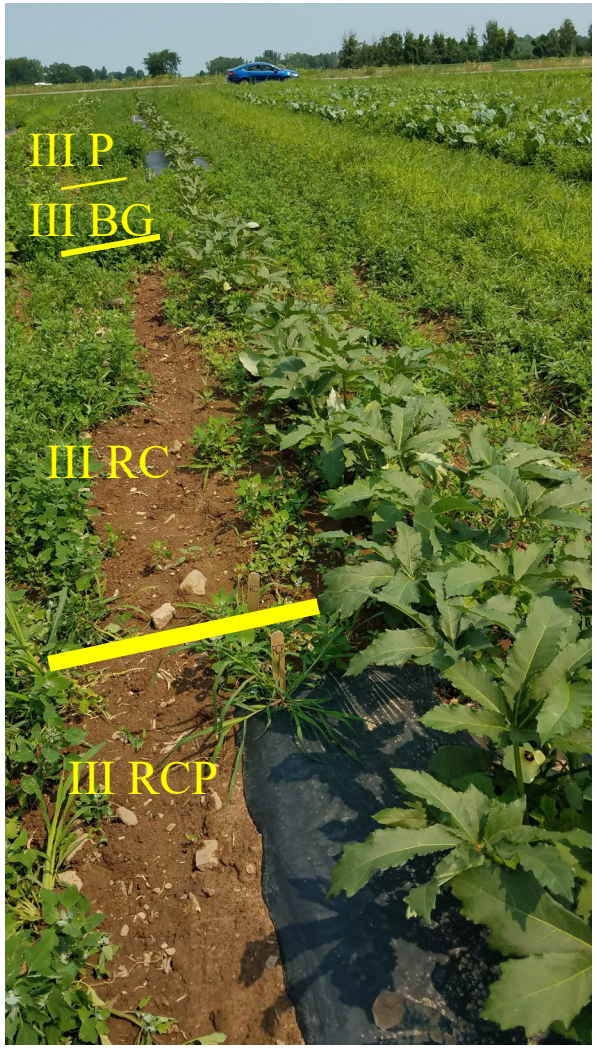
Row cover only. All have 1st lobed leaf fully expanded. Taller. Good color.

Plastic only. Better overall size than bare ground. Not uniform. Some leaf loss.

Row cover-plastic. Slightly larger than row cover alone. This particular plot got huge.

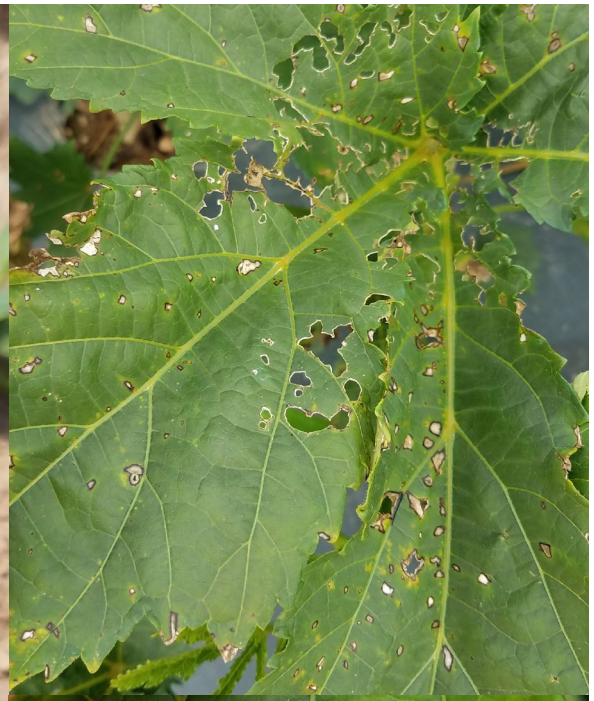
4th Weeding, July 17th
40 DAP
Harvest started 7/20





To fit the trial in the field, we had to push onto head land. That area experienced more damping off problems early and white mold later.

Maladies and Mishaps



There was a little bacterial foliar disease and some Japanese Beetle feeding.

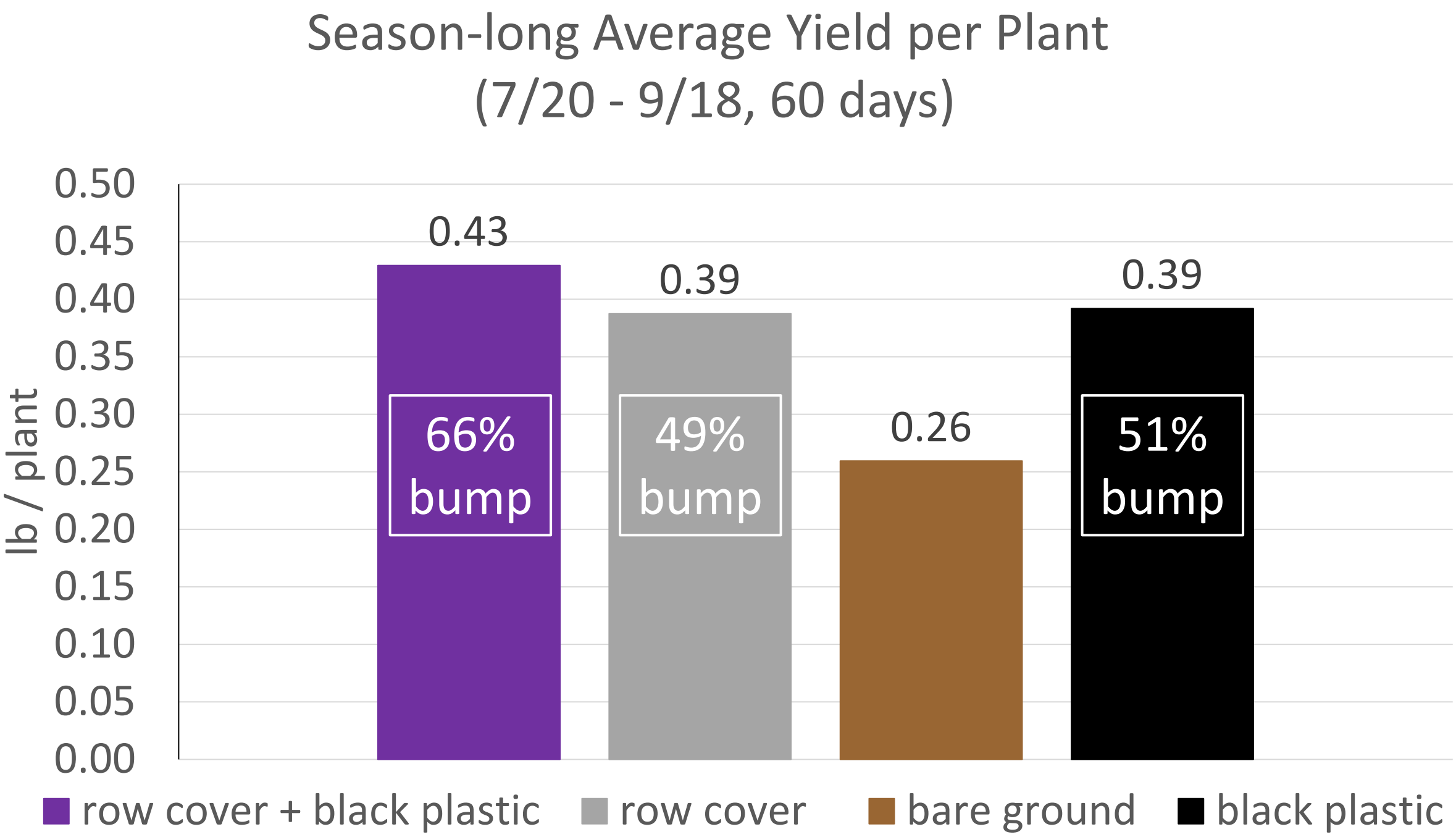
It rained. And rained. And rained all through August.

Weeds were well controlled in the 42” wide plots.

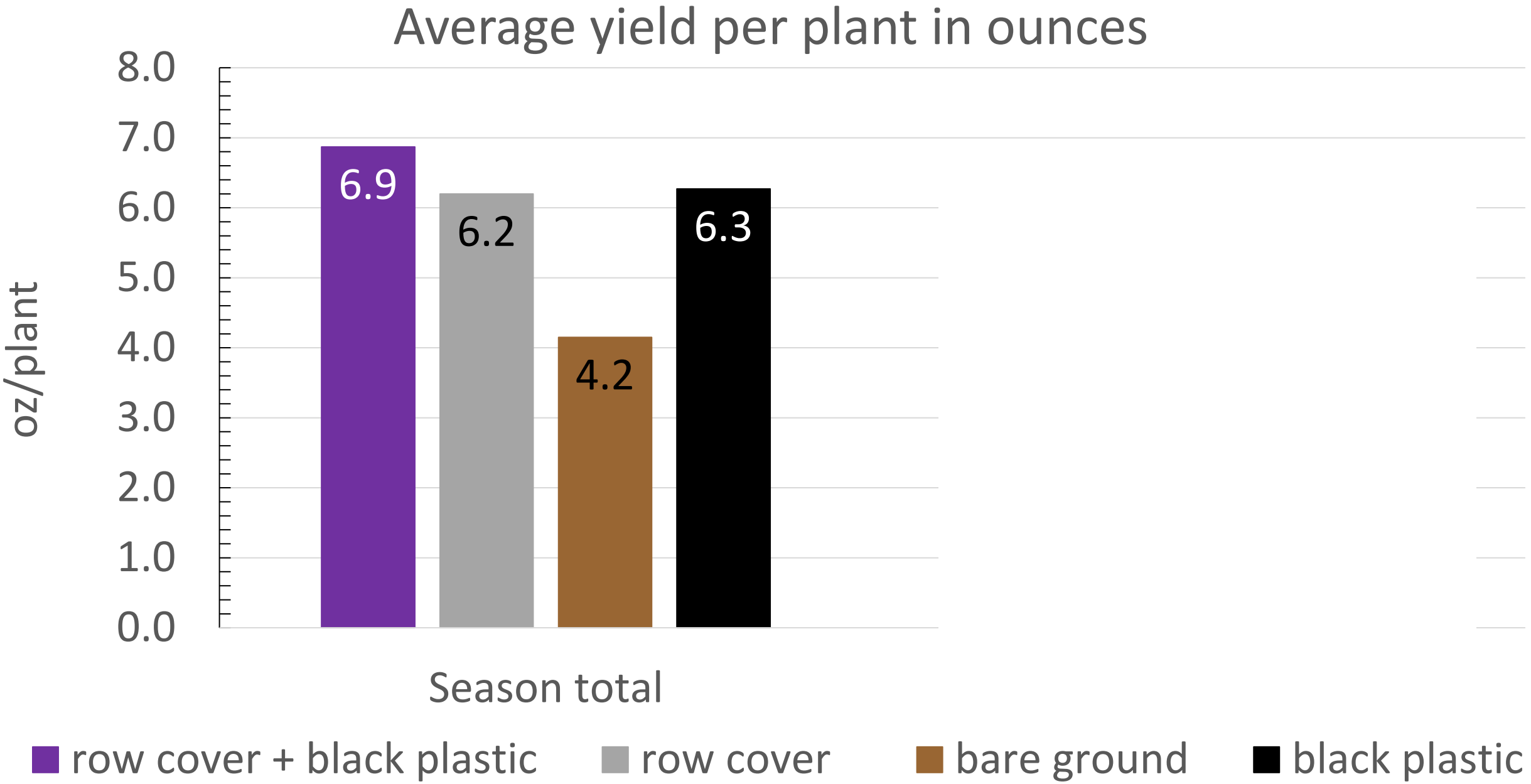
Drive row and alley weeds escaped mechanical control (September photo).

Maladies and Mishaps
White Mold

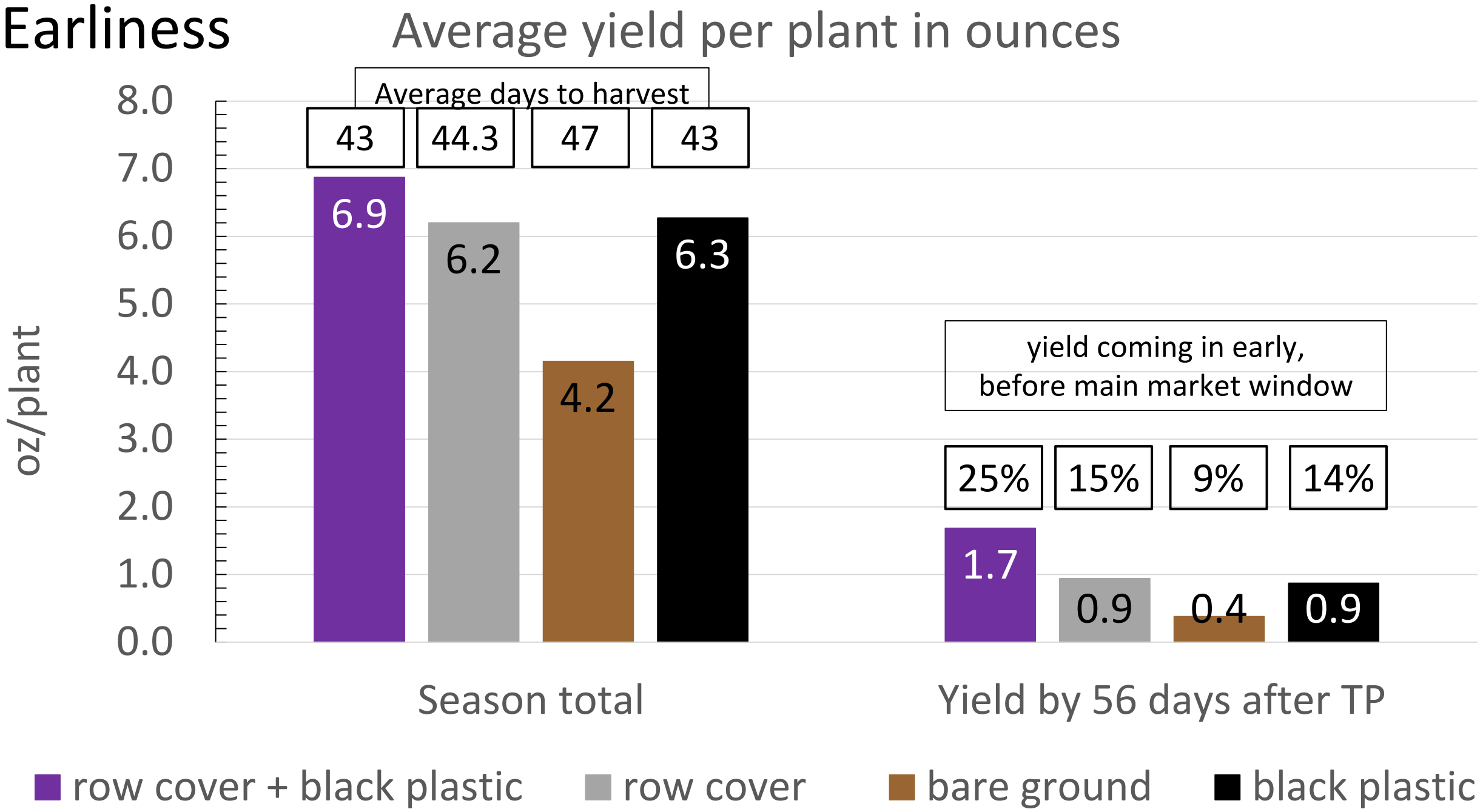
RESULTS


Season-long Average Yield per Plant
(7/20 - 9/18, 60 days)
lb / plant
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.43
0.39
0.26
0.39
66% bump
49% bump
51% bump
row cover + black plastic
row cover
bare ground
black plastic

Earliness


Average yield per plant in ounces
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
oz/plant
6.9
6.2
4.2
6.3
Season total
row cover + black plastic
row cover
bare ground
black plastic

Earliness


Average yield per plant in ounces
Average days to harvest
43
44.3
47
43
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
oz/plant
6.9
6.2
4.2
6.3
yield coming in early,
before main market window
25%
15%
9%
14%
1.7
0.9
0.4
0.9
Season total
Yield by 56 days after TP
row cover + black plastic
row cover
bare ground
black plastic

Economics

	cost	$/linear foot	$/1000'
5'x4000' plastic mulch	$ 174.00	$ 0.04	$ 43.50
83" x 500' agribon-19 row cover	$ 189.00	$ 0.38	$ 378.00

667 plants/1000 linear feet	Total yield (lb)	Gross value at $4.50/lb	Gross - material costs	Crop value $5.50 until 56 DAP, $4.50 after
Row cover + plastic	286.4	$ 1,288.77	$ 1,119.27	$ 1,189.47
Row cover	258.5	$ 1,163.08	$ 1,037.08	$ 1,076.26
Bare Ground	173.0	$ 778.51	$ 778.51	$ 794.22
Black plastic mulch	261.4	$ 1,176.21	$ 1,132.71	$ 1,168.99

Assumed 3 uses for the row cover, defray cost over multiple crops
Does not include irrigation equipment

Shortfalls

- Didn’t get a chance to test multiple varieties combined with techniques
- Losses to disease limited stand in Rep I
- Sowing failure
  - Delayed trial start date 2 weeks
  - Shrunk trial size – 3 reps instead of 4, fewer plants/rep
- Unable to plant in a risky early window
  - Colder soils or colder nights would have better answered season extension questions
  - Would have helped separate different benefits between inputs

Can we lengthen the harvest window?

Increase revenue by 33-45%!

Can we do it without breaking the bank?

Add more growing season?

We don't know

Reduce other costs?

Weeding time was much less with plastic

Make crop grow faster?

Yes! All 3 practices accelerated growth and precociousness

Shorten time to harvest?

Buffalo Bill '91 was consistently earlier than Jambalaya, even in bare ground

Grow bigger plants to get more yield?

The RCP plants were larger and vigorous

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