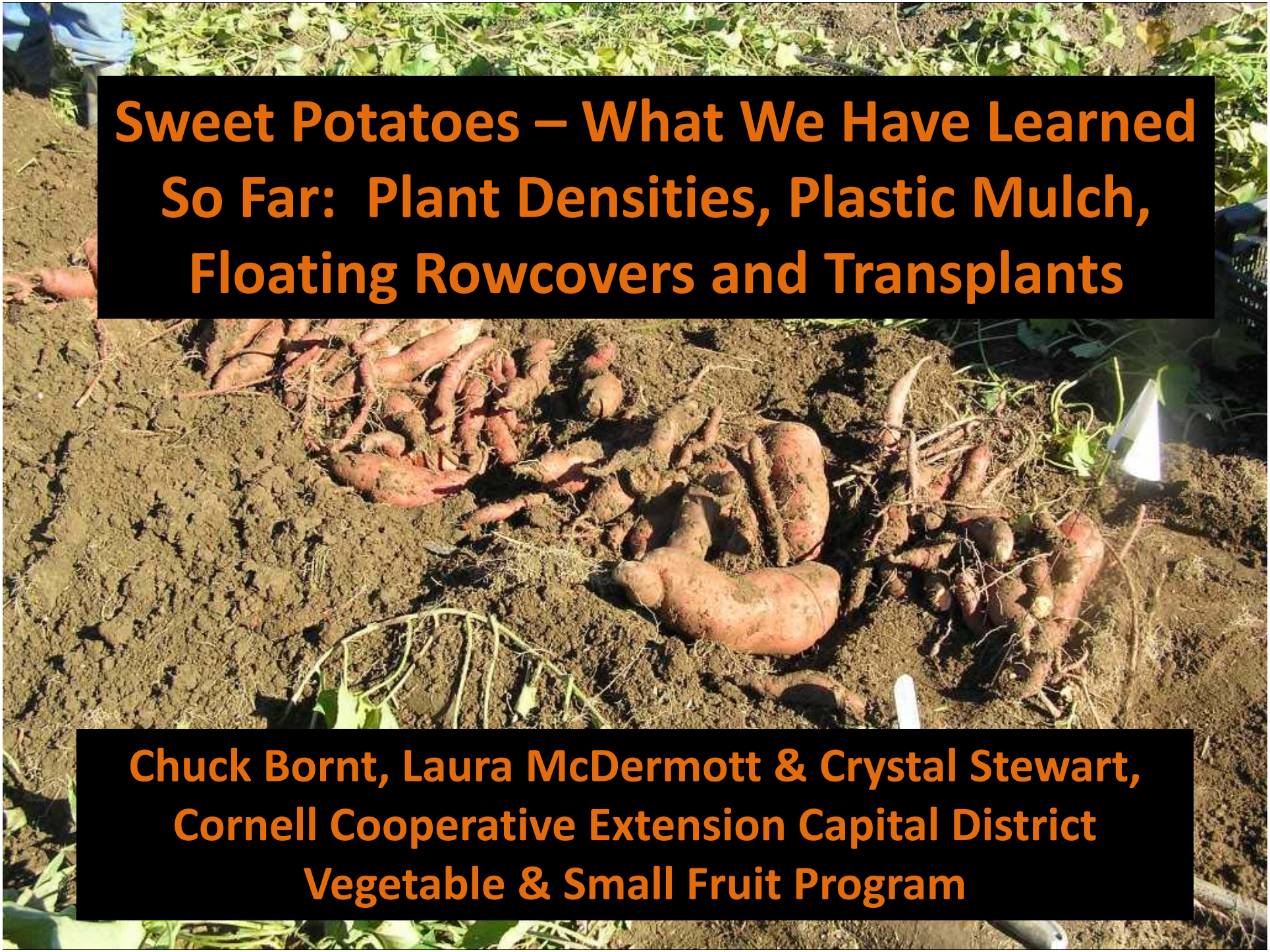

Sweet Potatoes – What We Have Learned So Far: Plant Densities, Plastic Mulch, Floating Rowcovers and Transplants

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Trial Particulars

- This was a multiple trial planting: Thanks to our host Samascott Orchards. We looked at:
  - 2 different plastic mulches (black and IRT) and with or without floating rowcovers
  - 4 different planting densities/planting configurations with slips
  - Using “transplants” or plugs compared to traditional slips

2011 IRT vs. Black Mulch With or Without Floating Rowcovers.

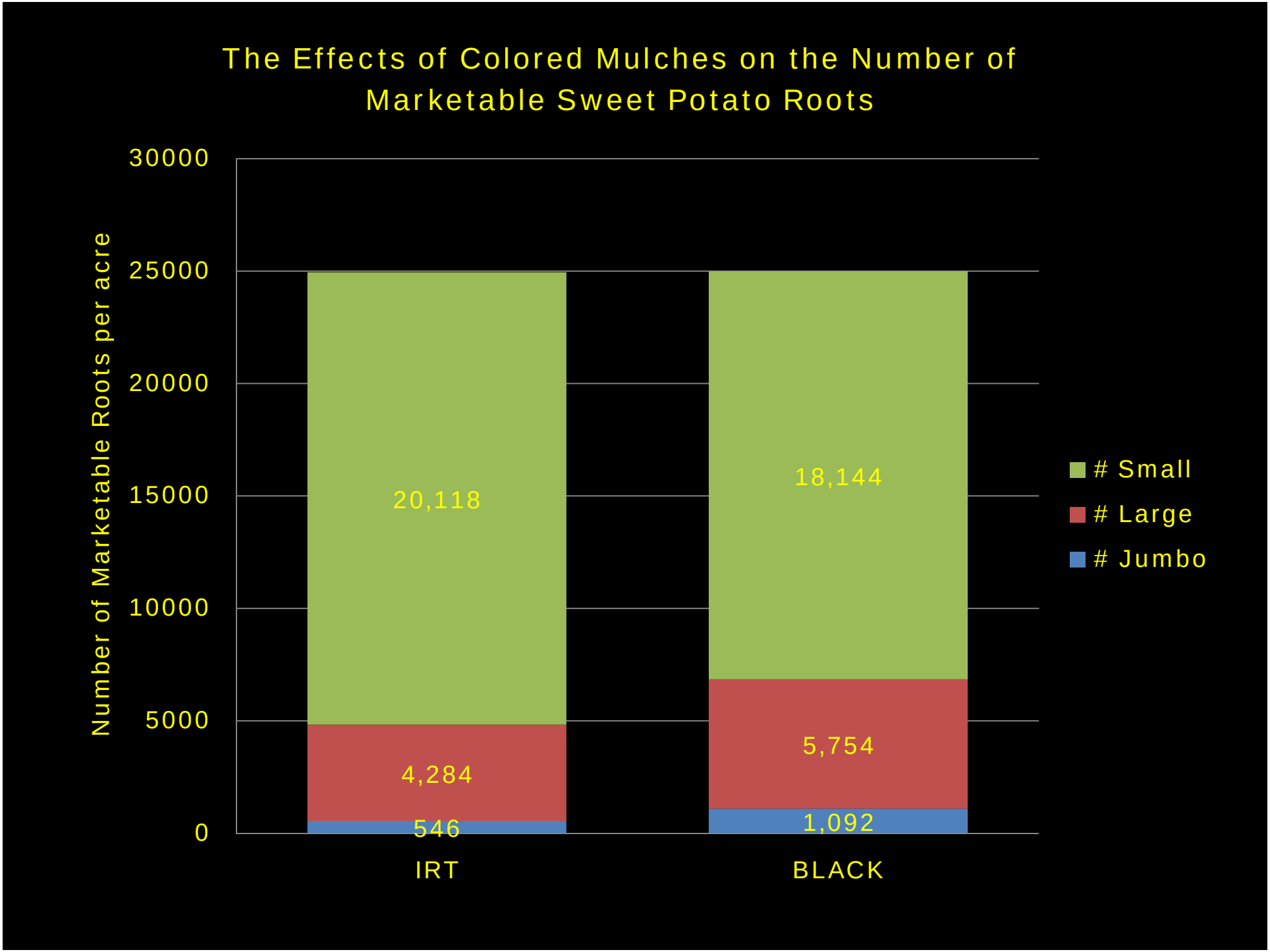
Variety = Covington

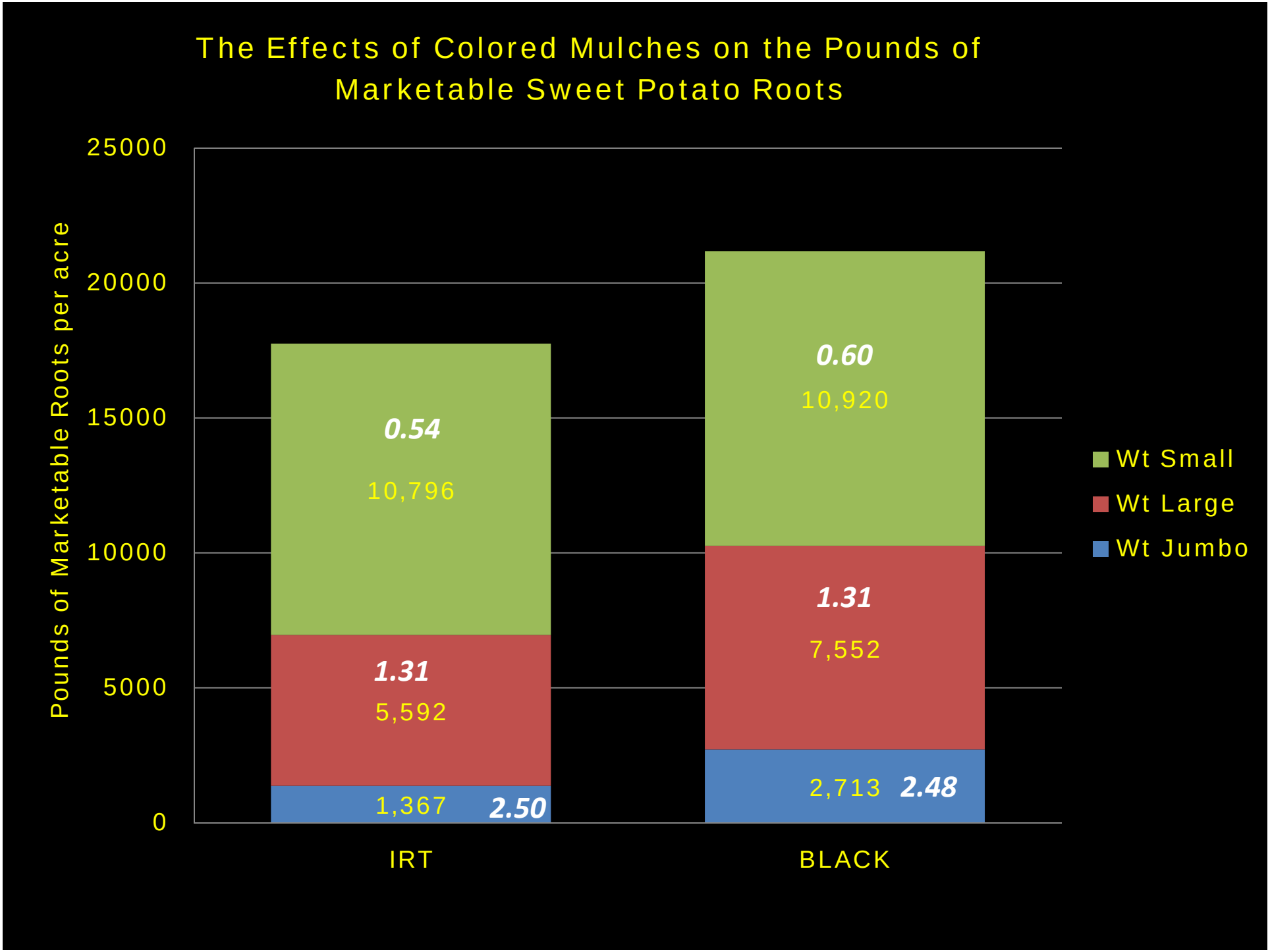
- All plants were planted into 4” raised beds mulched with black plastic or IRT (Infra-red transmitting) mulch on 6.5’ centers on June 10, 2011. A single row of slips at 15” apart was used for the in-row spacing.
- DuPont 5131 (Typar 518) was applied on June 11, 2011
- Harvested on October 20, 2011.

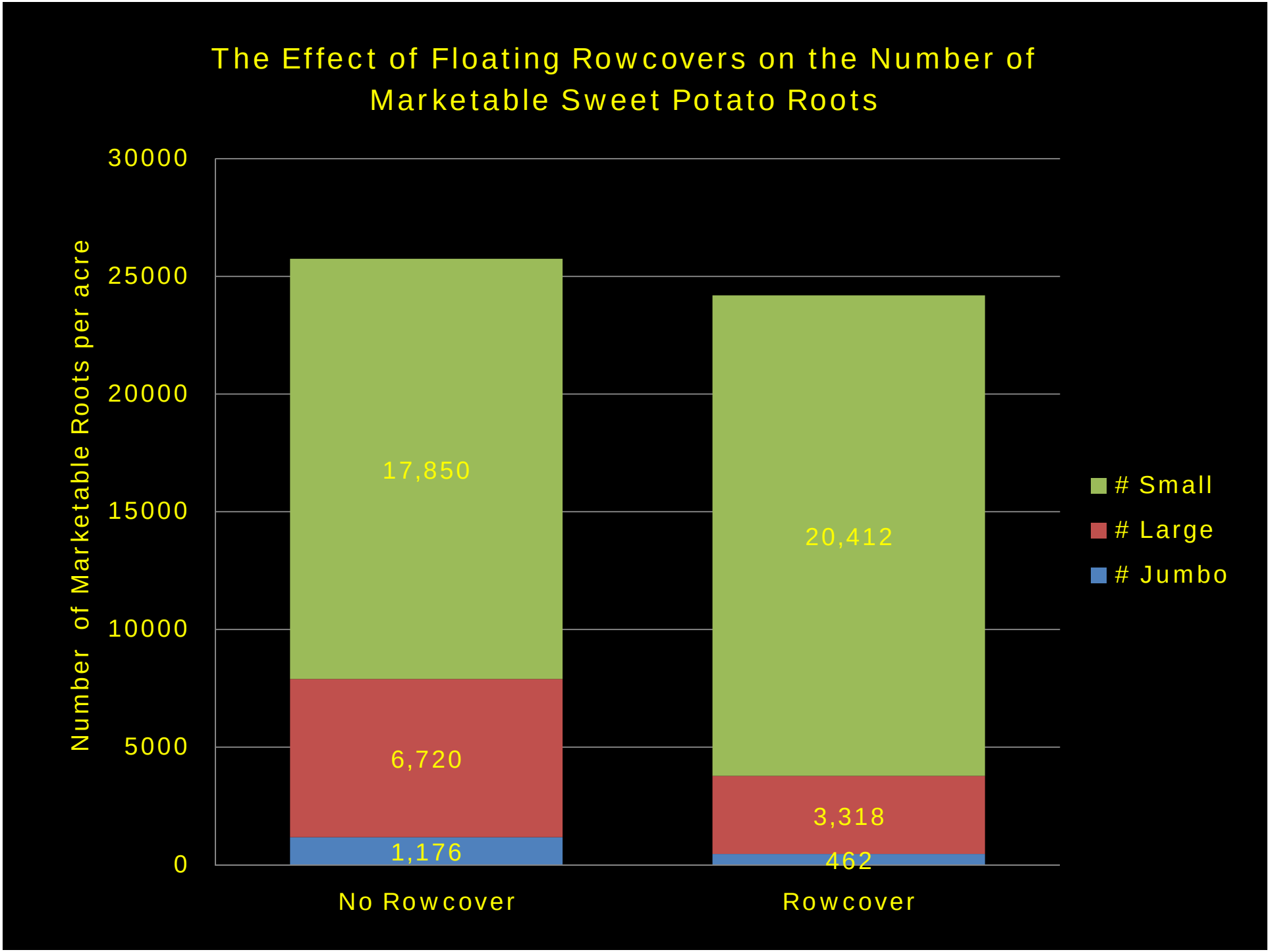

Row Cover

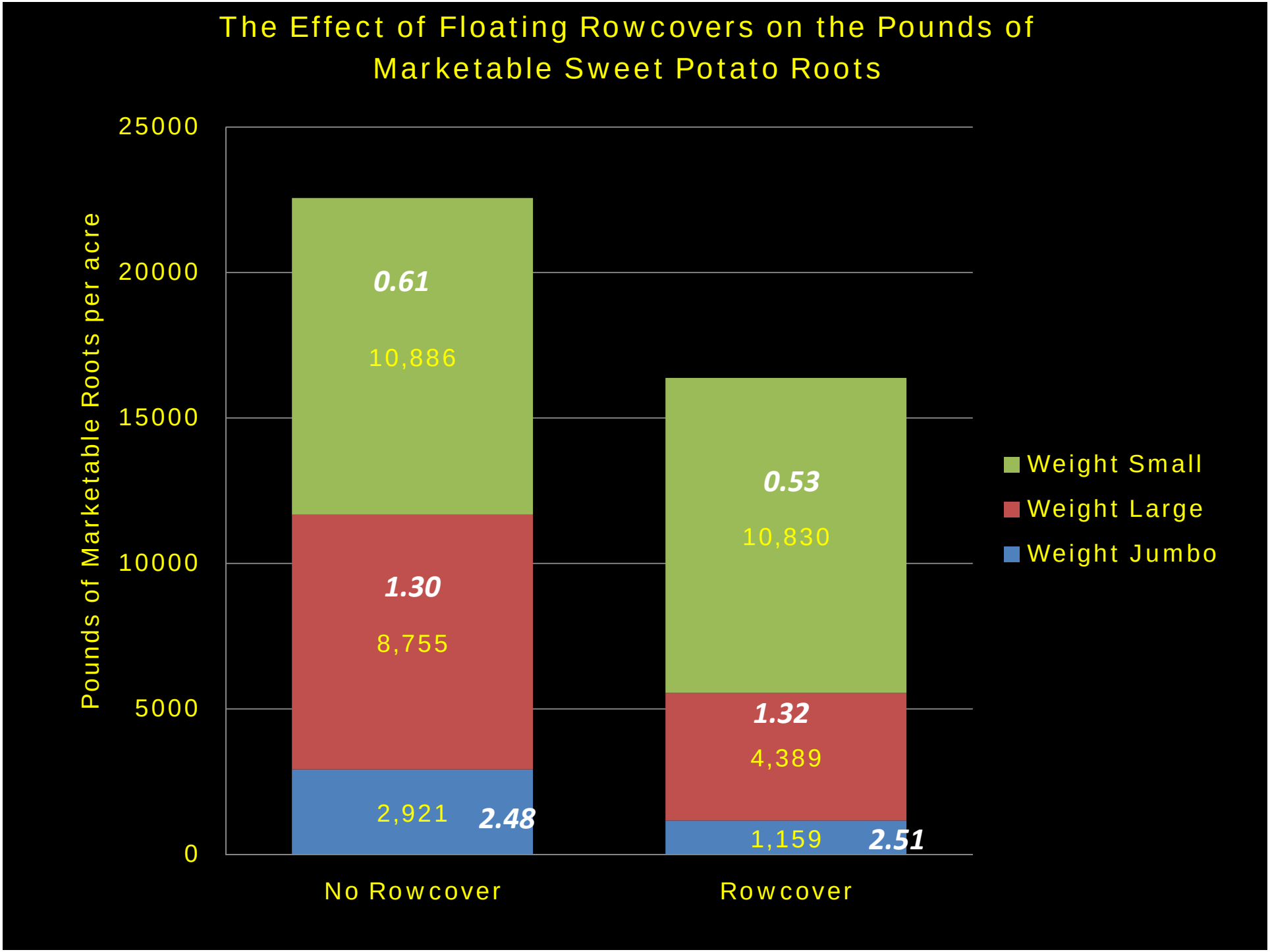

NO Rowcover

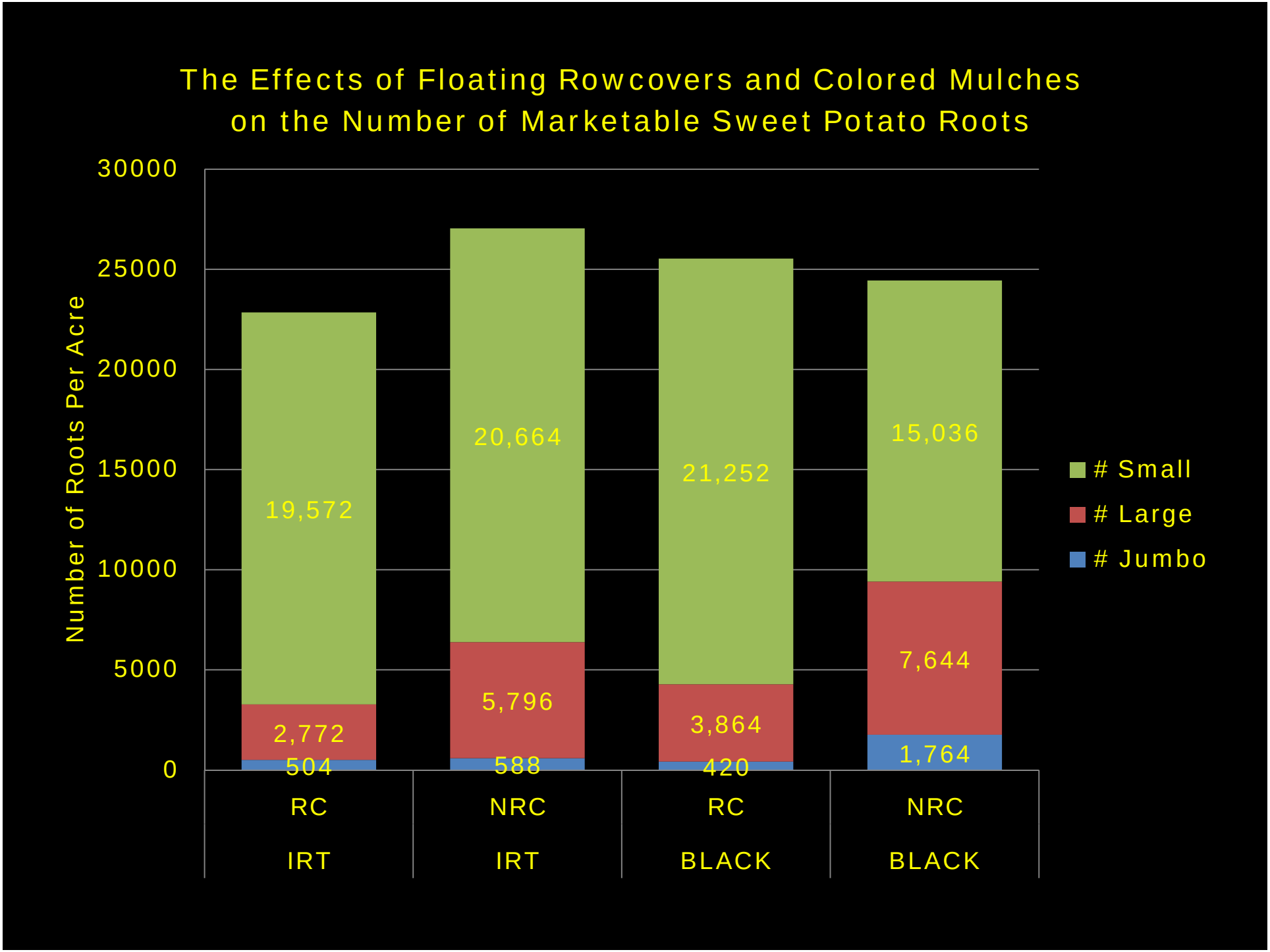

Jumbo Roots –
2lbs +
Large Roots –
1 – 2 lbs
Culls - less then 0.25 lbs or
less then 1.5” in diameter
Small Roots –
0.25 – 1.0 lbs
Beauregard
Rep1

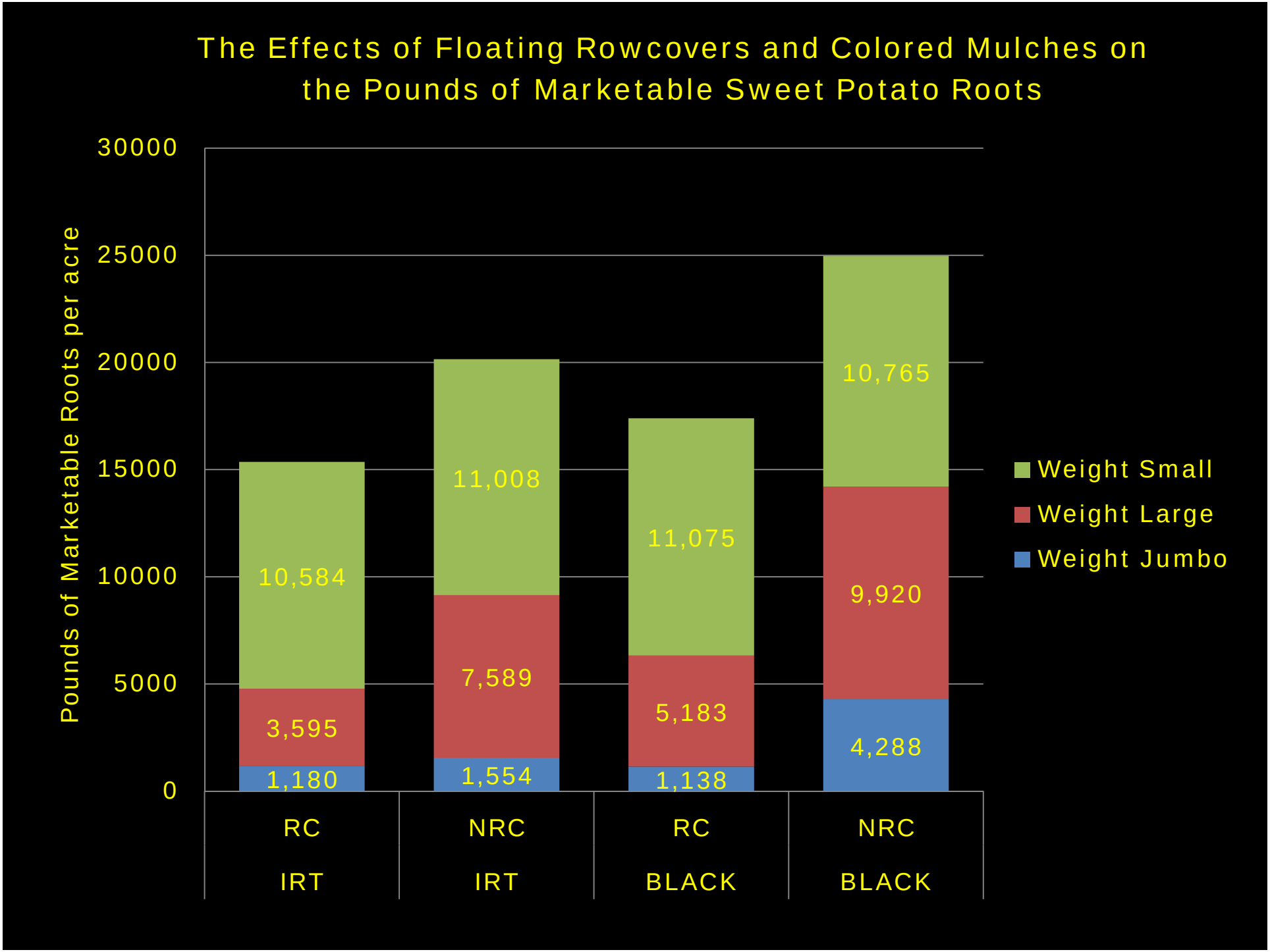

The Effects of Colored Mulches on the Number of Marketable Sweet Potato Roots
Number of Marketable Roots per acre
30000
25000
20000
15000
10000
5000
0
20,118
4,284
546
18,144
5,754
1,092
IRT
BLACK
Small
Large
Jumbo


The Effects of Colored Mulches on the Pounds of Marketable Sweet Potato Roots
Pounds of Marketable Roots per acre
25000
20000
15000
10000
5000
0
0.54
10,796
1.31
5,592
1,367
2.50
0.60
10,920
1.31
7,552
2,713
2.48
IRT
BLACK
Wt Small
Wt Large
Wt Jumbo


The Effect of Floating Rowcovers on the Number of Marketable Sweet Potato Roots
Number of Marketable Roots per acre
30000
25000
20000
15000
10000
5000
0
17,850
6,720
1,176
20,412
3,318
462
No Rowcover
Rowcover
Small
Large
Jumbo


The Effect of Floating Rowcovers on the Pounds of Marketable Sweet Potato Roots
Pounds of Marketable Roots per acre
25000
20000
15000
10000
5000
0
0.61
10,886
1.30
8,755
2,921
2.48
0.53
10,830
1.32
4,389
1,159
2.51
No Rowcover
Rowcover
Weight Small
Weight Large
Weight Jumbo


The Effects of Floating Rowcovers and Colored Mulches on the Number of Marketable Sweet Potato Roots
Number of Roots Per Acre
30000
25000
20000
15000
10000
5000
0
19,572
2,772
504
20,664
5,796
588
21,252
3,864
420
15,036
7,644
1,764
RC IRT
NRC IRT
RC BLACK
NRC BLACK
Small
Large
Jumbo


The Effects of Floating Rowcovers and Colored Mulches on the Pounds of Marketable Sweet Potato Roots
Pounds of Marketable Roots per acre
30000
25000
20000
15000
10000
5000
0
10,584
3,595
1,180
11,008
7,589
1,554
11,075
5,183
1,138
10,765
9,920
4,288
RC IRT
NRC IRT
RC BLACK
NRC BLACK
Weight Small
Weight Large
Weight Jumbo

Mulch Conclusions:

Black Plastic resulted in the greatest percentage of marketable “Large” roots in both 2010 and 2011 (with the exception of Beauregard and Carolina Ruby in 2010 which did better on IRT)

Mulch may have varying influences on the different varieties?

Recommendation – stick to black plastic!

Rowcover Conclusions:

Rowcovers generally reduced overall yields in 2011 when applied on June 11 and left on until harvest.

Rowcovers may not need to be left on all season but applied early after planting until July and removed and replaced in September as it starts to cool down?

2010 Planting Density Trial

Variety = Beauregard

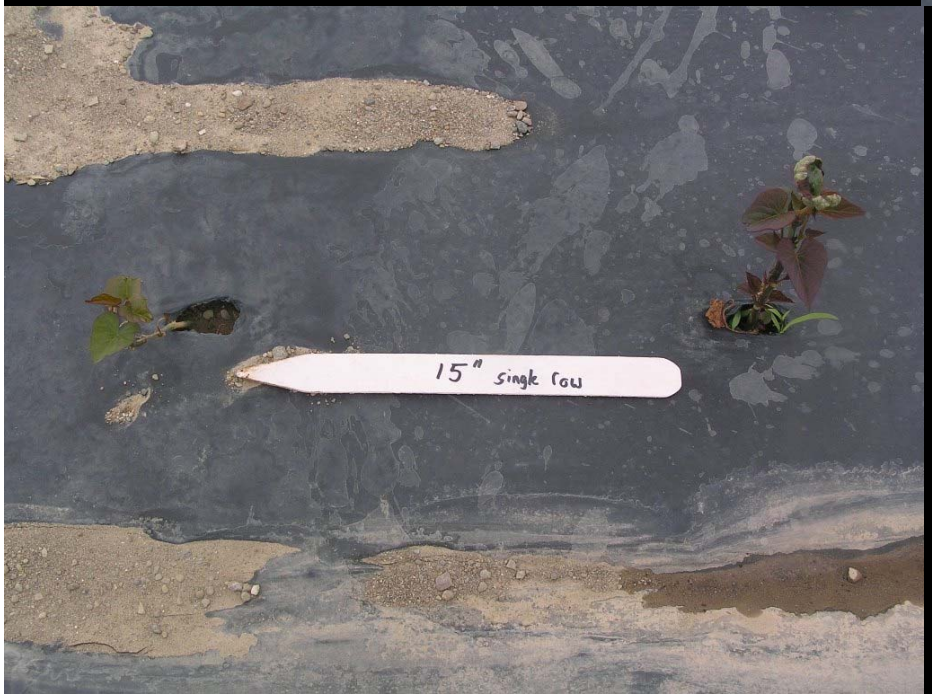
Densities compared:

1, single row (1X), 15” in row spacing, 6.5’ between row spacing – or 5,360 plants/acre

Or

Double staggered row (2X), with 18” in-row spacing, 12” between rows, on 6.5’ spacing or 8,935 plants per acre

18” x 12” Double staggered row



15 “ single row

2010 Results:

- Planting double rows 18” X 12” nearly doubles the number of plants – 8,935 compared to 5,360
- In this trial it reduced the number of jumbo roots and increased the number of large roots

- However, average root size in each size category was reduced in double rows compared to single rows.

2011 Planting Density Trial

Variety = Covington

Densities compared:

- Single row (1X) at 12” apart
- Double staggered row (2x) at 12” apart
- Single Row 6” apart
- Double Staggered row 18” apart

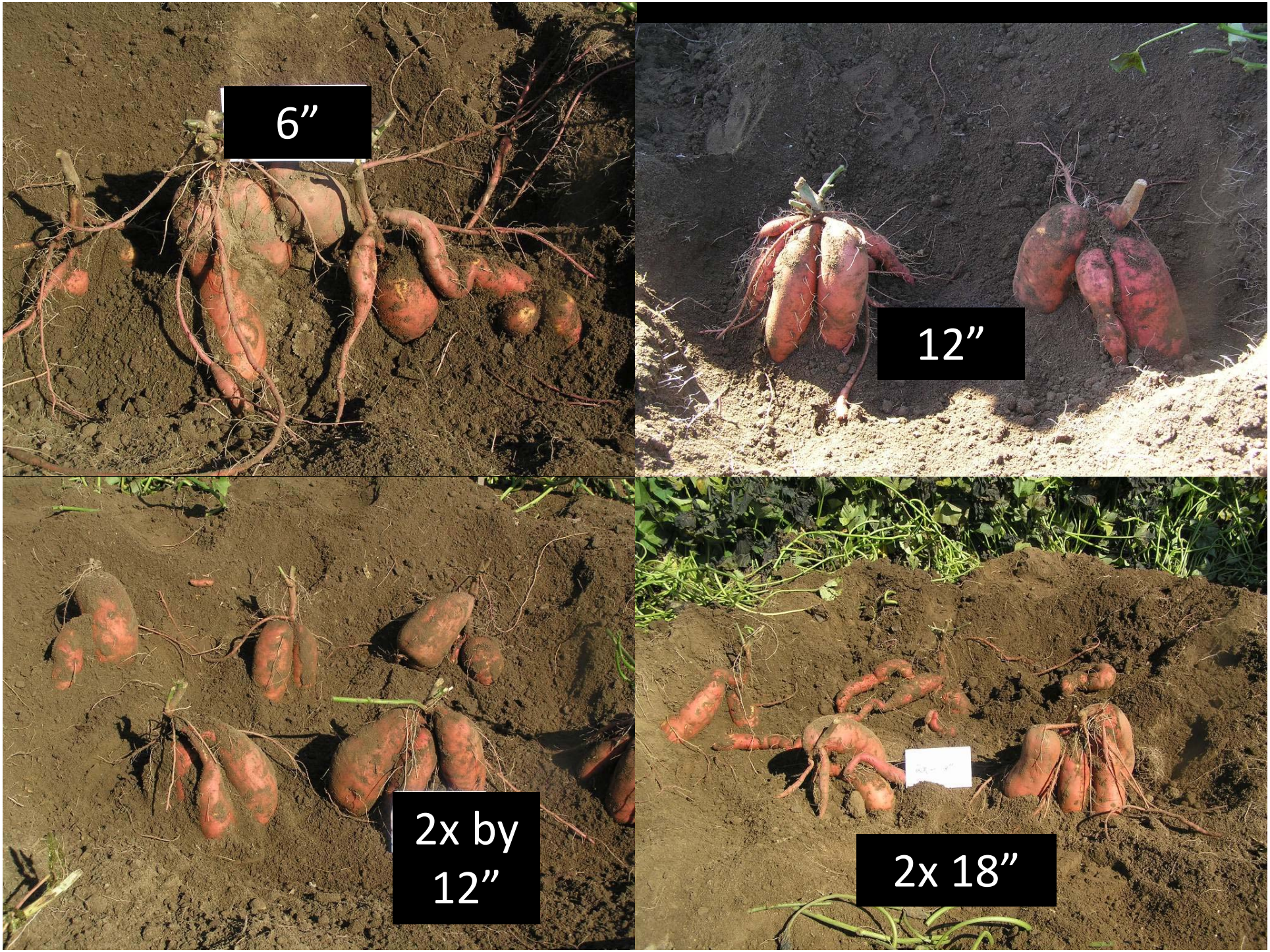
All plants were planted into 4” raised beds mulched with black plastic on 6.5’ centers on June 7, 2011. Harvested on October 20, 2011.

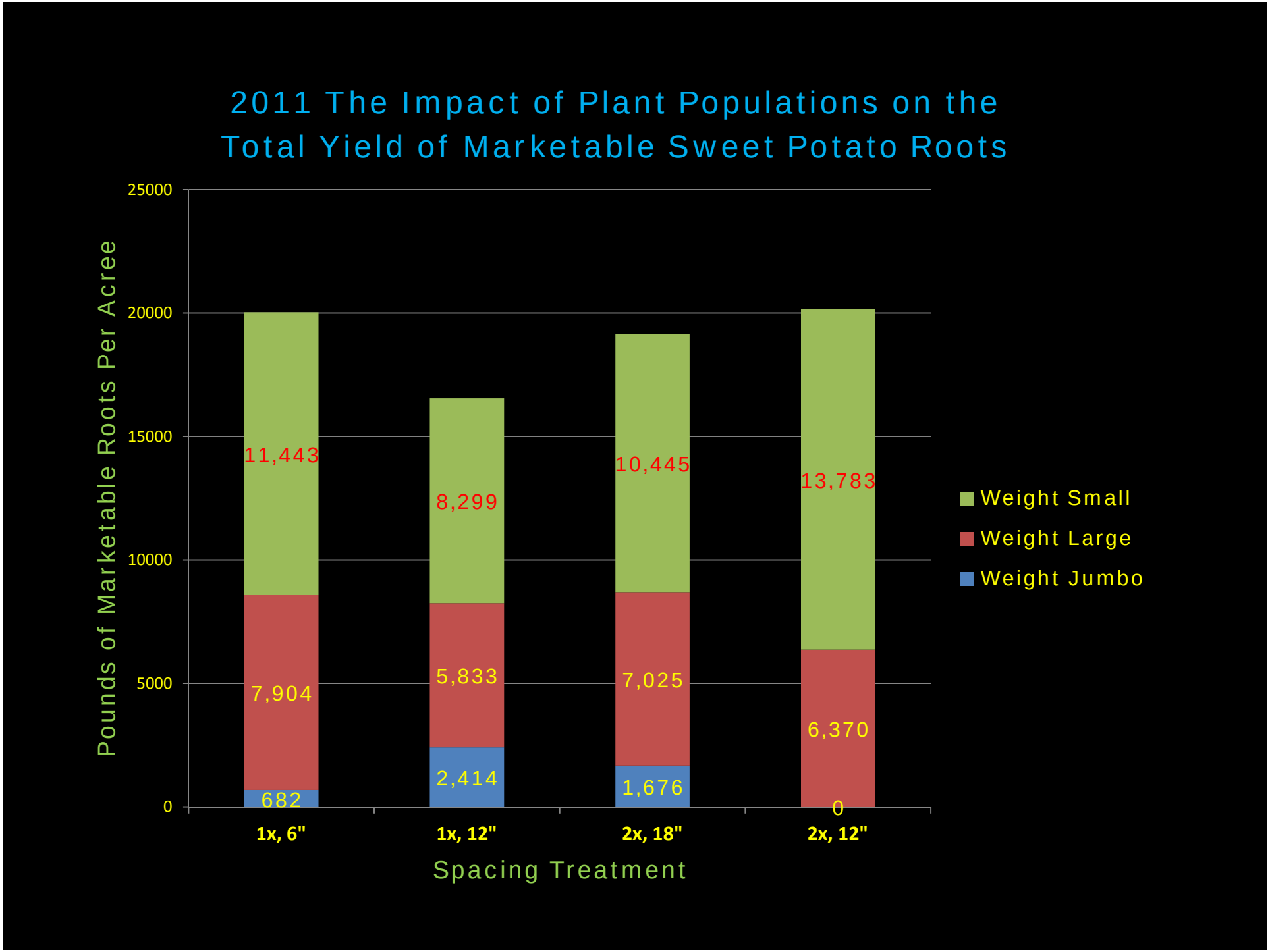
Double row, 18” apart

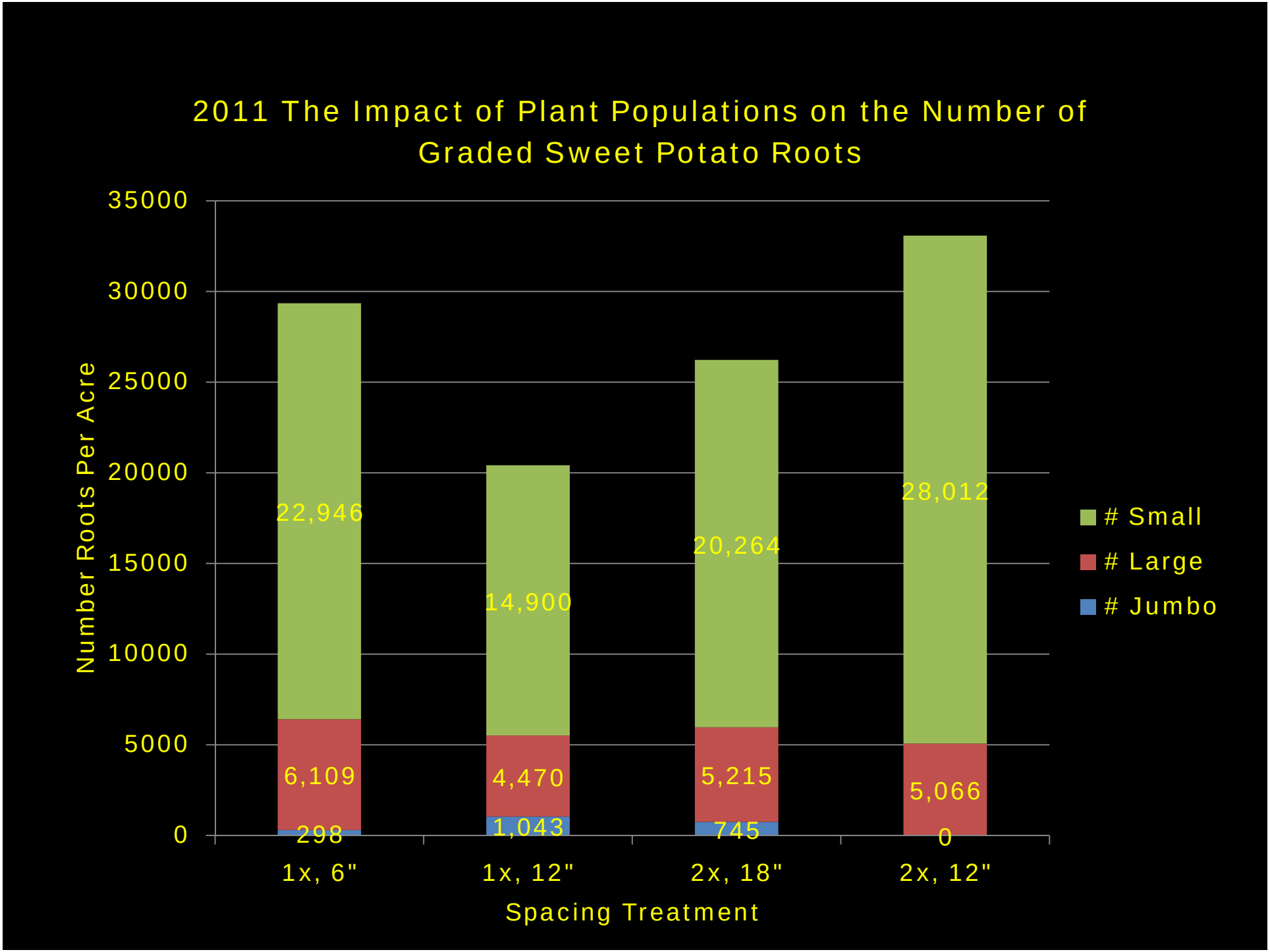
Double row, 12” apart

Single row, 12” apart

Single row, 6” apart


6”
12”
2x by 12”
2x 18”


2011 The Impact of Plant Populations on the Total Yield of Marketable Sweet Potato Roots
Pounds of Marketable Roots Per Acree
25000
20000
15000
10000
5000
0
11,443
7,904
682
8,299
5,833
2,414
10,445
7,025
1,676
13,783
6,370
0
1x, 6"
1x, 12"
2x, 18"
2x, 12"
Spacing Treatment
Weight Small
Weight Large
Weight Jumbo


2011 The Impact of Plant Populations on the Number of Graded Sweet Potato Roots
Number Roots Per Acre
35000
30000
25000
20000
15000
10000
5000
0
22,946
6,109
298
14,900
4,470
1,043
20,264
5,215
745
28,012
5,066
0
1x, 6"
1x, 12"
2x, 18"
2x, 12"
Spacing Treatment
Small
Large
Jumbo

Number of Plants per Acre and Cost

Number of Rows per Bed	Spacing in the rows	Number of Plants per Acre[1]	Cost of Plants per Acre[2]
1	6”	13,400[1]	$763.80 ($57.00/1000)
1	12”	6,700[1]	$415.40 ($62.00/1000)
2	18”	8,935[1]	$643.32 ($62.00/1000)
2	12”	13,400[1]	$763.80 ($57.00/1000)
Typical Southern Plantings[3]	Rows 42” apart In-row 12”	12,450[3]	$709.65 ($57.00/1000)

[1] Based on plastic mulched raised beds on 6.5’ centers

[2] Plant costs were calculated using Scott Farms figures for 2012 and includes shipping.

[3] These plant populations were determined using recommendations from Louisiana and are bare ground plantings.

Are Double Rows Worth the Extra Expense?

Number of Rows per Bed	Cost of Plants per Acre[2]	Jumbo and Large Root Yields	Total Income from Jumbo's and Large Roots[3] ($1.00/ lb) [4]	Profit per acre
1 x 6"	$763.80 ($57.00/1000)	682 + 7,904	$8,586	$7,822
1 x 12"	$415.40 ($62.00/1000)	2,414 + 5,833	$8,247	$7,831
2 x 18"	$643.32 ($62.00/1000)	1,676 + 7,025	$8,701	$8,057
2 x 12"	$763.80 ($57.00/1000)	0 + 6,370	$6,370	$5,606

[1] Based on plastic mulched raised beds on 6.5' centers

[2] Plant costs were calculated using Scott Farms figures for 2012 and includes shipping.

[3] This does not include the marketable yields of small roots as they may be sold or maybe sold for less money.

[4] The $1.00/lb amount used in this calculation was only theoretical.

2011 Results:

- For this study, the double row at 18” resulted in yields that we would be interested in due to a high number of “Large” roots and fewer “Small” roots.

- However, I would also not rule out the 2x 12” spacing either, but beware there may be a higher number of “Small” roots.

2010 Slips vs. Transplants Trial

Variety = Beauregard

Evaluated the use of planting traditional sweet potato slips to slips planted into plug trays 2-3 weeks prior to field planting

Planted in a single row, 15” in row spacing, 6.5’ between row spacing –

Transplants
ready to go

Transplants one week after planting

Slips one week after planting

2010 Results:

- Transplants resulted in a significantly greater number of jumbo roots compared to slips

-They also resulted in fewer large and small roots.

-Transplants also had slightly larger overall average root size

-This might mean that transplants could be harvested earlier

-That might reduce the number of jumbos while increasing the number of large roots?

2011 Transplant Density Trial

Variety = Covington

Instead of using slips, we wanted to evaluate using transplants (slips that would be put into 50 cell plug trays 2 weeks before planting and left in a greenhouse)

We then compared the following densities:

- Single(1X) Row 6” apart
- Single Row (1X) at 12” apart
- Double staggered row (2x) at 12” apart
- Double Staggered row 18” apart
- Traditional slips shipped in 2 days before planting trial in the field, single row, 12” apart.

All plants were planted into 4” raised beds mulched with black plastic on 6.5’ centers on June 24, 2011. Harvested on October 20, 2011.

2011 Transplant Density Trial

We did not get off to a very good start!

Our slips that were to be used for making the transplants did not arrive until June 8, 2011 (suppose to arrive the 3rd week in May)!

Therefore, this planting did not go in until June 24th!

All plants were planted into 4” raised beds mulched with black plastic on 6.5’ centers on June 24, 2011. Harvested on October 20, 2011.

Transplants
ready to go


TRANS 6"
TRANS + DOP


2x, 18"


2x, 12"


TRANS DOP
1 row 12"
1x, 12"

Transplants one week after planting

Slips one week after planting


2x - 12"
Transplant
2x - 18"
Transplant
Transplant
Trial
Slips
12"

2011 Results:

- Unfortunately, I do not feel that this was a good trial due to the fact we did not get our slips in May when we needed them.

-The June 24th planting date was too late in my opinion which is evident by the high numbers of small roots

-Also, “Root Balls” could also pose another problem with transplants

Thank You

The Samascotts for hosting these trials!

And

Northeast SARE for supporting this work through a Research and Demonstration Grant!