Management of Curly Top of Tomato with Reflective Mulches

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Management of Curly Top of Tomato with Reflective Mulches

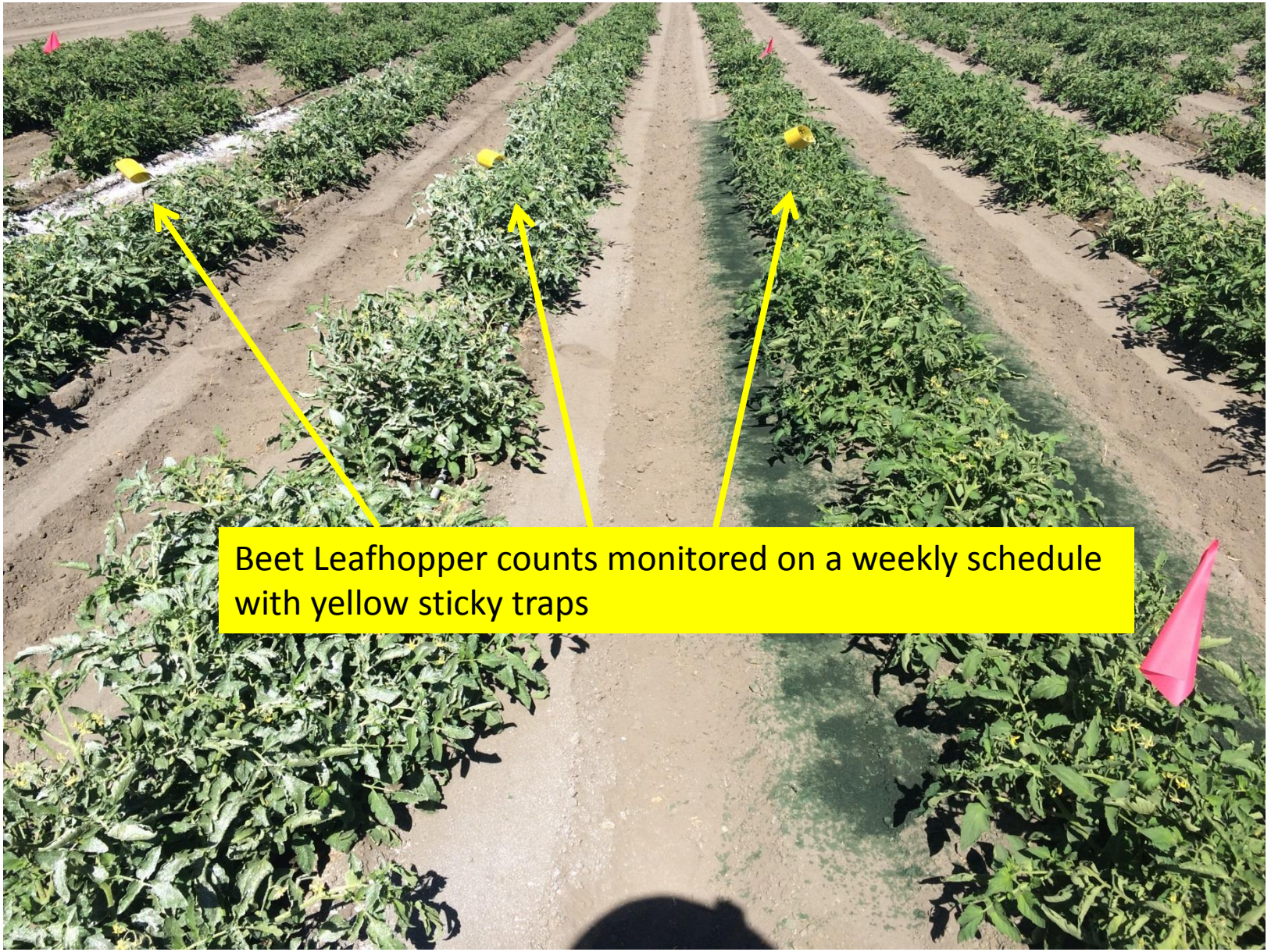
- Curly top virus transmitted by Beet leafhopper.
- Once BLH lands on tomato plant it probes to see if its suitable plant host.
- Once BLH probes the virus is transmitted to tomato plant.
- Insecticides kills BLH after infection occurs.

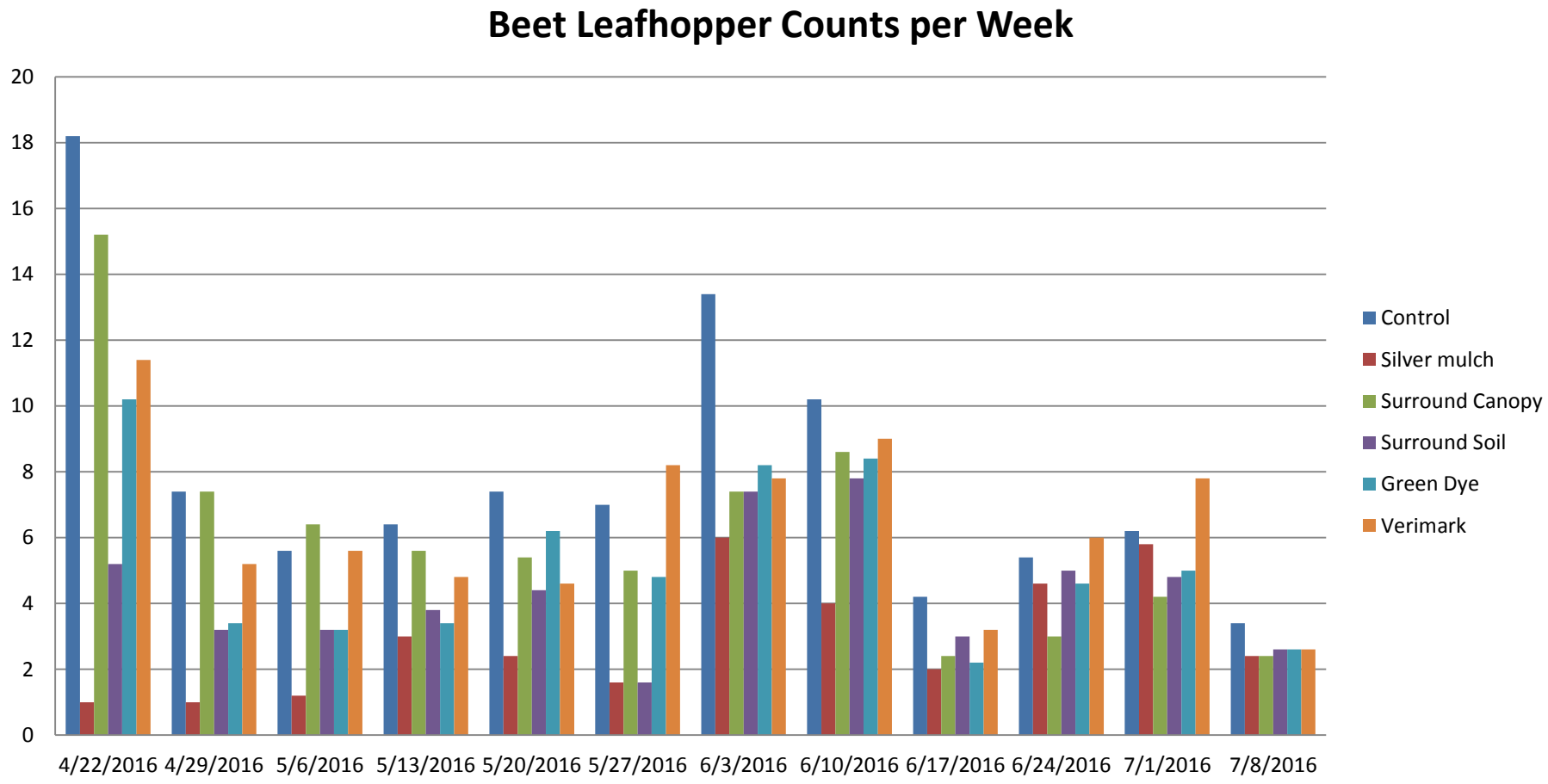
Management of Curly Top of Tomato with Reflective Mulches

- Need to prevent BLH from landing onto plants.
- A method to repel BLH from tomato plants.
- Reflective mulches are effective but costly.
- Trial conducted to test different methods to repel BLH.

The treatments were as follows:

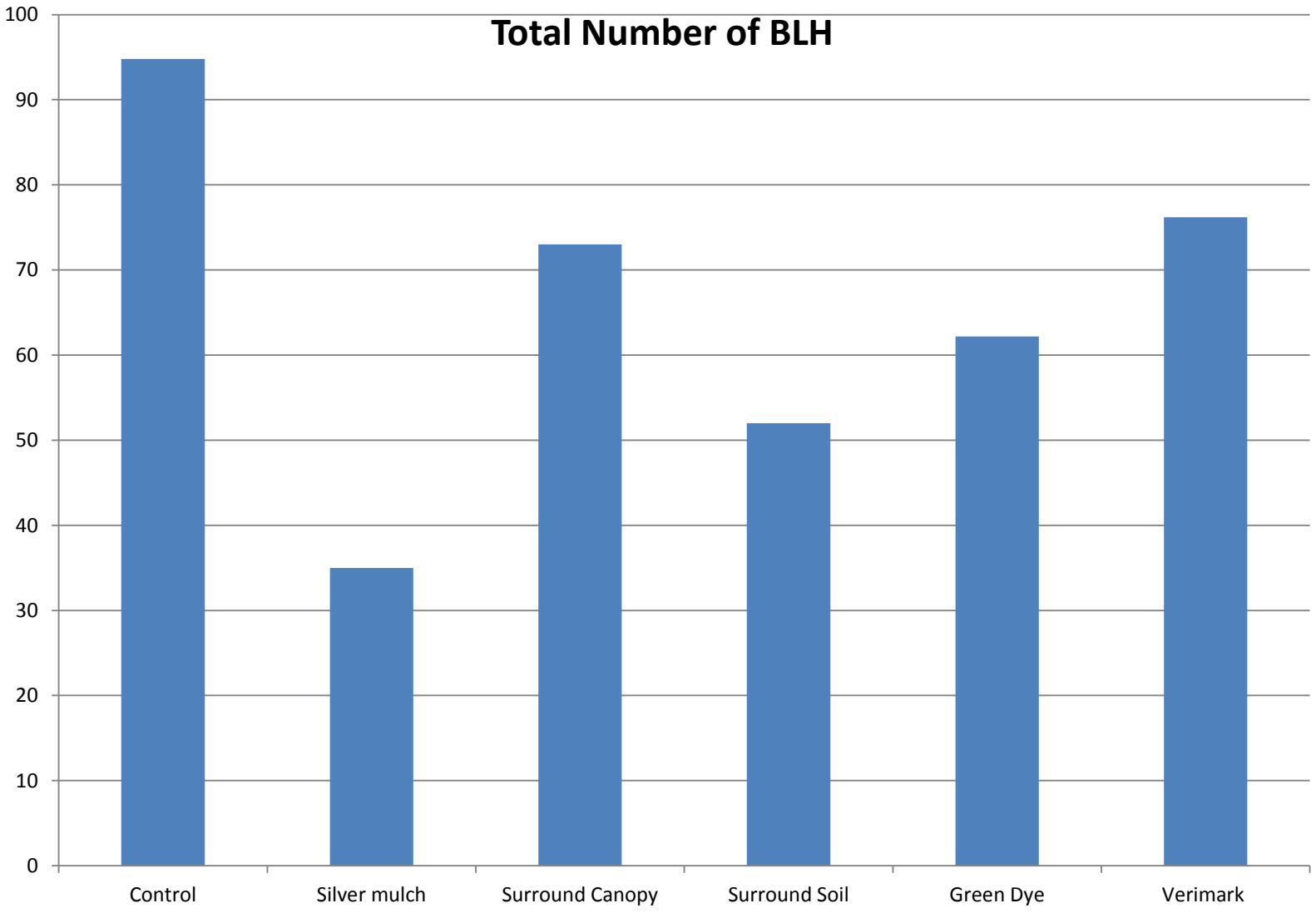
- 1. Control
- 2. Silver Reflective Mulch
- 3. Surround Canopy
- 4. Surround Soil
- 5. Green Dye soil
- 6. Verimark


Beet Leafhopper counts monitored on a weekly schedule with yellow sticky traps


Beet Leafhopper Counts per Week
20
18
16
14
12
10
8
6
4
2
0
4/22/2016
4/29/2016
5/6/2016
5/13/2016
5/20/2016
5/27/2016
6/3/2016
6/10/2016
6/17/2016
6/24/2016
7/1/2016
7/8/2016
Control
Silver mulch
Surround Canopy
Surround Soil
Green Dye
Verimark

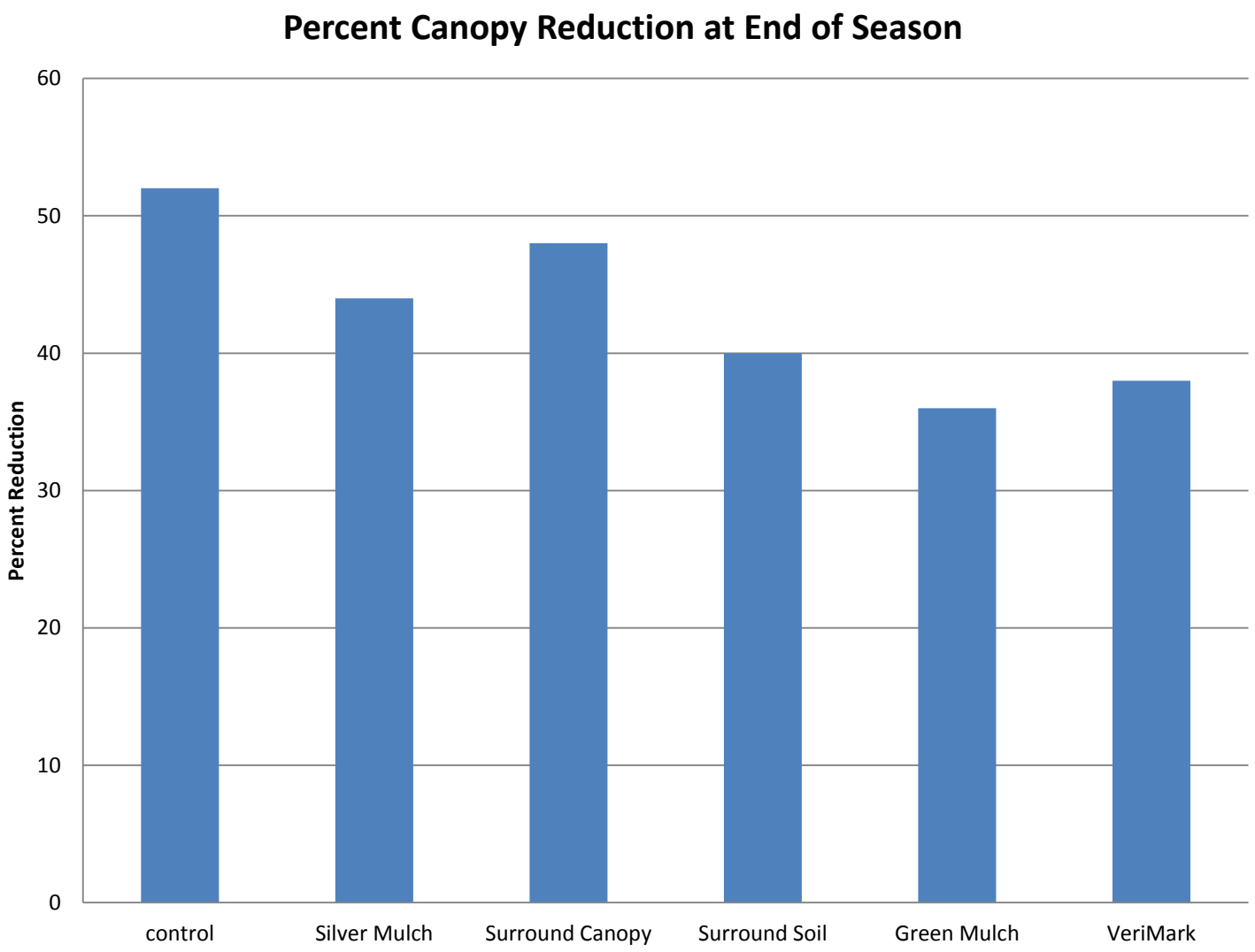
Total number of BLH captured over season on yellow sticky traps

Treatment	Average Total BLH Count for Season
Control	94.8 A
Silver Reflective Mulch	35.0 C
Surround Canopy	73.0 AB
Surround Soil	52.0 BC
Green Dye	62.2 B
Verimark	76.2 AB
Probability=	0.0130
%CV=	28.60
LSD P=0.05	24.73


Total Number of BLH
100
90
80
70
60
50
40
30
20
10
0
Control
Silver mulch
Surround Canopy
Surround Soil
Green Dye
Verimark

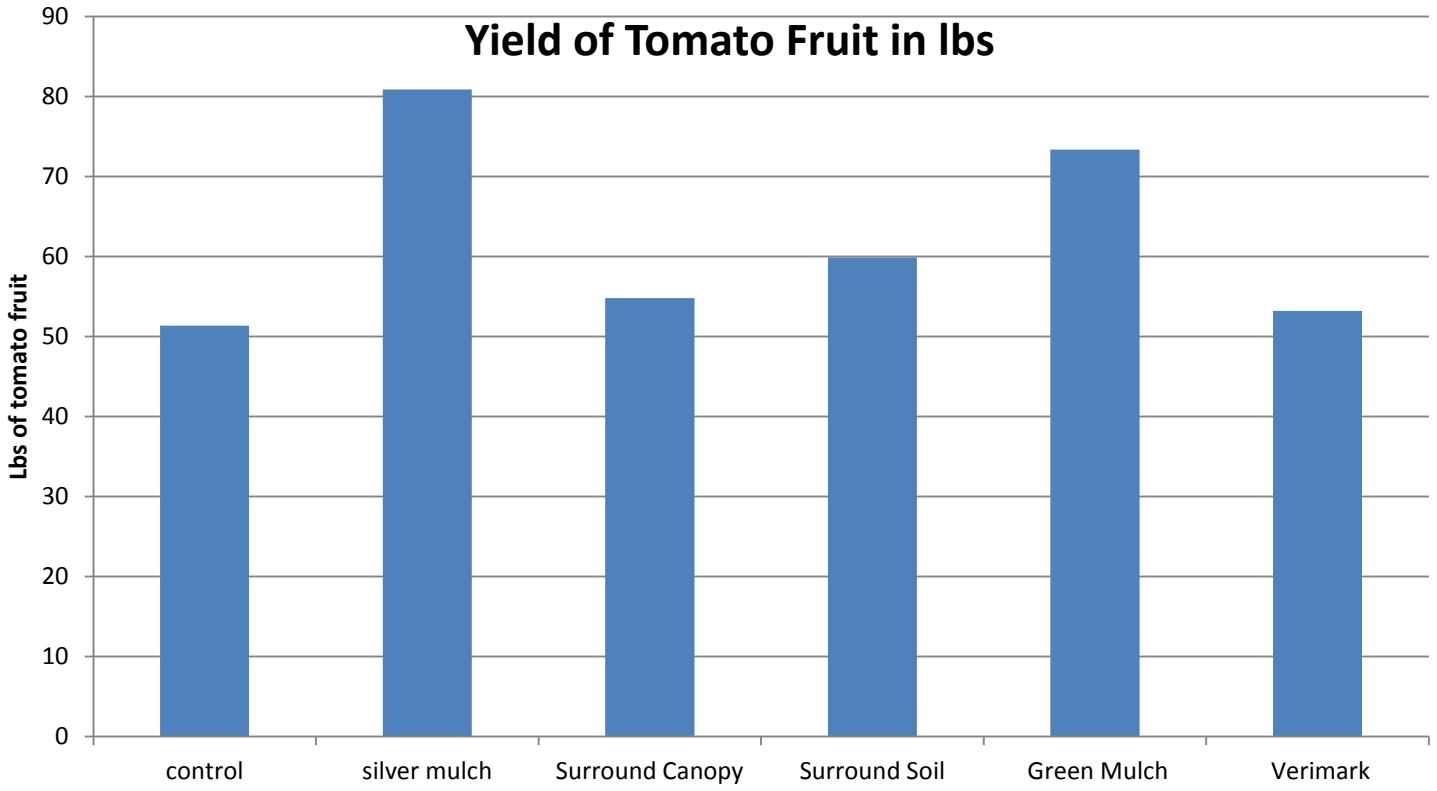
Canopy Reduction

Treatment	Percent canopy reduction at end of season
Control	52
Silver Reflective Mulch	44
Surround Canopy	48
Surround Soil	40
Green Dye	38
Verimark	38
Probability=	0.5993
%CV=	34.38
LSD P=0.05	Not Significant

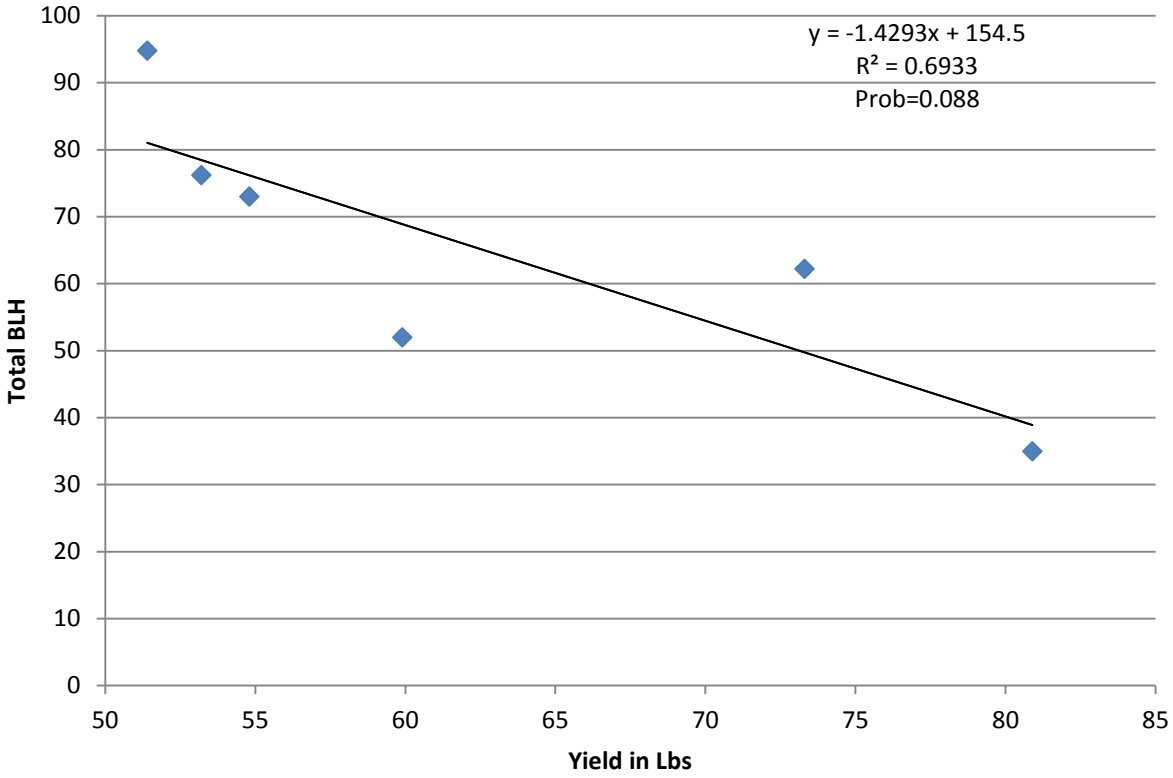

Percent Canopy Reduction at End of Season
Percent Reduction
60
50
40
30
20
10
0
control
Silver Mulch
Surround Canopy
Surround Soil
Green Mulch
VeriMark

Tomato Yield for each Treatment

Treatment	Lbs of tomato fruit harvested
Control	51.4
Silver Reflective Mulch	80.9
Surround Canopy	54.8
Surround Soil	59.9
Green Dye	73.3
Verimark	53.2
Probability=	0.4509
%CV=	43.77
LSD P=0.05	Not Significant


Yield of Tomato Fruit in lbs
Lbs of tomato fruit
90
80
70
60
50
40
30
20
10
0
control
silver mulch
Surround Canopy
Surround Soil
Green Mulch
Verimark

Regression of BLH Counts verses Tomato Yield

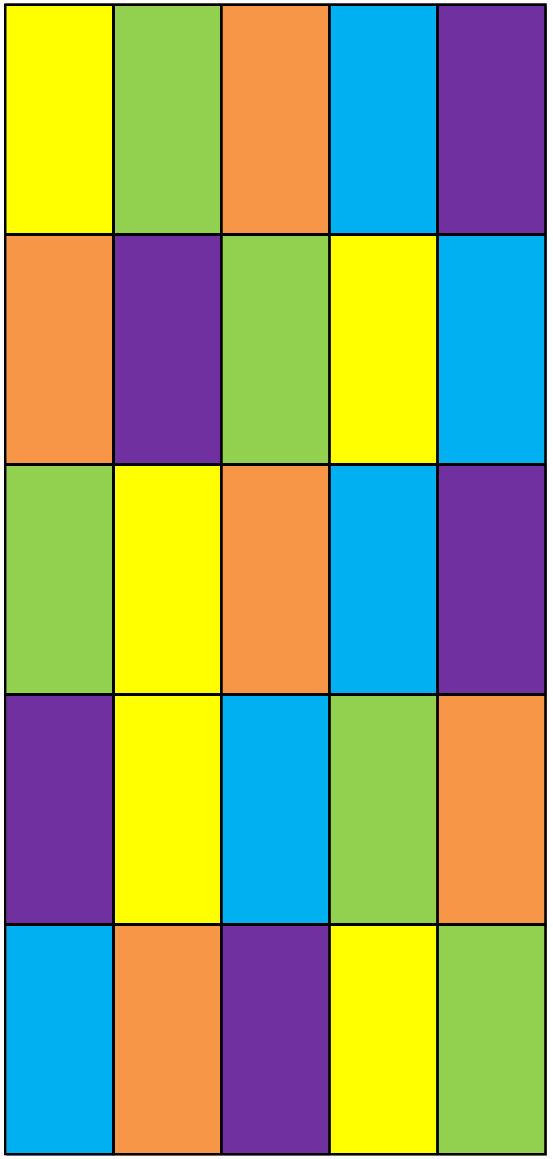


Conclusions

- We were able to reduce BLH counts with some of the mulches.
- Reducing BLH incidence reduced curly top which increased tomato yields.
- Surround applied as a spray on mulch can repel BLH.
- Green turf dye applied as a spray on mulch can repel BLH
- The economics of these treatments still need to be addressed.

Hindsight

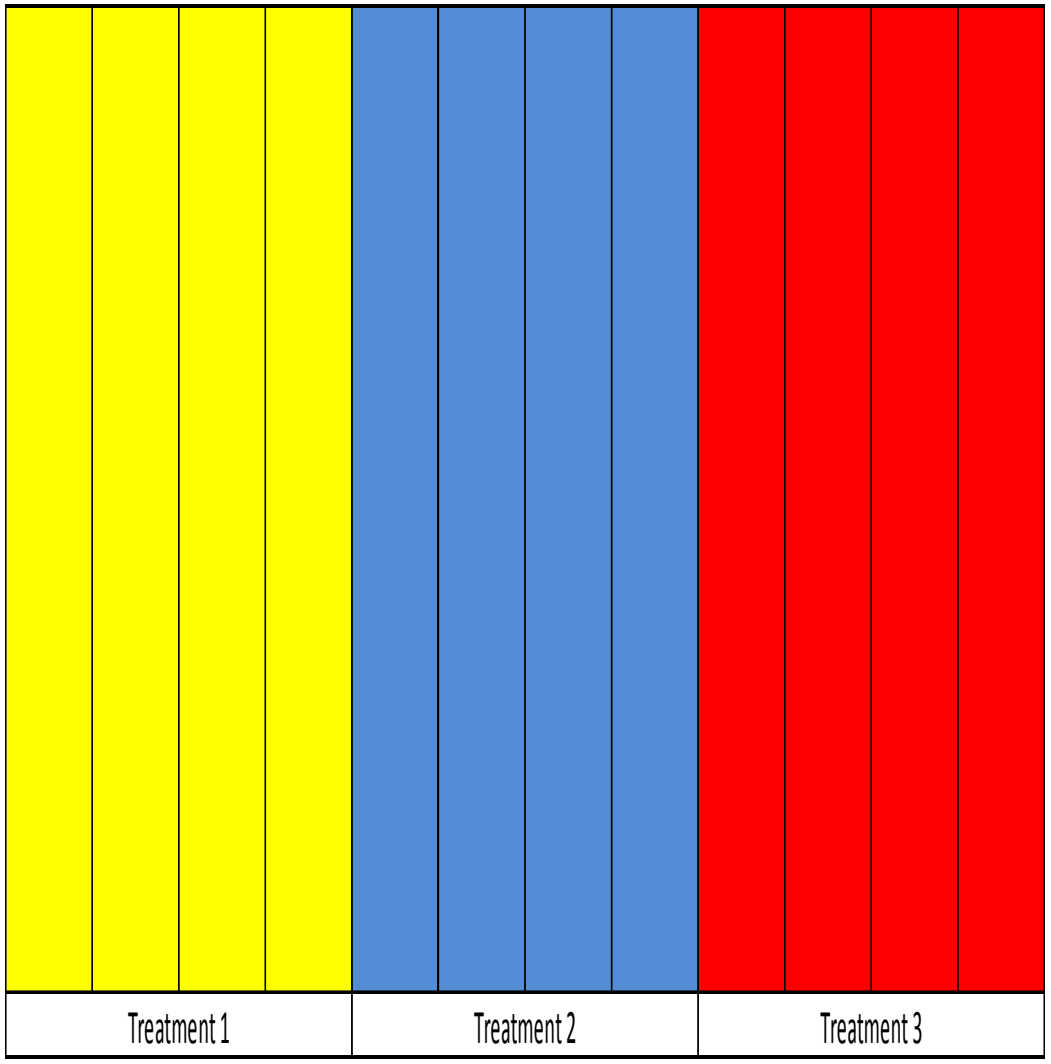
Yet these were only one row plots with BLH pressure coming from all sides.



Hindsight

Would repellency be greater if plots were larger in size?

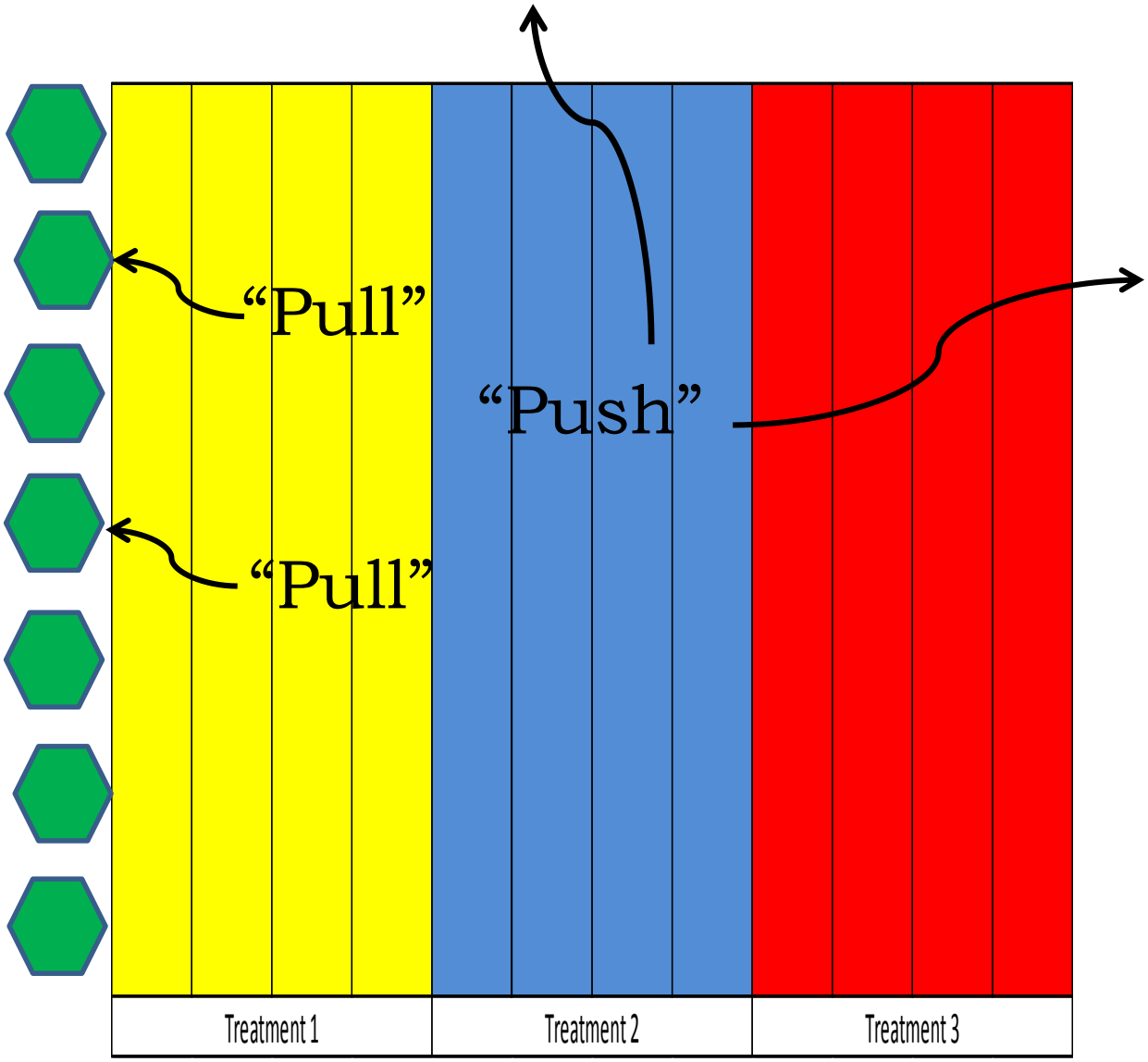
Four beds wide? An acre? 40 acres?



Hindsight

Push-Pull Technology

Combines both repellant and attractive plants in a field to repel pest insects from the crop and attract them to a non-crop plant on which they can be controlled



Khan, Z.R., C.A.O. Midega, E.M. Njuguna, D.M. Amudavi, J.M. Wanyama, and J.A. Pickett. 2008b. Economic performance of the 'push-pull' technology for stemborer and *Striga* control in smallholder farming systems in western Kenya. Crop Prot. 27:1084-1097.

Thanks to

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&
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