

**Heat Stress
Management in
Lettuce & Bell
Peppers;**

**Variety Trial for
Snow and Snap
Peas;**

**Specialty
Pumpkins that are
Edible and
Ornamental**

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Avoiding Heat-Induced Quality Problems in Lettuce

- High temperatures promote flowering (bolting)
- High temperatures cause bitter flavor to develop



Bolting occurred in most varieties planted in a fall trial in 2012. This trial was planted on August 15.

Avoiding Heat-Induced Quality Problems in Lettuce

Heat Tolerant Varieties

Tested in trials in:
2012, 2018, 2019, 2023

Some varieties have significantly lower levels of bolting and bitter flavor development.

The effect of variety is statistically significant and meaningful in the “real world”.



Shade Cloth

Tested in trials in:
2018, 2019, 2023

In 2018 and 2019 trials, shade cloth reduced bitter flavor but increased bolting.

In 2023 trials, shade did not impact bolting or bitterness.



White or Silver Mulch

Tested in trials in:
2019, 2023

White and silver mulch reduced bolting and bitterness in 2019 and 2023 trials.



Avoiding Heat-Induced Quality Problems in Lettuce

Flavor Ratings for Lettuce Varieties Transplanted on June 5 and Harvested in Early July

Variety Name	Type	Average Flavor Rating*	
Skyphos	Butterhead, Red	1.04	a**
Muir	Batavia, Green	1.08	ab
Nevada	Batavia, Green	1.13	abc
Jericho	Romaine	1.17	abc
Salanova Red Tango	One-Cut, Red	1.33	abc
Sunland	Romaine	1.38	abc
Salanova Red Butter	On-Cut, Red	1.42	bcd
Verigo	One-Cut, Green	1.46	cde
Rubygo	One-Cut, Red	1.75	def
Salanova Green Oakleaf	One-Cut, Green	1.79	efg
Adriana	Butterhead, Green	1.92	fg
Starfighter	Leaf, Green	2.04	fg
Salanova Green Butter	One-Cut, Green	2.13	g
Red Cross	Butterhead, Red	3.21	h

*Flavor was rated on a 1-4 scale with ratings 1 and 2 having marketable flavor and 3 and 4 being un-marketable.

**Averages followed by the same letter are not statistically different from one another.



Avoiding Heat-Induced Quality Problems in Lettuce

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Variety Name	Type	Average Flavor Rating*	
Skyphos	Butterhead, Red	1.04	a**
→ Muir	Batavia, Green	1.08	ab
→ Nevada	Batavia, Green	1.13	abc
Jericho	Romaine	1.17	abc
Salanova Red Tango	One-Cut, Red	1.33	abc
Sunland	Romaine	1.38	abc
Salanova Red Butter	On-Cut, Red	1.42	bcd
Verigo	One-Cut, Green	1.46	cde
Rubygo	One-Cut, Red	1.75	def
Salanova Green Oakleaf	One-Cut, Green	1.79	efg
Adriana	Butterhead, Green	1.92	fg
Starfighter	Leaf, Green	2.04	fg
Salanova Green Butter	One-Cut, Green	2.13	g
Red Cross	Butterhead, Red	3.21	h



Only Muir and Nevada produced marketable lettuce when transplanted on June 22 and harvested in early August.

*Flavor was rated on a 1-4 scale with ratings 1 and 2 having marketable flavor and 3 and 4 being un-marketable.

**Averages followed by the same letter are not statistically different from one another.

Avoiding Heat-Induced Quality and Yield Loss in Peppers

Early Season Shade

Shade applied at planting increases plant survival and promotes establishment.



Unshaded Treatment Jul 20, 2022



Shaded Treatment Jul 20, 2022

Avoiding Heat-Induced Quality and Yield Loss in Peppers

Early Season Shade

Shade applied at planting increases plant survival and promotes establishment.



Mid Season Shade

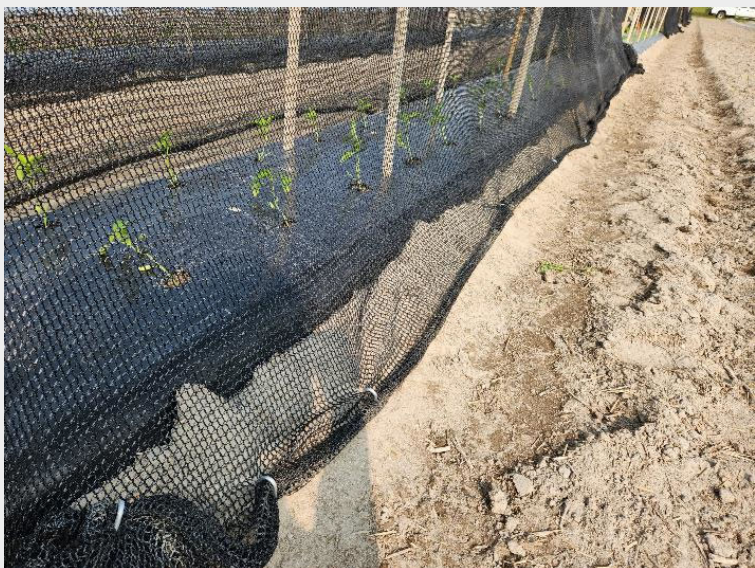
Shade in July and early August increase fruit size and reduces sunscald.

- Shaded treatments had cooler day temperatures and warmer night temperatures.

- Longer pepper fruit develop from flowers that form during warm nighttime (68-75°F) conditions.



Avoiding Heat-Induced Quality and Yield Loss in Peppers



Snow and Snap Pea Variety Trial



24 snow and snap pea varieties planted on March 30, 2023

Only the 8 vining types survived.



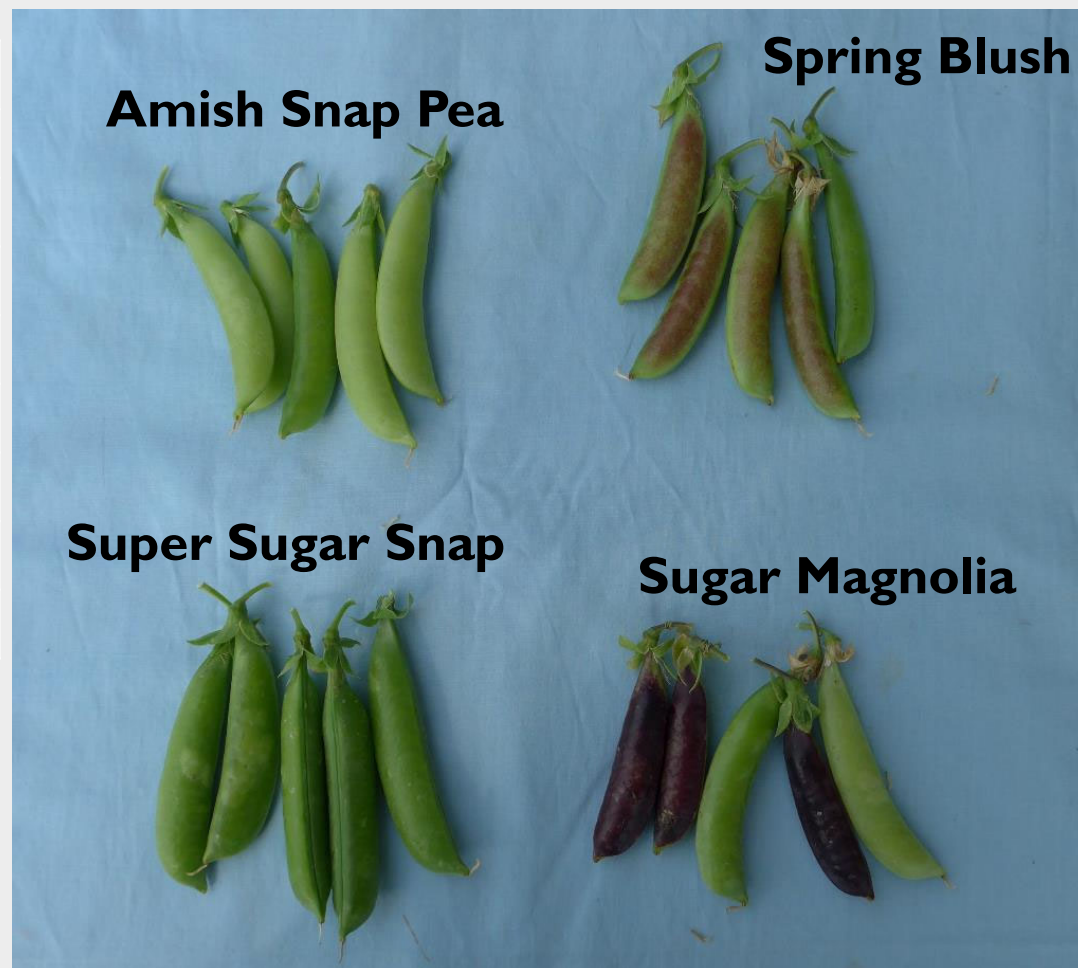
Snow and Snap Pea Variety Trial



Snow and Snap Pea Variety Trial

Variety	Yield (lbs/12 ft)	
Super Sugar Snap	9.1	a*
Spring Blush	6.7	ab
Sugar Magnolia	6.4	ab
Frieda Worlds	5.3	bc
Green Beauty	4.4	bc
Amish Snap Pea	3.9	bc
Mammoth Melting Sugar	2.9	c
Golden Sweet	2.7	c

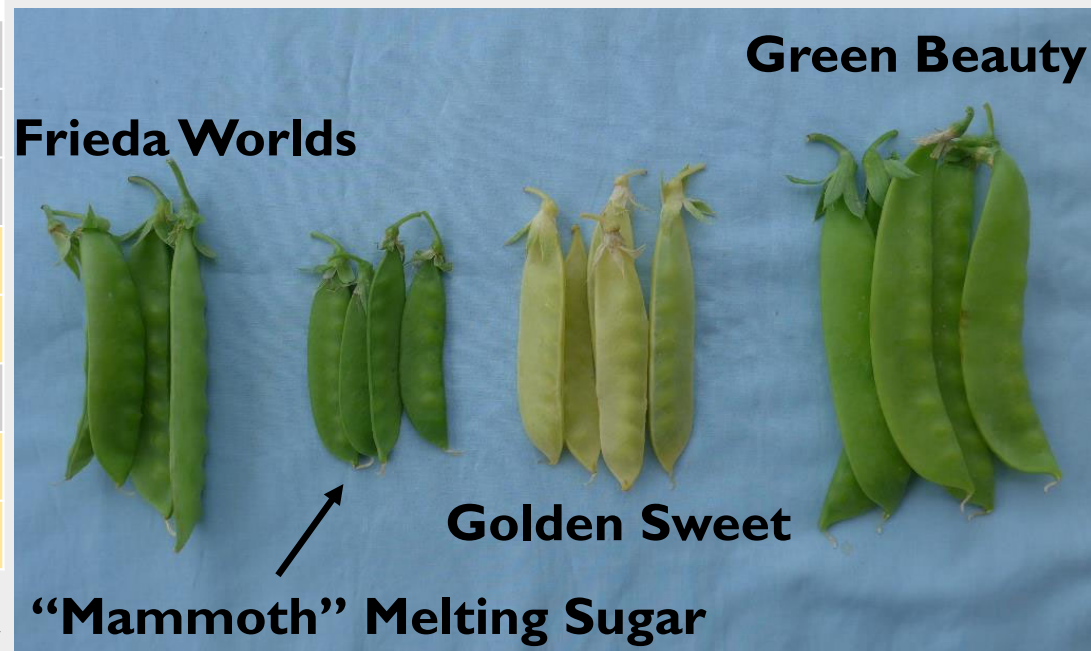
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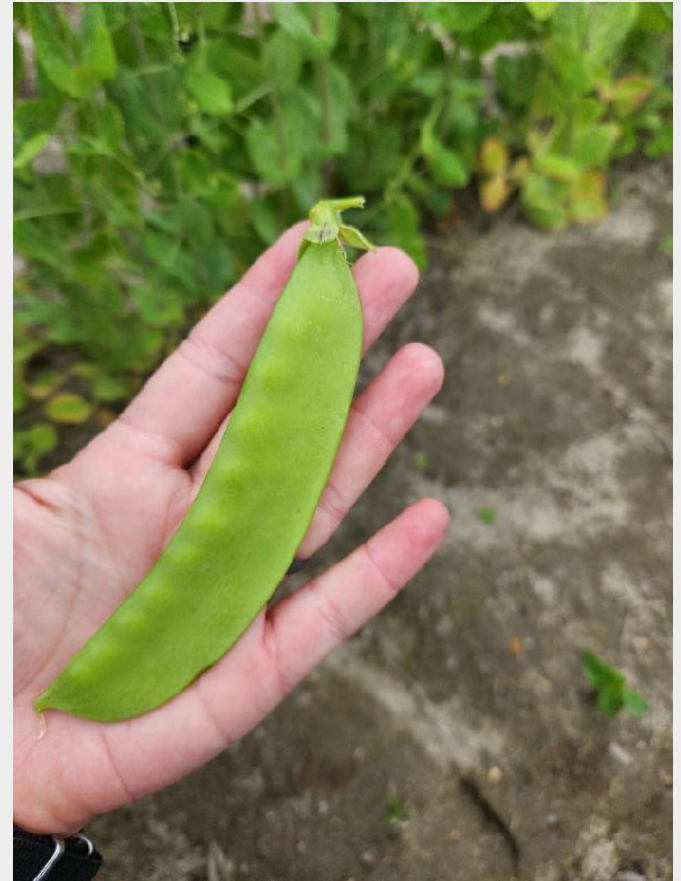


Snow and Snap Pea Variety Trial



Super Sugar Snap

Green Beauty



Edible & Ornamental Pumpkin Variety Trial

What kinds of specialty pumpkins are appealing?

In 2022 we conducted consumer surveys at two different events in September and collected responses from 137 people. More than 30 varieties were displayed.

Characteristics of Appealing Types

- Warty
- Blue
- White
- Striped and Mottled Coloration
- Flat Shapes



Edible & Ornamental Pumpkin Variety Trial

2023 Trial: 14 varieties that are edible & ornamental

5 Dumpling Type Varieties



Orangita



Orange Peel



Black Kat



Celebration



Heart of Gold

Edible & Ornamental Pumpkin Variety Trial

2023 Trial: 14 varieties that are edible & ornamental

Variety	Fruit/plot	
Orangita	57.0	a
Orange Peel	54.0	a
Black Kat	53.0	a
Celebration	42.7	ab
Heart of Gold	36.3	b
Millionaire	20.7	c
Kakai	17.3	cd
Lakota	9.7	cd
Naked Bear	9.7	cd
Blue Harvest	8.7	cd
Jarrahdale	7.3	cd
Queensland Blue	6.0	cd
Red October	6.0	cd
Lady Godiva	5.0	d



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Millionaire – spaghetti squash

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Kakai – “naked” seed

This variety was the best of the hullless types. Also, it is an OP variety so seed cost is lower.

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Naked Bear – “naked” seed

A nice hybrid hulless variety.

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Lady Godiva	5.0	d



Lady Godiva – “naked” seed

In this variety, there were some off-types that did not have naked seed.

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Lakota

Unique shape and coloration. This is an OP variety.

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Red October - hubbard

Hybrid red hubbard.

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Blue Harvest – flat blue

Hybrid flat blue. Seed 2-3x more expensive than OP blue varieties.

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Jarrahdale – flat blue

OP flat blue. Appealing shape, nice color variation.

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Lady Godiva	5.0	d



Queensland Blue – flat blue

OP flat blue. Shape is not as nice as Jarrahdale or Blue Harvest.

Thank You!

Partially funded by Delaware Department of
Agriculture Specialty Crop Block Grants:

**Developing Practices to Minimize High
Temperature Stress in Vegetable Crops 2017-2020**

**Identifying Varieties and Management Practices
for Summer Production of Lettuce and Greens
2022-2025**


Vegetable Program Employees

Austin Truitt, Ketsia Murat, Paige Sammons, Lily Hearn,
Arely Arriaga-Gonzalez, Mya Jones, Rob Hanifin

Carvel Research & Education Center Farm Crew



<https://sites.udel.edu/weeklycropupdate/>



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Vegetable Crops

Vegetable Crop Insect Scouting
David Owens, Extension Entomologist,
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Sweet Corn
 Corn earworm trap counts are high, and for only the second time this summer, we have caught a European corn borer in a pheromone trap! They do exist!

During the first 10 days of silking with temperatures above 82 degrees, a 2-day spray schedule following a pyrethroid and a 3 day spray schedule following a chlorantraniliprole application is advisable, especially at sights with very high moth activity. Last week's Weekly Crop Update had a very in-depth article on earworm management. With frequent applications such as these, be sure to scout for aphids, especially about 10 days before harvest so that if a population begins developing, a high rate of Assail can be used (7 day pre harvest interval). We are in the process of conducting adult vial pyrethroid resistance tests, and so far, cyfluthrin is showing a greater level of activity against corn earworm than lambda cyhalothrin, similar to field trial results from the last couple of seasons. While I recommend the same spray schedule regardless of the pyrethroid used, it may be that cyfluthrin in the spray program might prevent a couple of misses and provide just a little bit more efficiency.

Trap counts can be found at <http://agdev.anr.udel.edu/trap/trap.php>, and thresholds can be found at: <https://www.udel.edu/academics/colleges/canr/>


</cooperative-extension/sustainable-production/pest-management/insect-trapping/silk-stage-sweet-corn/>

Thursday trap counts are as follows:

Trap Location	BLT CEW	Pheromone CEW
	3 nights total catch	
Dover	6	156
Harrington	2	71
Milford/Canterbury	4	165
Rising Sun	9	65
Wyoming	8	153
Bridgeville/Redden	1	93
Concord	7	44
Georgetown	2	82
Woodenhawk	2	78
Laurel	10	117
Lewes	-	-

Snap Beans and Lima Beans
 Scout beans for worms or consider a treatment if a lot of moths are observed in the crop. Unlike sweet corn and unlike European corn borer, no threshold is available for timing sprays on either crop for this pest, except a black light threshold that to be honest, we have not reached or exceeded in years upon years. In lima bean fields, a beat sheet or shaking plants and counting earworm on the ground can be used to estimate population. Thresholds in lima beans are 1 earworm per 6 row feet. Labeled insecticides include IPM and bee friendly materials such as Avaunt, Vantacor, Coragen, Blackhawk, Bt, and high rates of Intrepid. Of these, Coragen and Vantacor are going to provide the longest residual control.

August 18, 2023
Weekly Crop Update Volume 31, Issue 21
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 Planting Dates for Fall and Spring
 Squash Vine Borers and Pumpkins
 Cover Cropping is a Necessary Tool for Vegetable Growers
 Cover Crops Provide Important Services for Vegetable Growers

Fruit Crops
 Fruit Crop Insect Scouting
 Netting to Control Birds in Vineyards

Agronomic Crops
 Agronomic Crop Insect Scouting

General
 Guess the Pest! July 28 Answer: Asiatic Garden Beetle
 Guess the Pest! August 4

Announcements
 2023 Women in Ag Scholars – 2nd Wednesdays
 High-impact Food Safety Webinar – Aug 17 | online
 Infield Listening Session on the Financial Needs of Farm and Ranch Families
 Participate in Research, Earn Money and Nutrient Management Credits
 Farmstead Preservation Program August 22nd
 Farmstead Preservation Program August 24th
 Small Grain Cereals Meeting
 Carrot Field Crop Tour
 Fresh Market Vegetable Research Field Day
 Marl Hill Farm Salads Session
 Soybean Planting Population Survey
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