

USU Kabocha Squash Variety Trial

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> USU Urban & Small Farms Conference Vegetable Session 3/3/2021 @ 9:30 am MST



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SERA 45

Goal: Trial 10 kabocha squash cultivars

- Kabocha winter squash (Cucurbita maxima)
 - Potential for food banks
 - Assess yield and storability
- Evaluate across multiple states and climates in the US
 - Use regional practices for production
 - 10 varieties was a manageable amount across research farms
 - Study at Utah State University conducted at the Utah Agriculture Experiment Station in North Logan, UT



Why kabocha?

- Smaller squash type
- 4-6 months storage
- Less research
- Lots of variation in color, shape, and size easier for vine tracing

Kabocha trial locations – 8 states



Received seed 6/17/20

Delica

Shakahi Green

Cha-Cha

Sonshine

Golden Bitta Boul

Speckled Rup

Origin: 37917 06/04/20 4746400917-6

o lb 5.80 Oz 1000

Amberman

Sweet Mang

Geilly

Winter sunt

4321

Variet Peak Culinary Quality

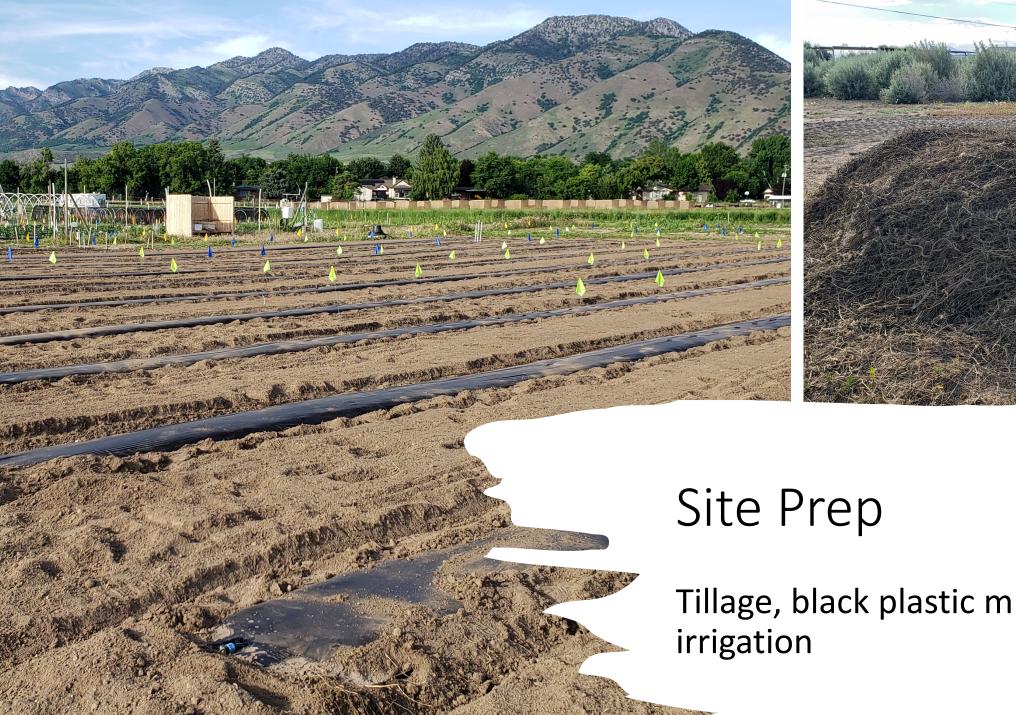
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vancty	-		Butternut					
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'Cha-cha'			Ded keheehe					
'Delica'			Red kabocha			I		
'Geisha'		din cinco	Green kabocha	1				
'Golden Butta Bowl'			(Tata		,			
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'Speckled Pup'				(incin	Gray kabo	cha 'Winte	r Sweet'	
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Research site



- Utah Agriculture Experiment Station Greenville Research Farm
- North Logan, UT
- Elevation: 4600 feet
- Soil: Millville silt loam, 2% organic matter

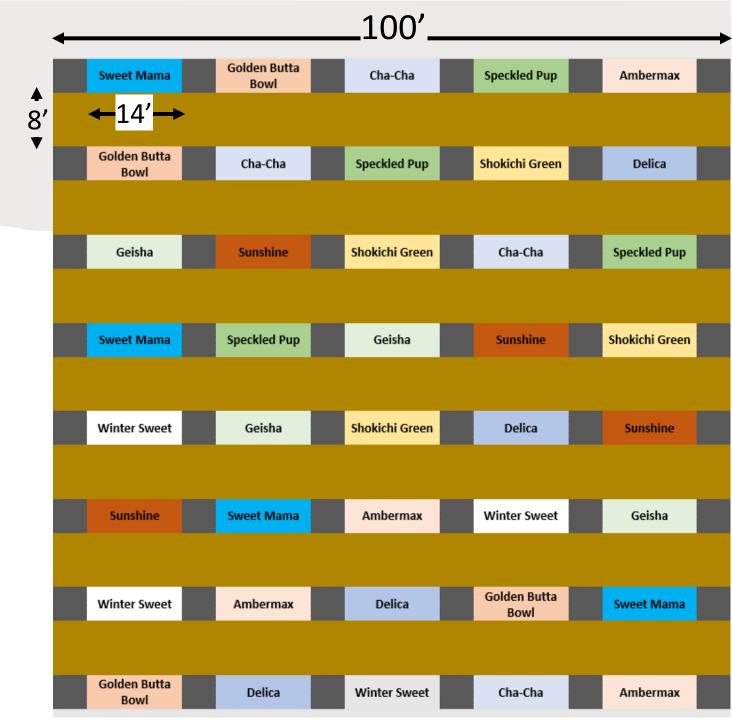




Tillage, black plastic mulch, drip

Seeded 6/24/20

- 240 total plants
 - 2 seeds thinned to 1 plant.
 - Plants spaced 2' apart
 - 24 plants/cultivar
- 8 rows, each 5' W x 100' L, spaced 8' apart
- Each Plot:
 - 5' W x 14' L
 - 6 plants of 1 cultivar



Field management

- Irrigation 2x per week for 4-12 hrs (60 kPa threshold)
- Fertigation 6 applications for a total of 120 lb N/ac

July 2020

- Weeded as needed
- Plant counts in July and October



When to harvest

- Corky
- Hard shell nail
- Vine dies back
- Freezing concerns



• We counted every mature squash produced per plot

Harvest: 10/9/2020

- Weighed and measured the length and width of each squash, except minis – just the first 20 squash/plot were measured as a representative.
- 10 squash per variety were then bagged and put into longterm storage. Many of us also took some home.

Storage: 10/2020 - Present

- Ideally store at 50-59°F with 50-70% humidity¹
 - Sensitive to chilling at $\leq 50^{\circ}$ F
 - 55-59°F ideal for most winter squash
 - Green winter squash can "degreen" at >55°F and therefore, benefit from storage at 50-55°, though some winter injury can occur.
- Squash stored at Utah Agriculture Experiment Station Kaysville Research Farm: 57°F

(My root cellar: $52-55^{\circ}$ in Oct-Dec, $49-52^{\circ}$ in Jan-Feb. Humidity = 50-52%)

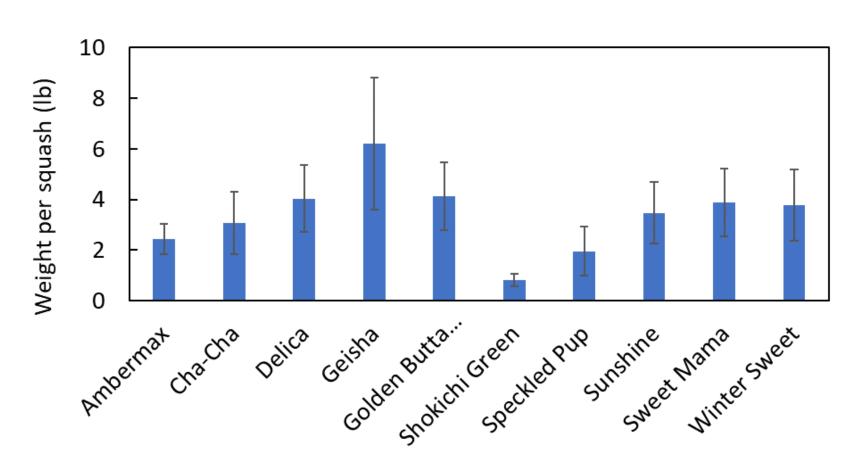
¹UC Davis (1998). < http://postharvest.ucdavis.edu/files/259454.pdf>

Storage Measurements

Melanie Stock nelwiestock Melanie Stock

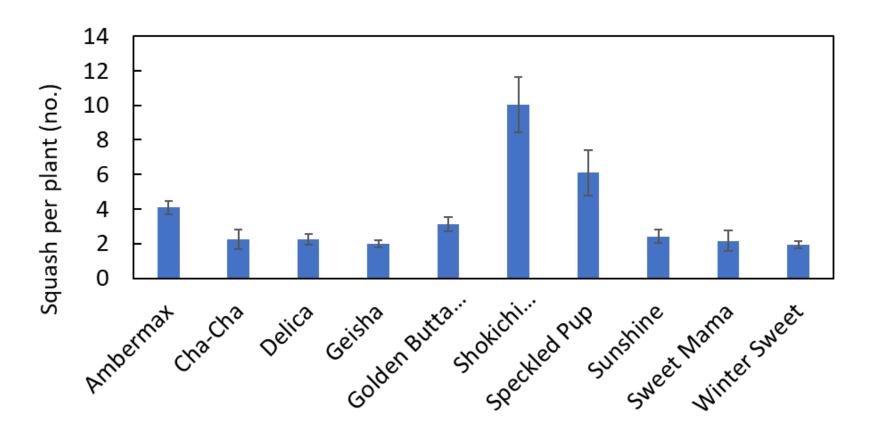
- Measured weight monthly
- Measured water content and Brix in Jan – April 2021

Results – Avg squash weight



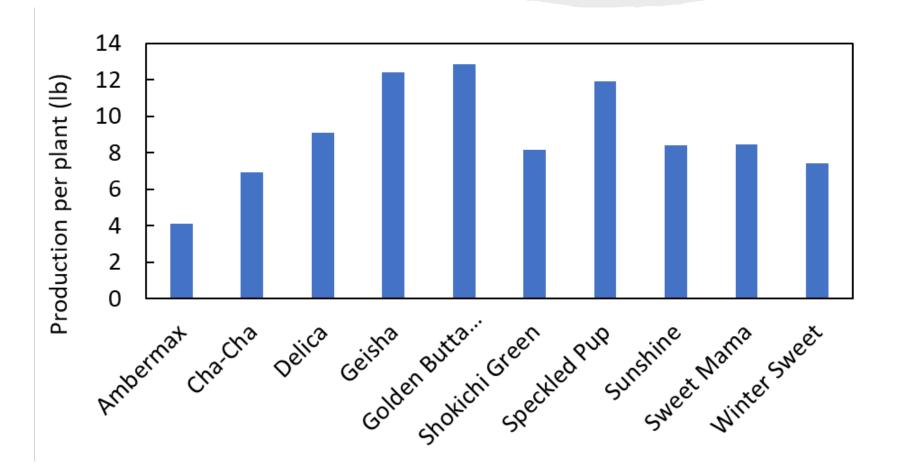


Results – Avg no. squash per plant





Results – Yield per plant

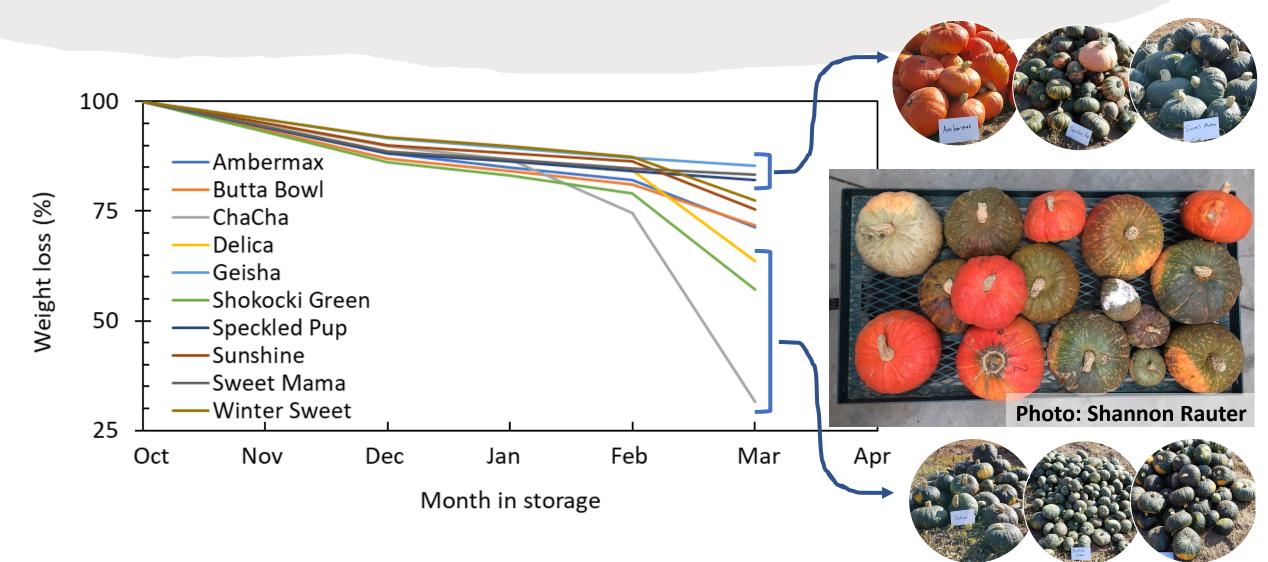




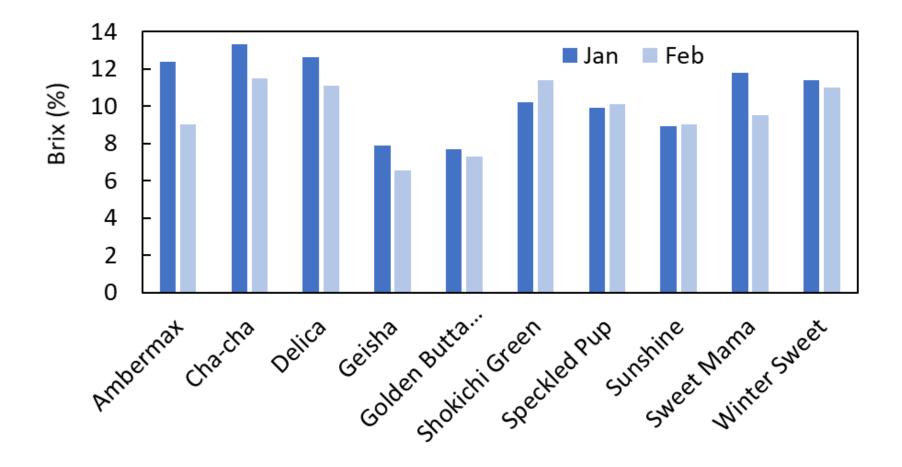
Variety descriptions and trial results

Variety	Maturity (d)	Weight (Ibs)	Color	Weight (Ibs)	Diameter (in)	Squash per plant (no.)	Yield (lbs/plt)	Yield (lbs/ac)	Yield (lbs/ft ²)	
	Commercial Description			USU Data						
'Ambermax'	90	3	Bright red-orange	2.4	5.9	4	4	6738	0.2	
'Cha-cha'	95	4-5	Dark green w/stripes	3.1	5.7	2	7	11393	0.3	
'Delica'	85	3-4	Dark green	4.0	6.8	2	9	14969	0.3	
'Geisha'	88	7-8	Green with white mottle	6.2	7.5	2	12	20464	0.5	
'Golden Butta Bowl'	85	3-5.5	Orange	4.1	7.0	3	13	21200	0.5	
'Shokichi Green'	100	0.5-1.25	Green with white mottle	0.8	4.2	10	8	13430	0.3	
'Speckled Pup'	85	1.5-2.5	Green with orange	2.0	5.4	6	12	19638	0.5	
'Sunshine'	95	3-5	Bright red-orange	3.5	6.3	2	8	13854	0.3	
'Sweet Mama'	85	3.5-5	Dark green	3.9	6.8	2	8	13919	0.3	
'Winter Sweet'	95	4-5	Gray	3.8	6.7	2	7	12214	0.3	

Results – Weight loss in storage



Results – Brix (sweetness)







Warning – lack of science on next slide!! But...I really enjoy food and I especially enjoy squash











A word on taste & texture

- Shokichi Green = best taste & texture. New favorite squash?
- Sweet Mama, Winter Sweet, Cha-Cha, and Delica = all delish.
- Geisha, Sunshine*, and GBB* = not so good, IMO. GBB* also a bit bitter.
- Speckled Pup = NOT delish. It is a beautiful ornamental.

*Storage conditions not ideal for orange kabochas





• Geisha, Golden Butta Bowl, and Speckled Pup had the greatest yield in pounds of squash produced per plant.

Summary

- Vines averaged 2 to >10 squash per plant.
- Cha-Cha, Delica, Shokichi Green, and Winter Sweet maintained the greatest Brix through Feb. We'll see about March and April.
- Kabocha store well and though less common, are truly tasty.



<u>Thank you!</u> (please fill out my eval)

Many thanks to SERA45, Drs. Dan Drost & Brent Black, James Frisby, Shannon Rauter & the USU Small Farms Lab!

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