



Squash Success From Seed to Storage

 **Johnny's**
Selected Seeds

Our Research Farm

Located in Albion, Maine (zone 5b)

- **200+ Acres Managed**
- **11 Farm Sites**
- **94 Acres Consisting of:**
 - **Seed Production—8 acres**
 - **Variety Trials—15 acres**
 - **Breeding Program—21 acres**
 - **Cover Crops—50 acres**



Breeding Program 2024 Stats

145,331 Plants Grown Our
Breeding Program

1,232 Taste Tests

4,855 Hand Pollinations



OUR PRESENTERS



Dr. Lindsay Wyatt
Senior Plant Breeder



Nate Gorlin-Crenshaw
Product Manager

Overview

- **Intro to Johnny's Squash Breeding Program**
- **History of Our Program**
- **Insight into our Breeding Process**
- **Types & Species of Winter & Summer Squash**
- **Highlights of our JSS-bred squash lineup**
- **Harvest and storage tips for winter squash**



Johnny's Squash Breeding Program

- Work on diverse types of squash and pumpkins
- Primarily use pedigree selection and develop hybrids (traditional plant breeding methods)
- Low-input/organic conditions
- Breeding team
 - Breeder – Lindsay
 - Technicians – Sawyer & an open spot
 - Pollination crew



A Little History

Winter Squash & Pumpkins

- First plant breeding program at Johnny's – about 50 years old!
- Started by our company founder, Rob Johnston

Summer squash

- Primarily bred by Janika Eckert

2015 Transition

- Lindsay started at Johnny's and took over breeding all 3 crops



Insight Into Our Breeding Process

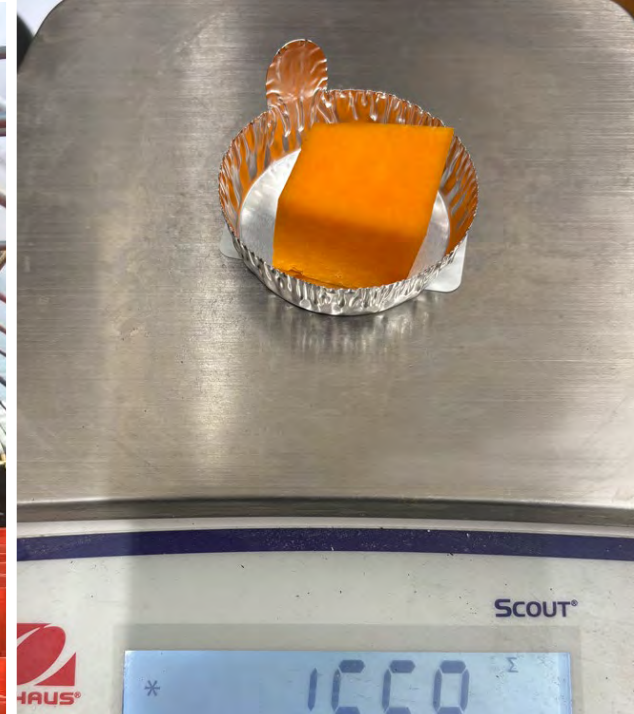




Making Pollinations







Squash Types & Species

- **Summer squash**
- **Winter squash**
 - *Cucurbita pepo*
 - *Cucurbita moschata*
 - *Cucurbita maxima*
- **Pumpkin**



Summer Squash • *Cucurbita pepo*

- Flowers earliest; harvest and eat the immature fruit



Winter Squash – *Cucurbita pepo*



Winter Squash – *Cucurbita moschata*



Winter Squash – *Cucurbita maxima*



Pumpkins

- Mostly *Cucurbita pepo*, but some *Cucurbita maxima*
- Pumpkin = shape (not a different species)



Johnny's Bred Squash Varieties



Winter Squash: Pepo

Starry Night PMR

Organic (F1) Acorn Squash. 95 days

- **Superior eating quality** compared to a typical acorn squash
- **Better storage** than a typical acorn as well
 - Maintains eating quality later into the winter
- Easy to recognize for its **unique, pixelated color pattern**
 - Also a ripeness indicator
- **Vigorous bush habit**
 - Can be planted on more compact spacing compared to a vining type
 - More upright plants keep first flush of fruit off the ground or on mulch
 - Holds up well to Powdery Mildew



Winter Squash: Pepo

Night Shift

Organic (F1) Acorn Squash. 95 days

- **Superior eating quality** compared to a typical acorn squash
- **Better storage** than a typical acorn
 - **Maintains eating quality** later into the winter
- **Vine habit**
 - More plant means more sugars
 - Large plants can help smother weeds
 - Higher yield per plant compared to bush-types
 - Holds up well to Powdery Mildew



Winter Squash: Pepo

Delicata JS

Organic (OP) Delicata Squash. 100 days

- Has gained a lot of popularity over the years for its **flavor straight out of the field, edible skin**, and general **ease of processing** in the kitchen
- There are many Delicata strains on the market- this one is ours
 - Selected for uniformity, yield, and of course, flavor!



Winter Squash: Pepo

Honey Bun

(F1) Acorn Squash. 95 days

- A **dramatic improvement** in the "Sweet Dumpling" class
- **High yielding and uniform**, with great flavor and sweetness and good storability
- Fruits turn caramelly-bronze at peak ripeness—**easy to know when it's time to eat them**



Winter Squash: Maxima

Sunshine

Organic (F1) Kabocha Squash. 95 days

- A true classic
- **Bred by our founder, Rob Johnston** over 20 years ago, and still one of our most popular squash
- **Great color, great appearance, great yields**
- **Can be eaten right at maturity**, without waiting for the squash to fully mature in storage
- Not the best for long-term storage



Winter Squash: Maxima

Sweet Jade

Organic (F1) Kabocha Squash. 95 days

- **A hidden gem** of the JSS squash assortment
- **Delicious personal-size kabocha**
 - Sized perfectly for single servings, soup bowls, and more, with little to no wasted fruit
- **Heavy yields and exceptional storage**



Winter Squash: Maxima

Marmalade

Organic (F1) Kabocha Squash. 100 days

- One of my personal favorites
- **High yielding**
- Combines **bright color and earliness** with **excellent storage and eating quality**



Winter Squash: Maxima

Winter Sweet

Organic (F1) Kabocha Squash. 95 days

- Our best tasting winter squash
(in my humble opinion)
 - Nice **balance of sweetness and flavor**
 - Perfect **flaky, creamy texture**
- **Stores like a rock**
- Needs to **mature in storage for around 2 months** before you can start eating it



Winter Squash: Maxima

Winter Blush

Organic (F1) Kabocha Squash. 95 days

- Pink accompaniment to Winter Sweet
- **Similar storability** and **eating quality** in a different color
- Fruits are **pale pink at harvest**, with **variable levels of sky blue** in a star shape on the blossom end which **fades to solid pink in storage**.



Winter Squash: Maxima

Mambo

Organic (F1Kabocha Squash. 95 days

- One of our newest introductions
- Standard green Kabocha but with **a little more versatility**
 - Classic blocky buttercup shape but with **no significant "button"** on the blossom end.
 - **Can be marketed as a buttercup or a kabocha**
- Beyond its appearance, it ticks all the other boxes: **high yielding, uniform, and delicious**



Winter Squash: Moschata

Block Party

Organic (F1) Butternut Squash. 100 days

- Our other newest winter squash
- Lovingly referred to as 'Miracle' and 'Saint Butternut' in our breeding nursery—it was just too good to be true.
 - Both its **yield and storage** results are **unbelievably high without compromising on flavor**.
- We named it 'Block Party' for its **compact blocky shape—a great efficiency** when packing CSA boxes.
 - Its thick neck means **less waste** when preparing or processing and it has a **good flesh-to-seed-cavity ratio**.



Winter Squash: Moschata

Butterscotch

Organic (F1) Butternut Squash. 100 days

- **Our best-tasting butternut**
 - Sweet and creamy, with excellent flavor
- **Doesn't need to mature in storage** before it can be enjoyed
- **Doesn't store as well as larger butternuts** like Metro or Block Party, but similar to Honeynut and Butterbaby
- Shorter vines can be planted at **tighter spacing**, allowing for **higher yields per acre**



Winter Squash: Moschata

Waldo PMR

Organic (F1) Butternut Squash. 100 days

- Largest of our hybrid butternuts
- Improved Waltham-type—**More uniform and attractive** without the oversized fruits
 - Produces **big yields with very few culls**
 - Still has **great eating quality**
- **Vigorous plants** and **strong PMR** ensure crops reach maturity under high disease pressure



Summer Squash: Pepo

Tempest

Organic (F1) Yellow Summer Squash.

54 days

- **Outstanding culinary quality.**
 - **Rich, nutty flavor** and **pleasantly firm texture - less watery** than other summer squash
 - **Retains shape, texture, and color** through a multitude of cooking methods
- **Open plant habit** and **soft spines** for easy harvest
- Precocious yellow gene causes **leaves to express yellow color**



Summer Squash: Pepo

Goldfinch

Organic (F1) Yellow Summer Squash.
50 days

- **Improved plant habit** compared to standard yellow summer squash
 - The **wide-open plant habit** and **medium spines** make for easier harvests
 - **Squash conveniently positioned** along a long central stem
 - **Upright growth** lends itself well to container growing



Summer Squash: Pepo

Zephyr

(F1) Yellow Summer Squash. 54 days

- **Distinctive appearance and great flavor**
 - Harvest young at 4-6" for **unusually delicious, nutty flavor** and **firm texture**
 - Blossoms bear a **mild, squash-like flavor** and work well in cooked dishes
- Under certain stressful situations, such as hot weather, Zephyr **fruits can show some variability** in the amount of green at the blossom ends.
- In addition, sometimes **the first one or two fruits produced** may be green-striped.



Winter Squash Eating Quality

- **Sugar content**
 - Measured by degrees Brix
- **Starch content**
 - Measured by percent dry matter
- **Finite amount of total carbohydrates** when the squash is harvested
- Then the **balance changes during curing and storage** – like a banana ripens!
- **Flavor also matters** – that's why we taste test



Winter Squash Harvest Tips



- Let fruit mature – **they'll look ready** before they're **actually** ready
 - Acorn squash is the worst culprit
 - Maximize the amount of carbohydrates the fruit stores
- **Signs they're ready to harvest**
 - 50+ days after the fruit set
 - Rind and stem hardness
 - Color change
- **Don't wait too long, either**
 - Avoid sunburn/sunscald
 - Avoid the fruits being frosted
 - If the plants are dead, go ahead and harvest
- **Be gentle**—squash can scratch and bruise during harvest

Winter Squash Storage Tips

Curing

After cutting the fruits from the vine, **sun-cure** in the field for 5–7 days, **or cure indoors** for 5–7 days at 80–85°F (27–29°C), in an area with good air ventilation

Storage Conditions

- **Cool and dry** – we recommend 55-60°F/12-15°C, 50-70% relative humidity and good ventilation

When to Eat Which Types

- **Earliest** – Delicata, acorn, spaghetti, red kabocha, mini butternuts
- **Medium** – Medium butternuts, green kabochas
- **Latest** – Large butternuts, blue/gray kabocha

Winter Squash Curing & Storage Chart

TYPE	Months After Maturity / Harvest					
	1 Mo	2 Mo	3 Mo	4 Mo	5 Mo	6 Mo
Acorn: most varieties			2½			
Acorn: 'Night Shift'				4		
Acorn: 'Starry Night'				4		
Acorn: 'Tuffy'	1		3			
Spaghetti: all varieties			2			
Butternut (Mini): 'Butterscotch PMR'			3			
Butternut (Mini): 'Butterbaby' and 'Honeynut'	1		3½			
Delicata: most varieties			3½			
Hubbard: 'Red Kurt'				4		
Hubbard: 'Blue Ballet' and 'North Georgia Candy Roaster'	1			4		
Kabocha: 'Sunshine'				4		
Kabocha: 'Cha Cha'; 'Mambo'; 'Sweet Jade'; 'Marmalade'	1				5	
Buttercup: most varieties	1				5	
Kabocha: 'Winter Blush'; 'Winter Sweet'		1½				6
Specialty: 'Tetsukubuto'	1					6
Butternut: most varieties		2	(Consume smaller to larger varieties across 3–6*-mo period post harvest)			
	KEY		Curing Period		Optimal Eating Period	

Johnny's Winter Squash Curing & Storage Chart



RESOURCES

- [Squash Varieties Developed by Johnny's](#)
- [Winter Squash Comparison Chart](#)
- [Winter Squash Curing & Storage](#)
- [Why Johnny's](#)
- [About Our Seeds](#)
- [Johnny's Classical Breeding Infographic](#)
- [NE Vegetable Management Guide](#)
- [UMinn Ext: Growing pumpkins & winter squash in home gardens](#)
- [Cornell Info Sheets:](#)
 - [How Do I Know When Winter Squash are Mature?](#)
 - [Harvesting & Curing of Pumpkins & Winter Squash](#)



Thank You

We hope you enjoyed our presentation

