

# 2023 North Carolina and Tennessee Pumpkin Cultigen Evaluation Study



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**EXTENSION**



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**2023  
North Carolina and Tennessee  
Pumpkin Cultigen Evaluation Study  
Upper Mountain Research Station  
Laurel Springs, NC  
Hort Series #246**

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**Disclaimer**

This publication presents data from the pumpkin cultigen evaluation study conducted during 2023. Information in this report is believed to be reliable but should not be relied upon as a sole source of information. Limited accompanying detail is included but excludes some pertinent information, which may aid interpretation.

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## **Introduction**

North Carolina grew \$18.7 million worth of pumpkins in 2022 at an average price of \$23.30 per hundredweight (cwt) ([2022 State Agriculture Overview](#)). Total harvested acreage was 3,900 acres (ac), an increase of 200 acres from 2021 (3,700 acres). Pumpkin production appears to be increasing in North Carolina, following the trend seen across the U.S. as the demand for pumpkins increases for their ornamental use and the increase in agrotourism ([USDA ERS 2015](#)). The majority of production occurs in western NC where the climate and soils are more favorable.

In 2023, Dr. Schultheis and Annette Wszelaki and their teams in the Horticulture Department at NC State and Plant Sciences Department at the University of Tennessee conducted a cultigen evaluation study of 69 carving pumpkins, specialty pumpkins, and gourds in replicated and unreplicated plots. These cultigens were evaluated for yield and quality characteristics that include but are not limited to: shape, suturing, texture, and length and diameter. The materials and methods, results, and representative photos follow.

## **Materials and Methods**

### ***Field Preparations***

The field planting site was located at the NCDA&CS Upper Mountain Research Station in Laurel Springs, NC. Gly Star Original Herbicide at a rate of 32 oz/ac was sprayed as a burn-down on 6 April 2023. The field was plowed on 22 May 2023 and black plastic mulch was laid on 25 May 2023.

### ***Planting***

The pumpkin entries were planted 14 June 2023. A total of 69 pumpkin cultigens were evaluated, with 31 jack o' lantern or traditional carving type pumpkins in a replicated trial, and 18 specialty type pumpkins and 20 gourds in un-replicated, observational plots. The study used a randomized complete block design (RCBD) with 4 replications. Each plot measured 18 feet long with 10 feet between plots. The jack type and specialty type pumpkins had an in-row spacing of 3 feet between plants for a potential total of 6 plants per plot and the gourds had an in-row spacing of 1.5 feet between plants for a potential total of 12 plants per plot.

### ***Pesticides***

A complete list of the herbicides, fungicides, and insecticides used in this study is provided in Table 1. These products are registered for use in this crop and were applied according to labeled rates that can be referenced in the [2023 North Carolina Agriculture Chemical Manual](#).

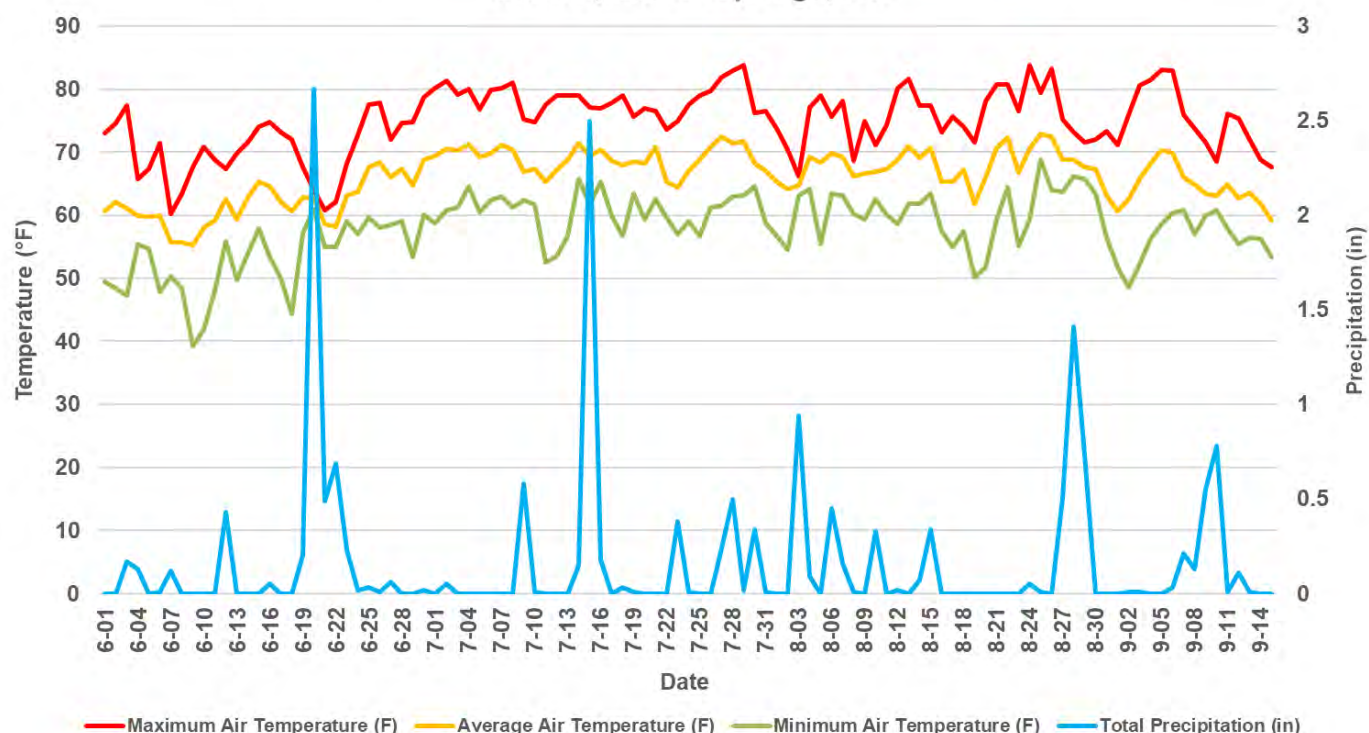


Table 1. Herbicides, Fungicides, and Insecticides Applied for the 2023 Pumpkin Cultigen Evaluation Study				
Date	Herbicides	Rate	Units	Sprayer Type
4/6/2023	Gly Star Original	32	oz per acre	Boom sprayer
4/6/2023	Weather Gard Complete Surfactant		1 qt per 100 gal	Boom sprayer
6/15/2023	Roundup Power Max	24	oz per acre	Boomless sprayer
6/15/2023	Sandea	0.75	oz per acre	Boomless sprayer
6/15/2023	Dual 2 Magnum	20	oz per acre	Boomless sprayer
6/15/2023	Command 3ME	16	oz per acre	Boomless sprayer
6/15/2023	Reflex	16	oz per acre	Boomless sprayer
6/28/2023	Sandea	0.75	oz per acre	Backpack sprayer
6/28/2023	Dual 2 Magnum	20	oz per acre	Backpack sprayer
6/28/2023	Roundup Power Max	25	oz per acre	Backpack sprayer
6/28/2023	Reflex	16	oz per acre	Backpack sprayer
6/28/2023	Command 3ME	16	oz per acre	Backpack sprayer
6/29/2023	Sandea	0.75	oz per acre	Backpack sprayer
6/29/2023	Dual 2 Magnum	20	oz per acre	Backpack sprayer
6/29/2023	Roundup Power Max 3	25	oz per acre	Backpack sprayer
6/29/2023	Reflex	16	oz per acre	Backpack sprayer
7/20/2023	Roundup Power Max	32	oz per acre	Backpack sprayer
7/20/2023	Weather Gard Complete Surfactant		1 qt per 100 gal	Backpack sprayer
8/2/2023	Roundup Power Max 3	32	oz per acre	Backpack sprayer
8/7/2023	Roundup Power Max	32	oz per acre	Backpack sprayer
8/25/2023	Roundup Power Max	32	oz per acre	Backpack sprayer
Date	Fungicides	Rate	Units	Sprayer Type
7/14/2023	Orondis Opti B	2	pints per acre	Mist blower
7/14/2023	Cabrio	16	oz per acre	Mist blower
7/14/2023	Cuprofix Ultra 40	2	lb per acre	Mist blower
7/21/2023	Manzate Pro-Stick	2.25	lb per acre	Mist blower
7/21/2023	Torino	3.4	oz per acre	Mist blower
7/30/2023	Manzate Pro-Stick	2	lb per acre	Mist blower
8/6/2023	Orondis Opti B	2	pints per acre	Mist blower
8/6/2023	Monsoon	8	oz per acre	Mist blower
8/31/2023	Manzate Pro-Stick	2.25	lb per acre	Mist blower
8/31/2023	Satori	21	oz per acre	Mist blower
8/31/2023	Torino	3.4	oz per acre	Mist blower
Date	Insecticides	Rate	Units	Sprayer Type
7/1/2023	Venom	3	oz per acre	Mist blower
7/14/2023	Mustang Max	4	oz per acre	Mist blower
8/31/2023	Tombstone	2.8	oz per acre	Mist blower
Date	Other	Rate	Units	Sprayer Type
8/6/2023	Trico Pro Deer Repellent	0.5	gallon per acre	Mist blower

## Weather

The weather at the Upper Mountain Research Station in Laurel Springs, NC was generally favorable with a few periods of rainfall over 2 inches in June and July (Figure 1). The temperature was fairly consistent throughout the growing season with averages temperatures in the 60's and low 70's. Temperatures were relatively cool the first three weeks of the growing season with lows dipping to 39°F.

**Figure 1. Temperature and Precipitation at the Upper Mountain Research Station, Laurel Springs, NC**



## Harvest and Data Collection

The gourds were harvested on 13 September 2023 (91 days after planting) and the carving and specialty pumpkins were harvested on 14 September 2023 (92 days after planting). Each pumpkin in the carving and specialty categories was weighed and counted. Ten representative gourds from each plot were weighed and all fruit were counted from those plots. Length and diameter measurements were taken on 3 pumpkins per plot for the carving and specialty pumpkins. Shape, suturing, texture, handle width, handle attachment, and handle length ratings were taken as an average of all of the fruit in a plot. Quality data were not collected for the gourds.

## Results

Four cultigens are included in quality evaluations but not yield due to issues with plant stand: 'HSC 151' from Rupp Seeds, 'Kakai' from Johnny's Seeds, 'Porcelain Doll (Improved)' from Lark Seeds, and 'Porcelain Doll (Original)' from Rupp and Johnny's Seeds.

## Yield and Average Fruit Weight Per Size Category

Pumpkin cultivars were divided into the following size categories for yield analysis based on marketed average fruit size: Pie (<5.0 lb), Small (5.0-10.0 lb), Large (13.1-17.0 lb), Extra-Large (17.1-22.0 lb), and Jumbo (>22.0 lb). Only one cultigen, 'HSC 151', would have been classified as a Medium size (10.1-13.0 lb), but was not included in yield analysis due to inferior plant stand.

### Pie Specialty Pumpkins (<5.0 lb)

'Blaze' from Hollar Seeds was the only entry in the Pie size category, with an average fruit weight of 3.7 lb. A total of 37,490 lbs per acre of mature fruit were harvested, and 8,416 lb of immature fruit were harvested (Table 2). 'Blaze' produces orange fruit with yellow stripes, shapes are round and slightly flattened.

Table 2. Yield for Specialty Pie Pumpkin (<5.0 lb) 2023. Upper Mountain Research Station, Laurel Springs, NC.

Cultigen	Company	Rank	Yield			Immature Fruit Yield		Average fruit weight (lb)
			Pounds (lb) per acre	Tons per acre	Number (no) per acre	Pounds (lb) per acre	Number (no) per acre	
Blaze	Hollar	1	37490	18.7	10164	8416	2783	3.7

### Pie and Small Jack O'Lantern Pumpkins (2.5-10.0 lb)

Four entries were evaluated in the "Small" size category. 'Fort Knox' from Rupp Seeds had the highest yield of the four cultigens at 32,065 lb/ac (Table 3). 'Yosemite' from Rupp Seeds had the greatest average fruit weight in this category at 6.8 lb. 'Field Trip' from HM Clause and 'RPX 6201' from Rupp Seeds were also included in this category, yielding 26,717 lb/ac and 21,713 lb/ac, respectively. 'RPX 6201' yielded many smaller fruit compared to other entries in this category, with an average fruit weight of 2.9 lb and yielding 7,442 fruit per acre. The average fruit weight across all four cultigens in this size category was 5.6 lb. All entries in this category had orange fruit.

Table 3. Yield for Pie and Small Jack O'Lantern Pumpkins (2.5-10.0 lb) 2023. Upper Mountain Research Station, Laurel Springs, NC.

Cultigen	Company	Rank <sup>1</sup>	Yield				Immature Fruit Yield		Average fruit weight (lb)
			Pounds (lb) per acre	Tons per acre	Number (no) per acre	Bins per acre	Pounds (lb) per acre	Number (no) per acre	
Fort Knox	Rupp	1	32065	16.0	4780	47.8	2239	363	6.7
Yosemite	Rupp	2	28338	14.2	4114	41.1	1513	242	6.8
Field Trip	HM Clause	3	26717	13.4	4598	46.0	0	0	5.8
RPX 6201	Rupp	4	21713	10.9	7442	74.4	260	121	2.9
Average:			27208	13.6	5233	52.3	1003	182	5.6
LSD (0.05) <sup>2</sup> :			14198	7.1	1768	17.7	4005	690	1.2

1. Cultigens are ranked by total yield in pounds per acre.

2. Least Significant Difference (LSD) is the minimum difference required between two cultigens for a significant difference in that category at a significance level of P < 0.05.

### Large Pumpkins (13.1-17.0 lb)

Four entries were evaluated in the "Large" size category. 'Hermes' from HM Clause had the highest yield and the greatest average fruit weight of the four cultigens at 53,803 lb/ac and 16.4 lb (Table 4). 'Abominable' from Seneca had the greatest number of fruit per acre in this category at 3,872 fruit, as well as the smallest average fruit weight at 13.1 lb. 'Sand Ghost' from Lark Seeds and 'Skidoo Gold' from Rupp Seeds were also included in this size category, yielding 48,327 lb/ac and 47,093 lb/ac, respectively. The average fruit weight across all four cultigens in this size category was 15.0 lb. 'Hermes' and 'Skidoo Gold' produce orange fruit, while 'Abominable' has white fruit and 'Sand Ghost' has buff fruit.

Table 4. Yield for Large Pumpkins (13.1-17.0 lb) 2023. Upper Mountain Research Station, Laurel Springs, NC.									
Cultigen	Company	Rank <sup>1</sup>	Yield				Immature Fruit Yield		Average fruit weight (lb)
			Pounds (lb) per acre	Tons per acre	Number (no) per acre	Bins per acre	Pounds (lb) per acre	Number (no) per acre	
Hermes	HM Clause	1	53803	26.9	3267	81.7	3963	303	16.4
Abominable	Seneca	2	50463	25.2	3872	96.8	3019	545	13.1
Sand Ghost	Lark	3	48327	24.2	3146	78.7	6637	726	15.2
Skidoo Gold	Rupp	4	47093	23.5	3146	78.6	2922	303	15.1
Average:			49922	25.0	3358	84.0	4135	469	15.0
LSD (0.05) <sup>2</sup> :			24146	12.1	1519	38.0	6966	876	3.0

1. Cultigens are ranked by total yield in pounds per acre.

2. Least Significant Difference (LSD) is the minimum difference required between two cultigens for a significant difference in that category at a significance level of  $P < 0.05$ .

### Extra-Large Pumpkins (17.1-22.0 lb)

Nine entries were evaluated in the “Extra-Large” size category. ‘The Boss (JPN 17-4448)’ from Johnny’s Seeds had the highest yield of the nine cultigens at 62,121 lb/ac (Table 5). ‘Falcon’ from Lark Seeds ranked second for yield at 55,499 lb/ac and had the greatest average fruit weight in this size category at 26.0 lb. ‘Orange Sunrise’ from HM Clause and ‘Bayhorse Gold’ from Rupp Seeds ranked third and fourth for yield at 54,813 lb/ac and 53,458 lb/ac, respectively. ‘Garnett Gold’ from Rupp Seeds had the lowest average fruit weight in this size category at 17.3 lb and the greatest amount of immature fruit at harvest, indicating this may be a later-maturing cultigen. ‘Lemonade’ from HM Clause, ‘Dutchess’ from Johnny’s Seeds, ‘Carbonato Gold’ from Rupp Seeds, and ‘Thumpkin’ from Rupp Seeds were also included in this size category. The average fruit weight across all nine cultigens in this size category was 20.7 lb. All entries in this category produced orange fruit except ‘Lemonade’, which produced yellow fruit.

Table 5. Yield for Extra-Large Pumpkins (17.1-22.0 lb) 2023. Upper Mountain Research Station, Laurel Springs, NC.									
Cultigen	Company	Rank <sup>1</sup>	Yield				Immature Fruit Yield		Average fruit weight (lb)
			Pounds (lb) per acre	Tons per acre	Number (no) per acre	Bins per acre	Pounds (lb) per acre	Number (no) per acre	
The Boss (JPN 17-4448)	Johnny's	1	62121	31.1	2904	96.8	2517	121	21.5
Falcon	Lark	2	55499	27.7	2097	69.9	4017	242	26.0
Orange Sunrise	HM Clause	3	54813	27.4	2602	86.7	5578	484	21.1
Bayhorse Gold	Rupp	4	53458	26.7	2602	86.7	3043	303	20.6
Lemonade	HM Clause	5	47099	23.5	2420	80.7	6685	545	19.6
Dutchess	Johnny's	6	46149	23.1	2239	74.6	3080	182	20.5
Garnett Gold	Rupp	7	41787	20.9	2420	80.7	10666	908	17.3
Carbonato Gold	Rupp	8	37486	18.7	2017	67.2	4872	323	18.9
Thumpkin	Rupp	9	28635	14.3	1392	46.4	6885	484	20.6
Average:			47450	23.7	2299	76.6	5260	399	20.7
LSD (0.05) <sup>2</sup> :			27359	13.7	1192	39.7	10051	735	5.2

1. Cultigens are ranked by total yield in pounds per acre.

2. Least Significant Difference (LSD) is the minimum difference required between two cultigens for a significant difference in that category at a significance level of  $P < 0.05$ .

### Jumbo Pumpkins (>22.0 lb)

Nine entries were evaluated in the “Jumbo” size category. ‘Griffin’ from HM Clause had the highest yield of the nine cultigens at 76,805 lb/ac (Table 6). ‘Adonis’ and ‘Cider’ from HM Clause ranked second and third at 75,710 lb/ac and 72,370 lb/ac, respectively. ‘Olympus’ from HM Clause ranked fourth for yield at 65,987 lb/ac and had the highest average fruit weight in this size category at 35.3 lb. ‘Solid Gold’ from Rupp Seeds yielded 56,501 lb/ac mature fruit, ranking fifth, but also yielded 9,093 lb of immature fruit, indicating this may be a later maturing cultigen. ‘Kratos’ from HM Clause, ‘Justify’ from Seneca, ‘XPU7204’ from Sakata, and ‘JPN 17-4445’ from Johnny’s Seeds were also included in this size category. The average fruit weight across all nine cultigens in this size category was 29.7 lb. All entries in this category produced orange fruit except ‘Cider’, which produced buff fruit.



Table 6. Yield for Jumbo Pumpkins (&gt; 22.0 lb) 2023. Upper Mountain Research Station, Laurel Springs, NC.

Cultigen	Company	Rank <sup>1</sup>	Yield				Immature Fruit Yield		Average fruit weight (lb)
			Pounds (lb) per acre	Tons per acre	Number (no) per acre	Bins per acre	Pounds (lb) per acre	Number (no) per acre	
Griffin	HM Clause	1	76805	38.4	2239	111.9	3176	182	34.3
Adonis	HM Clause	2	75710	37.9	2239	111.9	3461	121	33.6
Cider	HM Clause	3	72370	36.2	2481	124.0	3110	242	30.1
Olympus	HM Clause	4	65987	33.0	1876	93.8	2003	121	35.3
Solid Gold	Rupp	5	56501	28.3	2178	108.9	9093	545	26.0
Kratos	HM Clause	6	51777	25.9	2082	104.1	3819	242	25.5
Justify	Seneca	7	51486	25.7	2178	108.9	7248	605	24.0
XPU7204	Sakata	8	46627	23.3	1573	78.7	1228	61	29.9
JPN 17-4445	Johnny's	9	43844	21.9	1513	75.6	6794	363	28.9
Average:			60123	30.1	2040	102.0	4437	276	29.7
LSD (0.05) <sup>2</sup> :			38715	19.4	1440	72.0	12256	758	5.9

1. Cultigens are ranked by total yield in pounds per acre.

2. Least Significant Difference (LSD) is the minimum difference required between two cultigens for a significant difference in that category at a significance level of  $P < 0.05$ .

## Yield and Average Fruit Weight Across All Size Categories

'Griffin' from HM Clause had the highest yield per acre across all 27 replicated entries at 76,805 lb/ac (Table 7). 'Cider' from HM Clause had the greatest number of bins per acre at 124.0 bins/acre. 'Olympus' from HM Clause had the greatest average fruit weight at 35.3 lb/fruit.

Table 7. Yield Across Size Categories 2023. Upper Mountain Research Station, Laurel Springs, NC.

Cultigen	Company	Size	Rank <sup>1</sup>	Yield				Average fruit weight (lb)
				Pounds (lb) per acre	Tons per acre	Number (no) per acre	Bins per acre	
Griffin	HM Clause	Jumbo	1	76805	38.4	2239	111.9	34.3
Adonis	HM Clause	Jumbo	2	75710	37.9	2239	111.9	33.6
Cider	HM Clause	Jumbo	3	72370	36.2	2481	124.0	30.1
Olympus	HM Clause	Jumbo	4	65987	33.0	1876	93.8	35.3
The Boss (JPN 17-4445)	Johnny's	Extra-Large	5	62121	31.1	2904	96.8	21.5
Solid Gold	Rupp	Jumbo	6	56501	28.3	2178	108.9	26.0
Falcon	Lark	Extra-Large	7	55499	27.7	2097	69.9	26.0
Orange Sunrise	HM Clause	Extra-Large	8	54813	27.4	2602	86.7	21.1
Hermes	HM Clause	Large	9	53803	26.9	3267	81.7	16.4
Bayhorse Gold	Rupp	Extra-Large	10	53458	26.7	2602	86.7	20.6
Kratos	HM Clause	Jumbo	11	51777	25.9	2082	104.1	25.5
Justify	Seneca	Jumbo	12	51486	25.7	2178	108.9	24.0
Abominable	Seneca	Large	13	50463	25.2	3872	96.8	13.1
Sand Ghost	Lark	Large	14	48327	24.2	3146	78.7	15.2
Lemonade	HM Clause	Extra-Large	15	47099	23.5	2420	80.7	19.6
Skidoo Gold	Rupp	Large	16	47093	23.5	3146	78.6	15.1
XPU7204	Sakata	Jumbo	17	46627	23.3	1573	78.7	29.9
Dutchess	Johnny's	Extra-Large	18	46149	23.1	2239	74.6	20.5
JPN 17-4445	Johnny's	Jumbo	19	43844	21.9	1513	75.6	28.9
Garnett Gold	Rupp	Extra-Large	20	41787	20.9	2420	80.7	17.3
Blaze	Hollar	Pie	21	37490	18.7	10164	N/A	3.7
Carbonato Gold	Rupp	Extra-Large	22	37486	18.7	2017	67.2	18.9
Fort Knox	Rupp	Small	23	32065	16.0	4780	47.8	6.7
Thumpkin	Rupp	Extra-Large	24	28635	14.3	1392	46.4	20.6
Yosemite	Rupp	Small	25	28338	14.2	4114	41.1	6.8
Field Trip	HM Clause	Small	26	26717	13.4	4598	46.0	5.8
RPX 6201	Rupp	Small	27	21713	10.9	7442	74.4	2.9
Average:				48673	24.3	3095	82.8	20.0

1. Cultigens are ranked by total yield in pounds per acre.

### ***Quality – Carving/Jack-Type Pumpkins***

The cultigen with the smoothest fruit texture, corresponding to a low value, out of the 31 jack-type entries was 'Porcelain Doll (Improved)' from Rupp and Johnny's Seeds at 0.9. The cultigen with the roughest texture was 'Fort Knox' from Rupp at 6.0 (Table 8). The average fruit texture rating across all entries was 3.5.

The cultigen with the lowest fruit shape rating, corresponding to a flatter shape, was 'Blaze' from Hollar Seeds at 1.8 (Table 8). The cultigen with the highest fruit shape rating, corresponding to a taller shape, was 'Griffin' from HM Clause at 9.0. The average fruit shape across all 31 entries was 5.1. Another measure of fruit shape was taken through LD measurements. The cultigens with the lowest LD ratio, corresponding to a flatter fruit, were 'Blaze' and 'Porcelain Doll (Improved)', both having a ratio of 0.6. The cultigen with the highest LD ratio was 'Griffin' at 1.3. The average LD ratio across all 31 entries was 0.9.

Cultigens were also rated on fruit suture depth, ranging from little to no sutures, such as 'Kakai' from Johnny's (1.5), to very deep sutures in 'Porcelain Doll (Improved)' (9.0). The average fruit suture rating across all 31 entries was 4.0 (Table 8).

The stem or handle of the fruit was also rated for visual strength of attachment, width, and length. The cultigens with the strongest handle attachment were 'Falcon' from Lark and 'Olympus' from HM Clause, both with a rating of 8.8 (Table 8). The cultigen with the highest rating for handle length and handle width was 'Thumpkin' from Rupp at 7.8 and 8.8, respectively.

**Table 8. Quality Evaluations 2023, Upper Mountain Research Station, Laurel Springs, NC.**

Cultigen	Company	Size	Color	Texture <sup>1</sup>	Shape <sup>2</sup>	Sutures <sup>3</sup>	Attachment <sup>4</sup>	Handle Length <sup>5</sup>	Handle Width <sup>6</sup>	LD <sup>7</sup>
Abominable	Seneca	Large	White	2.0	5.0	3.0	4.5	5.5	4.3	0.8
Adonis	HM Clause	Jumbo	Orange	3.5	7.3	4.5	7.8	6.0	7.3	1.0
Bayhorse Gold	Rupp	Extra-Large	Orange	3.3	6.0	3.8	6.3	4.8	4.8	1.0
Blaze	Hollar	Pie	Yellow Stripe Orange	1.8	1.8	2.0	3.3	5.3	2.3	0.6
Carbonato Gold	Rupp	Extra-Large	Dark Orange	5.0	5.0	5.5	7.0	4.5	5.0	0.9
Cider	HM Clause	Jumbo	Buff	3.0	5.3	4.0	7.0	7.0	7.0	0.9
Dutchess	Johnny's	Extra-Large	Dark Orange	4.8	5.0	6.0	5.8	4.3	5.0	0.9
Falcon	Lark	Extra-Large	Dark Orange	5.3	6.5	5.5	8.8	6.3	7.0	1.0
Field Trip	HM Clause	Small	Orange	4.3	3.3	3.0	5.5	6.5	4.3	0.7
Fort Knox	Rupp	Small	Dark Orange	6.0	5.3	5.0	5.8	7.0	6.5	0.9
Garnett Gold	Rupp	Extra-Large	Orange	5.5	5.5	5.8	7.0	4.3	5.0	0.9
Griffin	HM Clause	Jumbo	Orange	3.5	9.0	3.0	7.0	7.3	7.0	1.3
Hermes	HM Clause	Large	Orange	3.8	4.8	3.8	7.5	5.0	5.5	0.9
HSC 151	Rupp	Medium	Green-Orange	5.0	4.3	2.3	4.9	4.1	3.3	0.8
JPN 17-4445	Johnny's	Jumbo	Orange	3.8	7.0	4.5	6.3	3.5	5.3	1.0
Justify	Seneca	Jumbo	Orange	4.0	6.0	4.0	8.0	5.0	6.8	1.0
Kakai	Johnny's	Small	Green-Orange	2.0	4.5	1.5	3.5	3.0	2.5	0.9
Kratos	HM Clause	Jumbo	Orange	3.7	5.7	4.0	7.9	4.4	5.3	0.9
Lemonade	HM Clause	Extra-Large	Yellow	3.0	6.0	3.3	6.8	6.0	4.8	1.0
Olympus	HM Clause	Jumbo	Orange	3.5	5.0	2.8	8.8	5.3	6.8	0.8
Orange Sunrise	HM Clause	Extra-Large	Neon Orange	3.5	5.0	3.5	7.3	3.5	5.5	0.9
Porcelain Doll (Improved)	Lark	Large	Light Pink	0.9	3.0	9.0	3.8	3.9	3.7	0.6
Porcelain Doll (Original)	Rupp and Johnny's	Large	Light Pink	1.1	2.0	7.0	4.0	2.4	3.0	0.7
RPX 6201	Rupp	Small	Orange	3.3	5.5	2.0	5.3	3.5	5.5	1.0
Sand Ghost	Lark	Large	Buff	3.8	5.8	3.8	5.3	5.0	6.5	0.9
Skidoo Gold	Rupp	Large	Orange	4.0	4.3	3.0	5.0	3.8	5.0	0.8
Solid Gold	Rupp	Jumbo	Orange	2.0	4.7	2.0	5.7	4.7	5.3	0.9
The Boss (JPN 17-4448)	Johnny's	Extra-Large	Orange	3.0	4.8	5.5	5.8	4.0	5.8	0.9
Thumpkin	Rupp	Extra-Large	Dark Orange	4.0	3.0	4.5	7.3	7.8	8.8	0.6
XPU7204	Sakata	Jumbo	Orange	3.7	5.3	3.0	8.1	3.7	6.1	0.9
Yosemite	Rupp	Small	Dark Orange	3.3	5.8	3.0	6.7	6.7	6.0	1.0
<b>Average:</b>				3.5	5.1	4.0	6.3	5.0	5.4	0.9
<b>LSD (0.05)<sup>8</sup>:</b>				1.3	0.8	1.1	0.8	1.0	0.7	0.1

1. Texture Rating: 1 = smooth, 5 = semi-rough, 9 = rough

2. Fruit Shape Rating: 1 = flat, 5 = round, 9 = tall

3. Fruit Suture Rating: 1 = none, 5 = medium, 9 = deep

4. Handle Attachment: 1 = poor, 5 = average, 9 = excellent

5. Handle Length: 1 = short, 5 = medium, 9 = long

6. Handle Width: 1 = thin, 5 = medium, 9 = thick

7. LD: Individual length and width measurements were taken from 3 fruit per replications (12 total), LD ratio was determined by dividing fruit length by fruit width.

8. Least Significant Difference (LSD) is the minimum difference required between two cultigens for a significant difference in that category at a significance level of  $P < 0.05$ .

## Specialty Pumpkins – Yield

One specialty-type cultigen, ‘Blue Doll’ from Rupp Seeds, is not included in yield data due to issues with plant stand. Many of the *Cucurbita maxima* plants emerged but wilted and died about 4 weeks after planting. This was not the case with the *Cucurbita pepo* species. The specialty-type cultigen that yielded the greatest in pounds per acre was ‘Lunch Lady’ at 71,172 lb/ac (Table 9). The average yield in pounds per acre across all 17 specialty-type cultigens was 34,817 lb/ac. ‘Lunch Lady’ also yielded the greatest number of fruit per acre at 8,712. The average yield in number of fruit per acre across all 17 cultigens was 3,260 no/ac. Specialty-type cultigen entries varied greatly in average fruit size, with ‘JPN 20-5116’ from Johnny’s Seeds averaging 1.5 lb/fruit and ‘Big Moose’ from Seneca and Johnny’s Seeds averaging 45.3 lb/fruit. The average fruit weight across all 17 cultigens was 14.4 lb/fruit.

**Table 9. Specialty Pumpkin Yield (Observational) 2023. Upper Mountain Research Station, Laurel Springs, NC.**

			Yield			
Cultigen	Company	Rank <sup>1</sup>	Pounds (lb) per acre	Tons per acre	Number (no) per acre	Average Fruit Weight
Lunch Lady	Johnny's	1	71172	35.6	8712	8.2
Big Moose	Seneca and Johnny's	2	65776	32.9	1452	45.3
Fright	Rupp	3	51957	26.0	2420	21.5
New England Cheddar	Rupp	4	47093	23.5	3630	13.0
Flat Stacker	Johnny's	5	45762	22.9	1694	27.0
Speckled Hound	Johnny's	6	43608	21.8	6776	6.4
Rouge Vif D'Etampes	Rupp and Johnny's	7	42689	21.3	2420	17.6
Red Warty Thing	Rupp	8	40632	20.3	2420	16.8
Galeux D Eysines (Peanut)	Johnny's	9	34703	17.4	1936	17.9
Long Island Cheese	Johnny's	10	30903	15.5	2904	10.6
Marina Di Chioggia	Johnny's	11	27757	13.9	2178	12.7
One Too Many	Rupp	12	24902	12.5	2420	10.3
Red Eye	Rupp	13	17714	8.9	1452	12.2
Naked Bear	Rupp	14	15778	7.9	6534	2.4
Jarrahdale	Rupp	15	13092	6.5	968	13.5
JPN 20-5116	Johnny's	16	9656	4.8	6292	1.5
Turks Turban	Johnny's	17	8688	4.3	1210	7.2
Average:			34817	17.4	3260	14.4

1. Cultigens are ranked by total yield in pounds per acre.



## Specialty Pumpkins – Quality

Specialty pumpkin cultigens varied greatly in color, shape, and texture. Fruit texture ranged from being very smooth, such as ‘Blue Doll’ from Rupp and ‘Long Island Cheese’ from Johnny’s, to rough and warty, such as ‘Fright’ and ‘Red Warty Thing’ from Rupp and ‘Galeux D Eysines’ from Johnny’s. The average fruit texture rating across all 18 specialty entries was 3.6 (Table 10). Fruit shapes ranged from being mostly flat, such as ‘Flat Stacker’ from Johnny’s at 1.0, to round-tall such as ‘Fright’ from Rupp at 6.0. The average fruit shape rating across all 18 entries was 2.5. LD ratios also varied widely in the specialty-type pumpkins, ranging from ‘Flat Stacker’ at 0.4 to ‘Lunch Lady’ at 1.79.

Cultigen	Company	Color	Texture <sup>1</sup>	Shape <sup>2</sup>	Sutures <sup>3</sup>	Attachment <sup>4</sup>	Handle Length <sup>5</sup>	Handle Width <sup>6</sup>	LD <sup>7</sup>
Blue Doll	Rupp	Blue	1.0	3.0	8.0	4.0	3.0	3.0	0.83
Big Moose	Seneca and Johnny's	Bright Orange	3.0	3.0	2.0	3.0	1.0	2.0	0.82
Flat Stacker	Johnny's	White-Gray	1.0	1.0	7.0	1.0	2.0	2.0	0.4
Fright	Rupp	Orange, Green Warts	9.0	6.0	3.0	5.0	5.0	4.0	1.0
Galeux D Eysines (Peanut)	Johnny's	Salmon	9.0	2.0	1.0	2.0	4.0	5.0	0.57
Jarrahdale	Rupp	Blue	2.0	3.0	9.0	2.0	2.0	4.0	0.62
JPN 20-5116	Johnny's	Dark Green	1.0	3.0	2.0	4.0	4.0	4.0	0.73
Long Island Cheese	Johnny's	Buff	1.0	1.0	2.0	3.0	4.0	1.0	0.62
Marina Di Chioggia	Johnny's	Green	8.0	2.0	7.0	6.0	3.0	8.0	0.53
Naked Bear	Rupp	Light Orange	2.0	3.0	2.0	6.0	4.0	6.0	0.76
New England Cheddar	Rupp	Buff	2.0	2.0	2.0	3.0	3.0	1.0	0.67
One Too Many <sup>8</sup>	Rupp	.	.	.	.	.	.	.	0.74
Red Eye	Rupp	Red	3.0	2.0	2.0	3.0	2.0	4.0	0.61
Red Warty Thing	Rupp	Red-Yellow	9.0	3.0	.	5.0	2.0	5.0	0.76
Rouge Vif D'Etampes	Rupp and Johnny's	Red-Orange	2.5	1.5	3.0	3.5	3.0	3.0	0.49
Speckled Hound	Johnny's	Pink-Green	2.0	3.0	7.0	5.0	4.0	6.0	0.61
Turks Turban	Johnny's	Red-Green	2.0	2.0	2.0	5.0	4.0	4.0	0.64
Lunch Lady	Johnny's	.	.	.	.	.	.	.	1.79
Average:			3.6	2.5	3.9	3.8	3.1	3.9	0.73

1. Texture Rating: 1 = smooth, 5 = semi-rough, 9 = rough

2. Fruit Shape Rating: 1 = flat, 5 = round, 9 = tall

3. Fruit Suture Rating: 1 = none, 5 = medium, 9 = deep

4. Handle Attachment: 1 = poor, 5 = average, 9 = excellent

5. Handle Length: 1 = short, 5 = medium, 9 = long

6. Handle Width: 1 = thin, 5 = medium, 9 = thick

7. LD: Individual length and width measurements were taken from 3 fruit, LD ratio was determined by dividing fruit length by fruit width.

8. "." indicates the fruit of that cultigen were not fully ripe to complete quality evaluations.

## Gourd Pumpkins

The gourd-type cultigen that yielded the greatest in pounds per acre was 'Blanco' from Seneca Seeds at 16,988 lb/ac (Table 11). The average yield in pounds per acre across all 20 gourd-type cultigens was 4,508 lb/ac. The cultigen that yielded the greatest in number of fruit per acre was 'Daisy Gourd' from Johnny's Seeds at 47,916 no/ac. The average yield in number of fruit per acre across all 20 cultigens was 17,799 no/ac. Gourd-type cultigen entries also varied greatly in average fruit size, with 'Blanco' averaging 7.0 lb/fruit and smaller gourd mixes such as 'Daisy Gourd' from Johnny's and 'Galaxy of Stars' and 'Small Formula Blend' from Rupp each averaging 0.5 lb/fruit. The average fruit weight across all 20 cultigens was 1.9 lb/fruit.

Table 11. Gourd Pumpkin Yield (Observational) 2023, Upper Mountain Research Station, Laurel Springs, NC.					
			Yield		
Cultigen	Company	Rank <sup>1</sup>	Pounds (lb) per acre	Number per acre	Average Fruit Weight
Blanco	Seneca	1	16988	9922	7.0
Large Bottle Gourd	Johnny's	2	10745	9438	4.4
Sanchez	Seneca	3	8494	7744	3.5
Hoargarth	Rupp	4	8373	9438	3.5
Gremlins	Johnny's	5	6582	12342	2.7
Icicle	Seneca	6	5735	7018	2.4
Sunshine	Lark	7	3896	7986	1.6
Phantomita	Lark	8	3872	7502	1.6
Gizmo	Rupp	9	3824	8712	1.6
Casperita	Rupp and Lark	10	3098	10648	1.3
Batwing Mix	Seneca	11	2710	16214	1.1
Orangita	Lark	12	2565	9438	1.1
Autumn Wings Blend	Johnny's and Rupp	13	2347	28314	1.0
Oooky	Lark	14	2275	15730	0.9
Jill-Be-Little	Johnny's	15	2057	12342	0.9
Harrowsmith Select	Johnny's	16	1573	23232	0.7
Autumn Wings Large Swa	Rupp	17	1331	36058	0.6
Daisy Gourd	Johnny's	18	1307	47916	0.5
Galaxy of Stars	Rupp	19	1283	47674	0.5
Small Formula Blend	Rupp	20	1113	28314	0.5
Average:			4508	17799	1.9

1. Cultigens are ranked by total yield in pounds per acre.

2. Yield in pounds per acre is based on the weight of 10 representative fruits from each plot.

## Carving/Jack O'Lantern-Type Pumpkin Representative Photos

Figure 2. Photo of 'Abominable' from Seneca, Jack-type Pumpkins 2023.



Figure 3. Photo of 'Adonis' from HM Clause, Jack-type Pumpkins 2023.





Figure 4. Photo of 'Bayhorse Gold' from Rupp, Jack-type Pumpkins 2023.



Figure 5. Photo of 'Blaze' from Hollar, Jack-type Pumpkins 2023.





Figure 6. Photo of 'Carbonato Gold' from Rupp, Jack-type Pumpkins 2023.



Figure 7. Photo of 'Cider' from HM Clause, Jack-type Pumpkins 2023.





Figure 8. Photo of 'Dutchess' from Johnny's, Jack-type Pumpkins 2023.



Figure 9. Photo of 'Falcon' from Lark, Jack-type Pumpkins 2023.





Figure 10. Photo of 'Field Trip' from HM Clause, Jack-type Pumpkins 2023.



Figure 11. Photo of 'Fort Knox' from Rupp, Jack-type Pumpkins 2023.





Figure 12. Photo of 'Garnett Gold' from Rupp, Jack-type Pumpkins 2023.



Figure 13. Photo of 'Griffin' from HM Clause, Jack-type Pumpkins 2023.





Figure 14. Photo of 'Hermes' from HM Clause, Jack-type Pumpkins 2023.



Figure 15. Photo of 'HSC 151' from Rupp, Jack-type Pumpkins 2023.





Figure 16. Photo of 'JPN 17-4445' from Johnny's, Jack-type Pumpkins 2023.



Figure 17. Photo of 'Justify' from Seneca, Jack-type Pumpkins 2023.





Figure 18. Photo of 'Kakai' from Johnny's, Jack-type Pumpkins 2023.



Figure 19. Photo of 'Kratos' from HM Clause, Jack-type Pumpkins 2023.





Figure 20. Photo of 'Lemonade' from HM Clause, Jack-type Pumpkins 2023.



Figure 21. Photo of 'Olympus' from HM Clause, Jack-type Pumpkins 2023.





Figure 22. Photo of 'Orange Sunrise' from HM Clause, Jack-type Pumpkins 2023.



Figure 23. Photo of 'Porcelain Doll', Jack-type Pumpkins 2023.





Figure 24. Photo of 'RPX 6201' from Rupp, Jack-type Pumpkins 2023.



Figure 25. Photo of 'Sand Ghost' from Lark, Jack-type Pumpkins 2023.





Figure 26. Photo of 'Skidoo Gold' from Rupp, Jack-type Pumpkins 2023.



Figure 27. Photo of 'Solid Gold' from Rupp, Jack-type Pumpkins 2023.





Figure 28. Photo of 'The Boss (JPN 17-4448)' from Johnny's, Jack-type Pumpkins 2023.



Figure 29. Photo of 'Thumpkin' from Rupp, Jack-type Pumpkins 2023.





Figure 30. Photo of 'XPU7204' from Sakata, Jack-type Pumpkins 2023.



Figure 31. Photo of 'Yosemite' from Rupp, Jack-type Pumpkins 2023.





## Specialty-Type Pumpkin Representative Photos

Figure 32. Photo of 'Blue Doll' from Rupp, Specialty-type Pumpkins 2023.



Figure 33. Photo of 'Big Moose' from Seneca and Johnny's, Specialty-type Pumpkins 2023.





Figure 34. Photo of 'Flat Stacker' from Johnny's, Specialty-type Pumpkins 2023.



Figure 35. Photo of 'Fright' from Rupp, Specialty-type Pumpkins 2023.





Figure 36. Photo of 'Galeux D Eysines' from Johnny's, Specialty-type Pumpkins 2023.



Figure 37. Photo of 'Jarrahdale' from Rupp, Specialty-type Pumpkins 2023.





Figure 38. Photo of 'JPN 20-5116' from Johnny's, Specialty-type Pumpkins 2023.



Figure 39. Photo of 'Long Island Cheese' from Johnny's, Specialty-type Pumpkins 2023.





Figure 40. Photo of 'Marina Di Chioggia' from Johnny's, Specialty-type Pumpkins 2023.



Figure 41. Photo of 'Naked Bear' from Rupp, Specialty-type Pumpkins 2023.





Figure 42. Photo of 'New England Cheddar' from Rupp, Specialty-type Pumpkins, 2023.



Figure 43. Photo of 'One Too Many' from Rupp, Specialty-type Pumpkins 2023.





Figure 44. Photo of 'Red Eye' from Rupp, Specialty-type Pumpkins 2023.



Figure 45. Photo of 'Red Warty Thing' from Rupp, Specialty-type Pumpkins 2023.





Figure 46. Photo of 'Rouge Vif D'Etampes' from Rupp and Johnny's, Specialty-type Pumpkins 2023.



Figure 47. Photo of 'Speckled Hound' from Johnny's, Specialty-type Pumpkins 2023.





Figure 48. Photo of 'Turks Turban' from Johnny's, Specialty-type Pumpkins 2023.



Figure 49. Photo of 'Lunch Lady', Specialty-type Pumpkins 2023.





## Gourd-Type Pumpkins Representative Photos

Figure 50. Photo of 'Autumn Wings Blend' from Johnny's and Rupp, Gourd-type Pumpkins 2023.



Figure 51. Photo of 'Autumn Wings Large Swan' from Rupp, Gourd-type Pumpkins 2023.





Figure 52. Photo of 'Batwing Mix' from Seneca, Gourd-type Pumpkins 2023.



Figure 53. Photo of 'Blanco' from Seneca, Gourd-type Pumpkins 2023.





Figure 54. Photo of 'Casperita' from Rupp and Lark, Gourd-type Pumpkins 2023.



Figure 55. Photo of 'Daisy Gourd' from Johnny's, Gourd-type Pumpkins 2023.





Figure 56. Photo of 'Harrowsmith Select' from Johnny's, Gourd-type Pumpkins 2023.



Figure 57. Photo of 'Galaxy of Stars' from Rupp, Gourd-type Pumpkins 2023.





Figure 58. Photo of 'Gremlins' from Johnny's, Gourd-type Pumpkins 2023.



Figure 59. Photo of 'Icicle' from Seneca, Gourd-type Pumpkins 2023.





Figure 60. Photo of 'Jill-Be-Little' from Johnny's, Gourd-type Pumpkins 2023.



Figure 61. Photo of 'Large Bottle Gourd' from Johnny's, Gourd-type Pumpkins 2023.





Figure 62. Photo of 'Oooky' from Lark, Gourd-type Pumpkins 2023.



Figure 63. Photo of 'Orangita' from Lark, Gourd-type Pumpkin 2023.





Figure 64. Photo of 'Phantomita' from Lark, Gourd-type Pumpkins 2023.



Figure 65. Photo of 'Sanchez' from Seneca, Gourd-type Pumpkins 2023.





Figure 66. Photo of 'Small Formula Blend' from Rupp, Gourd-type Pumpkins 2023.



Figure 67. Photo of 'Sunshine' from Lark, Gourd-type Pumpkins 2023.





Figure 68. Photo of 'Gizmo' from Rupp, Gourd-type Pumpkins 2023.



Figure 69. Photo of 'Hoargarth' from Rupp, Gourd-type Pumpkins 2023.

