



2008 Pumpkin Powdery Mildew Resistance Variety Trial

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Objective: To evaluate powdery mildew resistance, yield, and fruit and stem characteristics, as well as postharvest storability of experimental and commercially available jack o' lanterns for production in Tennessee.

What did we do?

- Broadcast and disked in 50 lb N, 50 lb P₂O₅, and 150 lb K₂O pre-plant
- Planted 22 varieties from seed June 3, 2008
- Four replications per variety
- Row spacing 9' between rows, 5' between hills, 4 hills/plot, 4 plants/hill thinned to 2 plants/hill
- Irrigated 15 times to supplement natural rainfall
- Pest control:
 - Weeds: Curbit preemergence
Poast postemergence
Gramoxone used in alley ways postemergence
 - Insects: Scouted regularly
Rotated Sevin, Asana and Capture for control of cucumber beetles, squash bugs and squash vine borers
 - Diseases: Scouted regularly
One spray of Bravo and one spray of Quadris
- Harvested September 10, 2008
- Washed half of the pumpkins for storage in 100 ppm bleach solution/half unwashed
- Stored on concrete floor in shed
- Traits evaluated:
 - Total yield (tons/acre)
 - Marketable yield (tons/acre)
 - Number of fruit per acre
 - Average weight per pumpkin (pounds)
 - Length (inches)
 - Width (inches)
 - Color (yellow to deep orange)
 - Shape (flat to oblong)
 - Suturing (none to deep)
 - Stem thickness (thin to thick)
 - Stem length (short to long)
 - Stem attachment (poor to excellent)
 - Powdery mildew on stem (none to severe)
 - Storability (duration)

What did we find?

The top yielder by weight was an experimental variety from Hollar Seeds called HSR4710. It yielded an average of 43.8 tons/acre with 95% marketable fruit and an average fruit size of 15 pounds. The top yielder by number was also an experimental variety from Hollar called HSR4721. This variety averaged over 8,000 fruit per acre with 98% marketable fruit and an average weight of 8 pounds per pumpkin. Rounding out the top five are Camaro (Hollar), Spartan (Seedway) and Magic Wand (Harris Moran). Charisma, Magic Lantern and 20 Karat Gold had the highest percentage of unmarketable fruit.- all over 20% Pankow's Field and Howden were two of the lowest yielding varieties in the trial. Both are susceptible to powdery mildew.

Variety	Total Wt (T/A)	Marketable Wt (T/A)	Total # (fruit/A)	% Unmarketable	Avg wt/frt (lbs)	Plant PM Severity (%)
HSR4710	43.8	41.9	5929	5	14.9	2
HSR4721	33.7	33.6	8289	2	8.3	4
Camaro	33.6	32.5	5808	8	12.1	1
Spartan	33.3	28.2	5566	15	12.1	5
Magic Wand	32.7	31.4	6413	10	10.2	0
Gladiator	30.8	28.2	5869	14	11.1	2
Superior	30	26.6	6474	17	9.8	6
ACX7302	29.9	28.2	5405	6	11.3	54
Magic Lantern	29.2	24.8	6171	22	10.4	1
Sorcerer	28.8	25.7	6111	15	9.9	28
King Midas	25.9	23.4	4659	9	13.6	29
Magician	25.7	24.9	6111	10	8.5	4
Warlock	25.7	22.9	4235	11	12.3	5
ACX6501	25.5	25.4	4840	3	10.8	32
Merlin	25	22.8	5324	15	9.8	7
Charisma	22.3	18.7	5627	26	8	6
Capital	21.5	19.2	4961	12	8.9	2
Hannibal	20.2	18.5	3691	11	11.3	28
20 Karat Gold	17.4	15.1	3691	22	10.5	27
ACX7301	17.2	16.1	3872	13	8.7	58
Pankow's Field	16.7	15.4	3691	13	8.9	26
Howden	16.6	15	2844	12	12.1	30

Yields per acre were scaled up from 9' x 20' plots with 4 hills/plot and hill spacing of 5' within the row. 2 plants/hill.

Pumpkin color, shape and suturing, as well as stem length, thickness and attachment were rated subjectively at harvest on a 1-9 scale (see below for scale key). Stem powdery mildew was rated on a 1-5 scale (see below). In these 22 varieties, color ranged from light to deep orange. Shape ranged from round to slightly oblong. Suturing ranged from none to deep. Stem length ranged from medium to long. Stem thickness ranged from thin-medium to medium-thick. Attachment ranged from slightly below average to above average. Stem powdery mildew ranged from approximately 10% to nearly 80% at harvest.

Variety	Color	Shape	Suturing	Stem Characteristics			
				Length	Thickness	Attachment	PM
20 Karat Gold	5.8	4.9	2.3	6	6	5.5	2.8
ACX6501	5	6.5	1.8	4.6	7	3.3	4
ACX7301	6	6.3	2.8	4	5.3	5	3.9
ACX7302	5	5.4	2.5	5.3	4.5	5	4.4
Camaro	4.3	6.3	1.3	5.3	6	5.8	1.9
Capital	6.4	5	4.8	6.8	3.8	4.3	3.1
Charisma	5	5.3	3.5	5.5	2.8	4.3	1.9
Gladiator	7	5.1	5.3	5.3	7	6.5	2.6
Hannibal	6.5	5.5	4.5	6	6.5	6.5	2.4
Howden	6.6	5.8	3.5	4.9	4.8	7.3	2.8
HSR4710	4.8	7	2.8	4.5	4.8	3.8	1.9
HSR4721	2.5	5.3	1	6	3	3.5	1.8
King Midas	6.5	6.1	3.3	5.3	5.5	5.8	2.9
Magic Lantern	6.9	6.4	3.8	5.3	4.3	6.8	2.9
Magic Wand	6.3	4.5	4.3	4.6	6	6.5	2
Magician	5.3	6	2.5	4	6.5	5	1.9
Merlin	6.5	5.8	2.8	5.3	4.3	5.5	3.4
Pankow's Field	4.5	7.3	1.8	6.3	4.3	3.8	2.9
Sorcerer	6.8	5.5	2.5	5.3	4	6.3	3.6
Spartan	6.8	5.9	4.5	4.3	4.3	6.3	3.8
Superior	6.3	6.8	4.5	8.3	5.5	5.8	1.4
Warlock	7.8	5.5	1.8	2.8	8.3	7.5	1.6

Color Scale: 1=Yellow, 5=Orange, 9=Deep Orange

Shape Scale: 1=Flat, 5=Round, 9=Oblong

Suturing Scale: 1=None, 5=Medium, 9=Deep

Stem Length Scale: 1=Short, 5=Medium, 9=Long

Stem Thickness Scale: 1=Thin, 5=Medium, 9=Thick

Stem Attachment Scale: 1=Poor, 5=Average, 9=Excellent

Stem Powdery Mildew Scale: 1=1%, 2=10%, 3=30%, 4=60%, 5=100%

For length and width measurements, King Midas measured both the longest and widest, followed closely by Spartan and HSR 4710. Capital measured the smallest.

Variety	Length (in)	Width (in)
King Midas	11.25	11.15
Spartan	11.15	10.45
HSR4710	11.10	10.80
ACX6501	10.50	9.70
Superior	10.35	9.00
Magic Lantern	10.15	9.85
Warlock	10.10	10.25
Camaro	10.05	9.45
Howden	10.00	9.60
Gladiator	9.85	9.85
Sorcerer	9.85	9.60
Magician	9.55	9.05
Merlin	9.35	9.40
ACX7302	9.35	9.31
ACX7301	9.20	9.00
Pankow's Field	9.20	8.50
Hannibal	9.10	9.50
20 Karat Gold	8.80	9.50
Charisma	8.75	8.95
Magic Wand	8.45	9.60
HSR4721	8.45	8.75
Capital	8.25	9.00

Lengths and widths are the average of 5 pumpkins/plot.



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Conclusions

There are many powdery mildew resistant jack-o'-lantern varieties that perform well in Tennessee under a reduced spray program, which deliver on pounds per acre as well as number of fruit per acre. Camaro, Spartan and Magic Wand were three of the top yielding commercially available varieties and all show high resistance to powdery mildew. Washing the pumpkins in a 10% bleach solution did not improve storability, and there were no differences in keeping quality between the varieties studied here.

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