

Disease Resistant Pumpkin Variety Evaluation - 2011

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Introduction

Pumpkins are an important crop for many growers in the Mid-Atlantic region. Seed companies continue to develop new varieties for this important market. One important trait in many new varieties is powdery mildew tolerance or resistance. Variety evaluations on pumpkins have been conducted in SE PA for many seasons to compare new selections to current standards. This report is on pumpkin variety trials at three locations in PA in 2011.

Procedures

Seventeen varieties of medium pumpkins (7-24 lbs) and 12 varieties of large pumpkins (>24 lbs) were grown in Lancaster County, PA in 2011. The pumpkins were grown using the no-till system and were watered via trickle irrigation. Spacing of the plants was as follows: medium – 4 ft. in row and large – 8 ft. in row; all rows were on 8 ft. centers. Plants were direct seeded on June 14 and recommended fertility, weed control and pest management practices were used.

There were three 6-plant replicates per variety and fruit were harvested on September 29 and 30.

Fifteen varieties of medium pumpkins (7-24 lbs) and 10 varieties of large pumpkins (>24 lbs) were grown in Centre County, PA in 2011. The pumpkins were grown on raised beds (but no plastic) and were watered via trickle irrigation. Spacing of the plants was as follows: medium – 4 ft. in row and large – 8 ft. in row; all rows were on 8 ft. centers. Plants were direct seeded on June 14 and recommended fertility, weed control and pest management practices were used.

There were three 6-plant replicates per variety and fruit were harvested on September 28 and 29.

Fifteen varieties of medium pumpkins (7-24 lbs) and three varieties of large pumpkin (>24 lbs) were grown in Northampton County, PA in 2011. The pumpkins were grown on bare soil with no irrigation. Spacing of the plants was as follows: medium – 5.3 ft. in row and large 8 ft. in row; all rows were on 6 ft. centers. Plants were direct seeded on June 8 and recommended fertility, weed control and pest management practices were used. There was one 10-plant replicate per variety and fruit were harvested on September 14. Powdery mildew ratings were taken on 10 leaves per plot with % mildew coverage on both the upper and lower leaf surfaces recorded. Plots were also given an overall mildew infection rating on this date.

Results

The 2011 growing season started cold and wet and then became warm and wet. A period of hot, dry weather occurred in July but by August the rain had returned throughout the state and

September experienced record rainfall. The excessive moisture at harvest had a significant effect on the state's pumpkin crop and the three growing sites in this study suffered as well.

Challenger had the highest estimated yield per acre in Lancaster County in the medium pumpkins, followed by Bunch O' Warts, Camaro and Magic Lantern, all with estimates over 20 tons/acre (Table 1). Superior had the highest estimated yield per acre in Centre County followed by Challenger, Gold Challenger and Corvette (Table 5). Only Challenger had an estimate over 20 T/A. Bunch O' Warts had the highest estimated yield in Northampton County, followed by Prudence, Diablo and 8616 with all estimates again over 20 T/A (Table 7). Average fruit size within a variety tended to be highest at the Centre County site. Gladiator and Charmed were particularly susceptible to fruit rot at the Lancaster site and had very low estimated yields/acre as a result. In Northumberland Challenger, Gold Challenger, Hannibal and Superior had low yields/per plot, again due to fruit loss.

Apogee had the highest estimated yield per acre at Lancaster for the large pumpkins, followed by New Moon and Gold Medal, again all estimates were over 20 T/A (Table 2). Apogee had the highest estimated yields at Centre followed by 8545 and Spartan (Table 6); however, only Apogee had an estimate over 20 T/A. Howden XXX had low yields due to a combination of a poor stand and fruit rot at the Lancaster site. Rascal also had lower estimated yields at Lancaster and Centre than at Northumberland.

Handle quality was better in the medium pumpkins as a group; several of the large pumpkins had handles that were not large enough or strong enough for their fruit size (Tables 3 & 4). Moonscape and Rascal are novelty pumpkins with a pinkish color – Rascal tended to have more fruit with a 'pumpkin' shape. Moonshine was a small white pumpkin that seemed to hold its white color well after maturity while New Moon was a very large white pumpkin with fruit over 60 lbs at the Lancaster site.

Powdery mildew ratings taken on August 24 showed that some varieties possess a strong resistance to mildew infection (Table 7). However, yield did not appear related to the resistance level. Further observations are needed to determine the effect of mildew resistance on yield.

Table 1. Yield and seed source for 17 varieties of medium pumpkins grown in Lancaster County, PA in 2011.

Variety	Number Fruit/Plt	Average Fruit Wt. (lb)	Estimated Yield (T/A)	Seed Source*
8616	0.9	20.3	12.3	OS
Bunch O' Warts	1.4	24.4	22.1	OS
Camaro	1.8	17.8	20.2	HL
Challenger	1.5	24.8	23.4	HL
Charmed	1.5	11.3	8.6	AC
Corvette	1.9	13.3	17.1	SG
Diablo	1.1	18.4	11.2	SG
Flat White Borer	1.8	7.9	8.0	SW
Gladiator	0.9	15.7	8.9	HM
Gold Challenger	1.4	15.2	12.1	RP
Hannibal	0.8	20.8	10.2	SG
Knucklehead	2.1	13.5	16.8	SG
Magic Lantern	2.2	15.2	20.1	HM
Moonscape	1.5	18.3	15.9	NE
Moonshine	2.3	6.9	9.3	SG
Prudence	1.3	15.1	12.6	OS
Superior	1.6	15.1	16.0	OS

*AC – Abbott & Cobb, HL – Hollar Seed, HM – Harris Moran, NE – neseed, OS – Outstanding Seed, RP – Rupp Seed, SG – Seigers, SW - SeedWay

Table 2. Yield and seed source for 12 varieties of large pumpkins grown in Lancaster County, PA in 2011.

Variety	Number Fruit/Plt	Average Fruit Wt. (lb)	Estimated Yield (T/A)	Seed Source*
8545	1.9	26.7	13.1	OS
Aladdin	2.0	21.6	12.2	HM
Apogee (8614)	2.4	29.5	21.2	OS
Captain Jack	1.9	30.8	17.5	SW
Gold Medal	2.2	29.0	20.3	RP
Harvest Time	1.6	27.0	12.3	AC
Howden XXX	1.9	17.8	7.7	SW
New Moon	1.3	54.2	20.5	SG
Rascal	1.5	23.0	8.7	OS
Solid Gold	1.9	22.3	11.4	RP
Spartan	1.6	21.3	10.1	SW
Summit	2.1	24.0	16.3	OS

*AC – Abbott & Cobb, HM – Harris Moran, OS – Outstanding Seed, RP – Rupp Seed, SG – Seigers, SW - SeedWay

Table 3. Fruit quality ratings for 17 varieties of medium pumpkins grown in Lancaster County, PA in 2011. Texture is rated on a scale of 1-5 with 1 being very smooth and 5 being heavily ribbed. Handles are rated 1-5 with 1 being poor and 5 being excellent.

Variety	Color	Shape	Texture	Handle
8616	Orange	Round	3.0	3.8
Bunch O' Warts	Orange	Upright-round	2.5	3.5
Camaro	Yellow orange	Upright-round	2.0	2.5
Challenger	Orange	Variable	3.2	1.8
Charmed	Orange	Upright	2.8	3.0
Corvette	Yellow orange	Upright-round	1.8	3.0
Diablo	Dark orange	Round	3.3	3.5
Flat White Borer	White	Flat	-	1.8
Gladiator	Dark orange	Upright-round	3.3	3.2
Gold Challenger	Dark orange	Round	3.2	3.3
Hannibal	Dark orange	Upright	2.7	3.0
Knucklehead	Dark orange	Upright-round	2.0	3.8
Magic Lantern	Dark orange	Upright-round	3.3	3.3
Moonscape	Orange pink	Round	variable	1.8
Moonshine	White	Round	2.5	3.3
Prudence	Orange	Round:Upr-rnd	2.7	3.7
Superior	Dark orange	Round:Upr-rnd	3.7	4.0

Table 4. Fruit quality ratings for 12 varieties of large pumpkins grown in Lancaster County, PA in 2011. Texture is rated on a scale of 1-5 with 1 being very smooth and 5 being heavily ribbed. Handles are rated 1-5 with 1 being poor and 5 being excellent.

Variety	Color	Shape	Texture	Handle
8545	Dark orange	Variable	3.3	3.5
Aladdin	Dark orange	Upright	2.7	2.7
Apogee (8614)	Orange	Upright-round	4.0	3.8
Captain Jack	Orange	Upright (tall)	2.5	2.7
Gold Medal	Dark orange	Variable	3.3	3.3
Harvest Time	Orange	Upright (tall)	2.2	1.8
Howden XXX	Dark orange	Round:Upr-rnd	3.3	4.0
New Moon	White	Round	1.5	1.5
Rascal	Pink	Round	4.2	2.2
Solid Gold	Orange	Round	2.8	4.0
Spartan	Dark orange	Upright-round	3.8	2.8
Summit	Orange	Variable	3.3	3.2

Table 5. Yield for 15 varieties of medium pumpkins grown in Centre County, PA in 2011.

Variety	Number Fruit/Plt	Average Fruit Wt. (lb)	Estimated Yield (T/A)
8616	1.5	19.0	12.9
Bunch O' Warts	0.8	26.0	14.0
Challenger	0.9	30.0	19.3
Charmed	1.0	19.0	13.2
Corvette	1.3	20.0	17.8
Diablo	0.8	22.0	12.5
Gladiator	1.0	18.0	12.1
Gold Challenger	1.2	23.0	18.5
Hannibal	0.9	24.0	15.5
Knucklehead	1.3	19.0	17.0
Magic Lantern	1.3	16.0	14.0
Moonscape	0.6	12.0	4.9
Moonshine	1.9	8.0	10.2
Prudence	1.0	19.0	12.9
Superior	1.4	23.0	22.3

Table 6. Yield for 10 varieties of large pumpkins grown in Centre County, PA in 2011.

Variety	Number Fruit/Plt	Average Fruit Wt. (lb)	Estimated Yield (T/A)
8545	1.4	28.0	13.1
Aladdin	0.7	32.0	7.9
Apogee (8614)	1.8	34.0	20.4
Captain Jack	1.0	34.0	11.7
Harvest Time	0.7	32.0	8.5
Howden XXX	0.9	24.0	7.4
Rascal	1.2	18.0	7.2
Solid Gold	1.1	22.0	7.9
Spartan	1.3	28.0	12.9
Summit	1.2	30.0	12.3

Table 7. Yield and powdery mildew ratings for 15 varieties of medium and three varieties of large pumpkins grown in Northampton County, PA in 2011.

Variety	Average Fruit Wt. (lb)	Estimated Yield (T/A)	Avg. PM Upper Leaf (%)	Avg. PM Lower Leaf (%)	Plot Rating*
<i>Medium</i>					
8616	17.4	23.7	8.5	4.0	0.5
Bunch O' Warts	18.1	25.9	30.5	36.5	2.0
Challenger	27.6	9.4	10.0	6.0	1.0
Charmed	13.5	11.0	33.5	57.0	2.0
Corvette	16.2	19.9	15.0	5.5	1.0
Diablo	20.6	23.8	11.0	8.3	1.0
Gladiator	17.7	10.8	0.1	1.3	1.0
Gold Challenger	16.6	9.1	50.6	65.0	3.0
Hannibal	22.5	4.5	50.0	73.0	3.0
Knucklehead	12.0	19.5	50.0	70.0	3.0
Magic Lantern	15.6	18.1	26.0	46.5	2.5
Moonscape	11.3	9.3	29.5	44.0	2.0
Moonshine	5.9	15.3	18.0	59.0	2.0
Prudence	18.0	25.7	33.5	16.5	2.0
Superior	17.7	7.2	14.5	6.6	1.0
<i>Large</i>					
Aladdin	29.8	17.6	19.5	19.0	1.0
New Moon	36.7	23.3	6.6	7.0	1.0
Rascal	25.5	20.8	14.6	9.0	1.0

*Plot rating for powdery mildew; 1=little to none, 4 = completely infected