

# Evaluation of Pumpkin Cultivars with Resistance to Powdery Mildew - 2005

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Powdery mildew of cucurbits is an annual problem in Iowa and in some years has the potential to ruin the crop if not controlled. The introduction of powdery mildew resistant cultivars has offered growers a more efficient approach to managing this disease and producing high-quality pumpkins for market. This trial was established to provide an unbiased performance evaluation of cultivars with reported resistance/tolerance to powdery mildew and generate information helpful to growers for selecting the right cultivars for specific marketing objectives.

Trial plots were established by transplanting into an area of the research farm with dark-colored loamy sand soil and irrigated with an overhead center pivot unit. The sunny and warm growing season was favorable for pumpkin growth and at harvest yields and quality were found to be about as good as I have seen here at the research farm. Powdery mildew was visible in the trial by early August and visual ratings were taken on August 22 for infection severity and results reported in Table 1. As expected the susceptible cultivars *Howden*, *Variety 510* and *Spooktacular*, were the most severely affected and were showing substantial vine defoliation by early September. The original plan was to let the powdery mildew develop and take yield data from the afflicted plots but concern that other diseases, such as downy mildew, were also developing and would compromise the trial lead us to apply Bravo and Pristine fungicide on August 25 and again on September 9. These fungicide applications seemed to keep vines healthy and allowed us to collect good yield data and fruit descriptions. As it turned out all of the entries, including the powdery mildew susceptible checks, produced good yields. Marketable yield and fruit characteristics are presented in Table 1 while comments and descriptions can be found in Table 2. Cultivars are ranked by average fruit weight, from large to small, in the tables. *Aladdin*, *Variety 510* and *Dependable* were the highest yielding cultivars but choosing which ones to plant will probably be made on desired characteristics, such as fruit size and shape, rather than just potential yield level. Tables 1 and 2 reveal that there are several good cultivar choices with a variety of fruit characteristics that have some level of powdery mildew resistance/tolerance.

## Materials and Methods

- Planting: One seed per cell, 72 cell tray, in greenhouse 6/7/05. Transplanted to field 6/29.  
Plot Design: RCB, 3 reps. Plot = single row of eight plants spaced 32" apart, rows 8' apart.  
Irrigation: Overhead sprinklers, water applied as needed.  
Fertility: 75 lb N + 120 lb K20 applied preplant (6/3); 50 lb N sidedressed (8/4).  
Pesticides: Prefar, Sandea, Poast herbicide; Capture insecticide; Bravo, Quadris fungicide.

Table 1. Pumpkin cultivar marketable yield, average fruit size and powdery mildew ratings.

Cultivar	# of Fruit Per Acre	Market Yield Lbs/Acre	Avg Fruit Wt lbs	Avg Fruit Height X Diameter Inches	Powdery Mildew Rating – 8/22
Harvest Time	2,380	76,013	31.5	17.5 X 13	1.7
Dependable	2,833	81,124	29.1	17.5 X 12	2.5
Super Herc	2,267	52,065	22.7	13.5 X 11.5	1.5
Aladdin	4,533	97,977	21.4	12.5 X 11.5	1.3
Variety 510	4,647	95,075	20.3	12.0 X 11.0	3.0
Howden	3,060	57,199	18.7	11.5 X 11.5	2.8
Magic Lantern	4,420	70,335	15.9	10.5 X 11.5	1.3
Merlin	4,193	67,127	15.9	11.5 X 11.5	1.8
Charisma	4,420	64,011	14.6	9.0 X 11.0	2.3
Magician	4,760	64,090	13.5	11.0 X 11.0	1.3
Cannon Ball	8,840	41,491	4.8	6.0 X 6.5	1.0
Mystic Plus	6,800	28,277	4.2	6.5 X 7.0	2.2
Iron Man	10,653	42,205	4.0	6.0 X 6.5	1.5
Spooktacular	9,747	29,059	3.0	4.5 X 6.0	3.0
Touch of Autumn	13,033	31,733	2.4	4.5 X 5.5	1.5
<i>Average</i>	<i>5,772</i>	<i>59,852</i>	<i>14.8</i>		<i>1.9</i>
<i>LSD 5%</i>	<i>1,906</i>	<i>22,750</i>	<i>2.6</i>		

*Powdery Mildew Ratings: 0=no powdery mildew, 1=slight, a little visible on inner leaves, 2=moderate, easily visible on foliage, 3=severe, on foliage and stems, leaves turning yellow or brown.*

Table 2. Pumpkin cultivar comments and descriptions.

Harvest Time	Really tall upright shape, medium ribbing, smooth surface with slight ribbing, bright orange color, large thick handles.
Dependable	Extra tall upright fruit, medium ribbing, bright orange color, large thick handles, long vines.
Super Herc	Tall upright fruit, deeply ribbed, dark orange color, large dark green handles, several fruit had rough surface (possibly due to Plectosporium blight, but only cv. affected).
Aladdin	Tall round shape, medium ribbing, dark orange fruit with long dark handles.
Variety 510	Long spreading vines, mostly tall round shape with deep ribs, dark orange, powdery mildew susceptible but still produced good yield because plots were sprayed with fungicide.
Howden	Long spreading vines, round to tall shape (variable), dark orange and deeply ribbed, powdery mildew susceptible.
Magic Lantern	Uniform, fat round shape, ribbed, deep orange color with nice dark handles.
Merlin	Uniform round fruit, prominent ribbing, dark orange and long dark handles.
Charisma	Blocky round (oblate) shape, pronounced ribbing, dark orange and long dark handles.
Magician	Upright oval shape, strong ribbing, dark orange color and nice dark handles.
Cannon Ball	Hard round fruit, dark orange with fairly smooth surface, large thick handles.
Mystic Plus	Round to oval shape with long tapered handle, nice burnt orange coloration, faint ribbing.
Iron Man	Hard round fruit with smooth surface, dark orange, strong thick handles.
Spooktacular	Fruit were ribbed with flattened round shape, bright orange, weak handles were often light colored and very susceptible to powdery mildew.
Touch of Autumn	Blocky round shape, shallow ribbing, bright orange coloration with dark handles.