

Evaluation of powdery mildew resistant pumpkin experimental cultivars, 2007.

Five experimental pumpkin cultivars being developed by Outstanding Seeds were compared to Sorcerer. Four of these experimental cultivars have a gene for resistance to powdery mildew from both parents (homozygous). Sorcerer was not bred with resistance. Four of the experimental cultivars are now named cultivars. A field experiment was conducted at the Long Island Horticultural Research and Extension Center in Riverhead on Haven loam soil. Fertilizer (N-P-K 10-10-10) at 1000 lb/A was broadcast and incorporated on 11 May. Seeds were sown on 1 Jun in the greenhouse. Seedlings were transplanted into beds covered with black plastic mulch on 14 Jun. Water was provided as needed through drip irrigation lines. During the season weeds were controlled with a clover living mulch broadcast seeded between plastic mulch on 25 May, hand weeding, and mowing. Cucumber beetles were managed with Admire 2F (0.0007 fl oz/plant) applied after transplanting as a soil drench around seedlings on 21 Jun and with Asana XL (9.6 fl oz/A) applied to foliage on 16 Jul. No fungicides were applied with activity for powdery mildew. The following fungicides were applied preventively for downy mildew (*Pseudoperonospora cubensis*) and Phytophthora blight (*Phytophthora capsici*): Forum 4.16SC (6 fl oz/A) on 16 Jul, Ranman 400 SC (2.75 fl oz/A) on 12 Aug, Acrobat 50 WP (6.4 oz/A) on 19 Aug, and Previcur Flex 6 F (1.2 pt/A) on 29 Aug. Neither disease developed before the end of this experiment. Plots consisted of three adjacent rows with four plants spaced 24 in apart in each row. Rows were spaced 68 in apart. A plant of Multipik, a susceptible summer squash cultivar, was planted between each plot in each row to separate plots and provide a uniform source of inoculum throughout the experiment. No fungicides were applied with activity for powdery mildew. Disease severity was evaluated on both leaf surfaces of older leaves on 2 Aug. Mature fruit were harvested and weighed on 19 and 20 Sep.

All experimental cultivars exhibited decreased powdery mildew severity relative to Sorcerer. On 2 Aug when severity on this susceptible cultivar was 13% on lower leaf surfaces, the experimental cultivars exhibited 73-97% control. Best suppression was provided by Packer and Progress (94-97%), which was significantly better than control provided by Summit (73%), which is the only one in the experiment with heterozygous resistance. On upper surfaces, average powdery mildew severity on Summit (18%) was not significantly different from severity on Sorcerer (34%). Control provided by the other experimental cultivars was 75-93%. Average weight of fruit for Summit (15 lb) was significantly greater than for Sorcerer (10.6 lb). Fruit weight for the other experimental cultivars ranged from 6.2 lb for Progress to 11.3 lb for Superior. All experimental cultivars produced fruit with nice shape and good dark orange color.

Pumpkin cultivar/experimental	Powdery mildew severity on 2 Aug ^z		
	Upper leaf surface (%)	Lower leaf surface (%)	Fruit weight (lb)
Progress (8405) (RR) ^y	2.5 b ^x	0.4 c	6.2 d
Packer (6888) (RR)	4.7 b	0.8 c	7.4 cd
6899 (RR)	5.5 b	1.0 bc	8.4 c
Superior (8408) (RR)	8.4 b	2.2 bc	11.3 b
Summit (8491) (R)	17.9 ab	3.6 b	15.0 a
Sorcerer (Std) (S)	33.5 a	13.3 a	10.6 b
<i>P</i> -value	0.0573	0.0001	< 0.0001

^zExact colony counts were made when possible and severity was estimated using the conversion factor of 30 colonies/leaf = 1%. Severity data is for old leaves on 2 Aug.

^y'S' indicates susceptibility to powdery mildew, 'R' indicates entry has resistance from one parent (intermediate resistance), and 'RR' indicates entry has resistance from both parents (resistant).

^xNumbers in each column with a letter in common are not significantly different according to Fisher's Protected LSD (*P* = 0.05).