

**Hard-rind pumpkin cultivar evaluation for *Phytophthora* fruit rot, 2008.**

The first pumpkins developed that form hard, gourd-like rinds (shells) when mature were shown to be less susceptible to *Phytophthora* fruit rot than pumpkins with conventional rinds in experiments conducted at the Long Island Horticultural Research and Extension Center (LIHREC) in 1997-8. One of these pumpkins, Lil' Ironsides, is now available commercially. This experiment conducted in 2008 was a continuation of research started in 2006 to examine new and experimental cultivars with the hard rind trait, all developed by Harris Moran. The experiment was conducted at LIHREC in a field of Haven loam soil where *Phytophthora* blight has been observed since 1991. All 9 pumpkin cultivars and experimental cultivars were seeded in the greenhouse and transplanted into bare ground plots on 2 Jul. Each plot consisted of ten plants spaced 2-ft apart in two 10-ft rows spaced 8.5-ft apart. The 3-ft buffer area between plots was planted with two summer squash 'Multipik' plants in each row. The experimental design was a randomized complete block with five replications. Fertilizer (N-P-K 10-10-10) at 1000 lb/A was broadcast and incorporated on 20 Jun. Water was provided as needed using overhead irrigation. Weeds were controlled by applying Strategy (3 pt/A) plus Sandea (0.5 oz/A) between rows after transplanting, cultivating, and hand weeding. Powdery mildew was controlled with applications of Procure (8 fl oz/A) on 17 Aug, 26 Aug, and 22 Sep and Quintec (6 fl oz/A) on 1, 10, and 28 Sep. No fungicides with activity for *Phytophthora* were applied. Fruit were examined for symptoms of *Phytophthora* fruit rot and other types of fruit rot on 30 Sep and 13 Oct. Observations of *Phytophthora capsici* spores were considered definitive confirmation of *Phytophthora* fruit rot. Fruit with suspected symptoms were also counted. Fruit were not harvested. Average monthly high and low temperatures (°F) were 80/63 in Jun, 84/67 in Jul, 79/63 in Aug, 75/61 in Sep, and 63/47 in Oct. Rainfall (in.) was 3.88, 3.67, 3.76, 8.34, and 3.18 for these months, respectively.

*Phytophthora* blight started to develop in the low end of the research field following rain events in Jul. There were 0.53, 1.75, and 1.02 in. of rain on 23, 24, and 27 Jul. Symptoms of *Phytophthora* blight were seen on 31 Jul. Many plants in replications 4 and 5 died before fruit set. Rain events in Aug and Sep provided favorable conditions for further development of *Phytophthora* blight. Data from replications 1-3 were analyzed. A high percentage of fruit of the cultivars with conventional soft rinds, Magic Lantern, Field Trip, and Mystic Plus, developed symptoms. As in previous experiments, more fruit of cultivar Magic Lantern, which produces large fruit, were affected than of Mystic Plus, which produces medium-sized fruit (not significant in 2008). Field Trip, which also produces medium-sized fruit, was included in the 2008 experiment to investigate whether the difference in susceptibility between Magic Lantern and Mystic Plus was related to fruit size. This does not appear to be the case. The rind of Mystic Plus appears harder than that of Magic Lantern and Field Trip. Apprentice had a relatively low number of fruit with symptoms of *Phytophthora* fruit rot and high number of healthy-appearing fruit. This cultivar also performed well in 2006 and 2007. Fruit of HMX 5681 also exhibited reduced susceptibility to *Phytophthora* fruit rot. Iron Man had the next lowest percent affected fruit, differing significantly from Magic Lantern and Field Trip. Lil' Ironsides and Gargoyle had fewer affected fruit than the conventional-rind cultivars, but these numbers were not significantly different for most comparisons. Warlock did not perform as well as it had in 2007. Warlock has a different source of the hard-rind trait compared to other entries in this experiment. In Warlock, the hard-rind trait is associated with a softer, more carvable, hard shell.

Cultivar (rind type)	Fruit with <i>Phytophthora</i> fruit rot (%)			Good fruit (%) <sup>y</sup>	
	30-Sep	13-Oct	Total <sup>z</sup>	13-Oct	
Apprentice (hard)	13.5	13.5 e <sup>x</sup>	60.0 bc	35.8 a	
Lil' Ironsides (hard)	50.0	55.6 bcd	74.2 abc	19.4 abc	
Iron Man (hard)	44.4	44.4 cde	60.6 bc	16.4 abc	
Gargoyle (hard)	42.6	52.9 bcd	74.0 abc	8.5 bc	
Warlock (hard)	68.3	81.6 ab	86.7 ab	10.3 bc	
HMX 5681 (hard)	29.2	29.2 de	51.3 c	26.7 ab	
Mystic Plus (soft)	45.4	71.1 abc	82.9 ab	15.6 abc	
Field Trip (soft)	69.6	87.0 ab	93.5 a	5.2 c	
Magic Lantern (soft)	70.7	100.0 a	100.0 a	0.0 c	
<i>P</i> -value	0.1726	0.0022	0.0367	0.0564	

<sup>z</sup> Total value includes fruit with symptoms that were not definitively caused by *Phytophthora capsici*.

<sup>y</sup> Good fruit are those without symptoms of fruit rot due to any cause.

<sup>x</sup> Numbers in each column with a letter in common are not significantly different according to Fisher's Protected LSD (*P* = 0.05), with the exception of the good fruit variable.