

PUMPKIN (*Cucurbita pepo*)
Powdery Mildew; *Podosphaera xanthii*

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Evaluation of powdery mildew-tolerant pumpkin cultivars under a standard disease control program, 2008.

Plots were established 10 Jun on a Crosby silt loam soil and Brookston silty clay loam (pH 6.1, OM <2%) at the Western Branch Research Station, The Ohio State University, South Charleston, OH (Clark Co.). Plots consisted of single 30-ft rows of pumpkins transplanted 3 ft apart in rows 15 ft apart. Each variety (18 standard, 6 small fruited types) was replicated four times in a randomized complete block design. One day prior to planting, the insecticide Admire Pro 4.6 F (7 oz/treated A) was applied to the transplants for cucumber beetle. Fertilizer (0.49 t/A each of 11-52-0, 0-0-60 and 46-0-0 (N-P-K) was applied preplant and disked in on 10 Jun. Strategy 2.1 SC at (5 pt/A) + Dual Magnum II, (1.3 pt/A) + Roundup Weathermax 4.5 EC (32 oz/A) was applied preplant for weed control on 10 Jun. During the season weeds were controlled by cultivation and hand weeding. For control of cucumber beetle feeding on fruit rind, Sevin XLR (1 qt/A) was applied to all plots at on 14, 20 Aug and 17 Sep. Fungicide applications for all plots consisted of Quadris Opti (3.2 pt/A) on 4 Aug, 2 and 17 Sep, Bravo Weather Stik 6F (3pt/A) + Procure 50 WS (6 oz/A) on 12, 24 Aug and 8 Sep and Quintec 2.08SC (6 oz/A) on 19 Aug to control powdery mildew and fruit rots. Fungicides and insecticides were applied at 55 psi and 50 gal/A with a tractor-mounted, PTO driven sprayer with a 12 ft boom carrying 7 Teejet TXVS-18 cone jet nozzle tips spaced 20 in apart. On 20 Aug and 16 Sep, nine leaves were chosen at random per plot to determine the percentage of leaf coverage of powdery mildew on the upper and lower surface of the leaves. Pumpkins were harvested on 18 Sep and graded into marketable orange fruit. All plots were trickle irrigated to maintain 1 in. of water per week. Rainfall for Jun, Jul, Aug, and Sep was 3.25, 4.02, 2.48, and 1.16 in., respectively.

Powdery mildew development on the foliage was first observed the last week of Jul. After initial sprays each of Quadris, and Procure mixed with Bravo, Quintec 2.08SC was applied about 2 weeks after the start of the disease control program because of lack of adequate powdery mildew control. On 20 Aug and 16 Sep, the standard fungicide program controlled powdery mildew on the upper leaf surfaces and there was no significant difference in severity among standard or small size varieties except for Hannibal which had significantly higher powdery mildew infection than other varieties but % infection levels on the upper surface were less than 4%. On the lower leaf surface, by 16 Sep powdery mildew severity ranged from 3% to 57%, Varieties Camaro and Warlock had significantly less powdery mildew than all standard varieties with a % severity greater than 13%. Varieties with good powdery mildew resistance were Magic Wand, Gladiator, RPX 1626, SSX 5120, HSC166 014 and RPX 1629. All the small types had percent infection levels less than 11%. Presence or absence of powdery mildew on handles was not significantly different among varieties. Foliar virus symptoms were present on all varieties. Fruit virus symptoms were also present but had little or no effect on marketability. The fruit produced by these varieties had good size, shape and color with dark green handles. While yield tended to be higher in the PMR varieties as indicated by % severity less than 13% on the bottom surface, there was little significant difference in fruit number and t/A. Fruit quality was good but yield was slightly depressed this year due to very wet weather in Jun and early Jul. Differences in average fruit size are influenced by variety.

Variety Standard Types	Powdery Mildew Severity (% of leaf coverage) ^z		Marketable Yield ^y		
	Upper leaf surface	Lower leaf surface	Total fruit no/A	Total yield (t/A)	Avg wt/fruit (lb)
Camaro ^u	0 b ^w	2.9 j	1573 efg	15 abc	19 bc
Warlock ^v	0 b	3.2 j	992 gh	7 efg	14 defg
Magic Wand (HMX6686) ^v	0.15 b	5.6 ij	1718 def	11 abcdef	13 efg
Gladiator ^v	0 b	6 ij	1428 efg	11 abcdef	16 cdefg
RPX 1626 ^s	0 b	9.9 ghij	1815 cde	17 a	18.6 bc
SSX 5120 ^f	0 b	10.6 fghij	968 gh	15 ab	31.5 a
HSC166 014 ^t	0 b	12.2 fghij	1283 efg	12 abcde	19 bc
RPX 1629 ^s	0 b	12.5 fghij	1452 efg	9 cdefg	12 g
Earlipac ^r	0 b	20 efg	944 gh	8 defg	16.2 cdef
Magic Lantern ^v	0 b	20.1 efg	1016 gh	6 efg	12
ACX 6501 ^w	0 b	24.5 efg	1549 efg	11 bcdef	14 defg
Gold Medal ^s	0.82 b	25.4 def	920 h	10 bcdefg	20.2 b
Gold Challenger ^s	0 b	28.3 cde	1041 gh	9 cdefg	17.2 bcd
Solid Gold ^s	0 b	32.1 cde	1234 efg	12 abcde	19 bc
RPX 1621 ^s	0 b	40 bcd	1307 efg	13 abcd	20 bc
ACX 7302 ^w	0 b	41.3 bc	1137 fgh	7 defg	12.3 fg
Hannibal ^t	3.60 a	47.6 ab	1210 efg	10 bcdefg	16.5 bcde
ACX 7301 ^w	0.95 b	57.2 a	1428 efg	10 bcdefg	14 defg
Small Fruited Types					
Gargoyle ^v	0 b	7.2 ij	2927 b	6 fg	3.4 h
Canon Ball ^v	0 b	7.7 hij	2928 b	6 fg	4 h
Field Trip (HMX6687) ^v	0 b	9.5 ghij	3751 a	8 defg	4 h
Fall Splendor ^r	0 b	10.1 fghij	2372 bc	5 fg	4.3 h
Chucky ^t	0 b	10.4 fghij	3993 a	4 g	2.2 h
Moonshine (White) ^t	0 b	23 efg	2275 cd	6.3 efg	6 h
LSD 0.05%	21.0	15.5	646	6.1	4.0

z Powdery Mildew Severity is the average percentage of leaf area on the upper or lower leaf surface with symptoms of powdery mildew as determined by rating 9 randomly selected leaves per plot by 3 different raters.

y Marketable Yield includes only good orange fruit of proper size, shape and free of defects.

x Column numbers followed by the same letter are not significantly different at P=0.05 determined by Fisher's protected LSD.

w Obtained from Abbott & Cobb Seed Company.

v Obtained from Harris Moran Seed Company.

u Obtained from Hollar Seed Company.

t Obtained from New Zealand Hybrid Seed Company.

s Obtained from Rupp Seeds Inc.

r Obtained from Sakata Seed Company.