

## On-Farm Evaluation of Powdery Mildew Tolerant Pumpkin Cultivars, 2006

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**Introduction.** Powdery mildew infects Indiana pumpkin crops every year. Common management strategies include fungicide applications and use of resistant cultivars. A two-week interval between fungicide applications is typically recommended. This trial was established to find out whether a longer interval between fungicide applications could be used on resistant cultivars without sacrificing disease control.

**Materials and Methods.** The trial was conducted in a pumpkin production field in Wells County, Indiana. Pumpkins were planted on 6 June, 2006. Three fungicide application intervals (2, 3, or 4 weeks) were evaluated on 4 powdery mildew resistant cultivars with two replications. Each replication of the trial was 48 ft. by approximately 750 ft. with 8 rows. Fungicide treatments were assigned randomly to sections 48 ft. by 250 ft. Quadris, Nova and Topsin were applied in rotation at intervals determined by the treatments (Table 1). The two outside and the two middle rows in each replication were planted with the powdery mildew resistant cultivars Cannonball, Mystic Plus, and Magic Lantern. Data were not collected on these rows. Rows 2 and 3 in one rep, and 6 and 7 in the second rep, were planted with cultivars Gladiator, Super Herc and Magic Lantern. In these rows, each fungicide treatment was divided into 3 subplots 83 ft. long, and one cultivar randomly assigned to each subplot. Remaining rows were planted with the cultivar 18 Karat Gold. Standard cultural, insect, and weed management practices for the farm were used. In addition, Champ II was applied on 8 Aug. to manage bacterial fruit spot. On 29 Aug., pumpkins were rated for powdery mildew on the upper leaf surface using the Horsfall-Barratt scale (J.G. Horsfall and R.W. Barratt, *Phytopathology* 35:655). The Horsfall-Barratt scale is a  $\log_{10}$ -based scale used to assign percent foliage affected into one of 11 severity classes. The ratings were analyzed using separate ANOVAs for 18 Karat Gold and the other 3 cultivars, and means were separated using Fisher's protected least significant difference at  $P=0.05$ .

**Results and Discussion.** For 18 Karat Gold, the percent foliage affected was 8.6, 10.9, and 10.9 for 2, 3 and 4 week spray intervals, respectively, with no significant effect of spray interval. Similarly, disease ratings for the three other cultivars were not significantly affected by spray interval (Table 1). Differences between those three cultivars were also not significant. These results suggest that it might be possible to extend spray intervals longer than 2 weeks for cultivars resistant to powdery mildew. At least one more year of trials would be desirable to confirm this result, particularly in light of the relatively low disease pressure in this trial.

Table 1. Powdery mildew disease severity for three pumpkin cultivars treated with fungicide at 2, 3, or 4 week intervals.<sup>z</sup>

Application Interval <sup>y</sup>	Gladiator	Magic Lantern	Super Herc	Mean <sup>x</sup>
		<i>percent foliage affected</i>		
2 weeks	3.5	11.7	14.1	9.8 a
3 weeks	7.0	7.0	5.9	6.6 a
4 weeks	2.3	9.4	5.9	5.9 a
Mean <sup>x</sup>	4.3 a	9.4 a	8.6 a	

<sup>z</sup>Plots were rated for disease severity using the Horsfall/Barratt scale; ratings transformed to percent are presented.

<sup>y</sup>Approximate interval between fungicide applications. 2 weeks: Quadris, Topsin, Nova and Topsin applied 41, 55, 67 and 80 days after planting (DAP), respectively; 3 weeks: Quadris, Topsin, Nova applied 41, 60 and 80 DAP, respectively; 4 weeks: Quadris, Nova, Nova applied 41, 67 and 96 DAP, respectively.

<sup>x</sup>Means within a column or row with a letter in common are not significantly different ( $P=0.05$ , LSD).

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