

Evaluation of fungicides for control of downy mildew of winter squash, Clayton 2006.

The experiment was conducted at the Central Crops Research Station in Clayton, NC (coordinates: N35° 40.062'; W078° 30.273'). Plots were fumigated on 12 Jul with 67/33 methyl bromide/chloropicrin (200 lb/A). Plots were single beds, covered with black plastic mulch on 5 ft centers, 20 ft long with 8 ft fallow borders at each end and non-treated guard rows on both sides. Squash was direct seeded on 8 Aug (2 ft in-row spacing; 2 seeds/hill) in raised beds and thinned to one plant per hill after emergence. Irrigation and fertilization were applied via drip tape. Treatments were randomized into four complete blocks.

Fungicide treatments were applied using a CO₂-pressurized sprayer equipped with a single-nozzle, handheld boom with hollow cone nozzles (TXVS-26) delivering 40 gal/A at 45 psi. Applications were made on a 7-day interval: 31 Aug, 7, 15, 22, and 29 Sep, and 5 Oct. Downy mildew severity was evaluated on 28 Sep, 5 and 13 Oct. Disease severity was assessed as percentage of leaf area necrotic. Fruit were harvested on 16 Oct. To control powdery mildew, the entire field was treated with Quintec (6 fl oz/A) on 8 and 19 Sep and 4 and 10 Oct and Nova (5 oz/A) on 13 and 26 Sep. Neither product will affect downy mildew, but provided excellent control of powdery mildew.

Downy mildew was first detected on 7 Sep at very low levels in the border rows which was one week after the first fungicide application. Plants in non-treated plots became almost entirely defoliated by 13 Oct. Several treatments provided excellent control of downy mildew under high disease pressure. Since many treatments are comprised of several products, it can be difficult to know if all the products in the treatment are necessary to achieve the level of control reported here. To determine the contribution of individual components in a multi-product treatment, readers should look to see if individual components were tested alone. No differences in fruit number or total yield were detected which was likely due to the timing of disease onset in relation to the timing of fruit set. The number of fruit with sunscald was highest in treatments where foliage was severely blighted by downy mildew, exposing fruit to direct sunlight. In the table, treatments are sorted by disease severity on 13 Oct. These results differ significantly from results of similar studies conducted in 2006 on cucumber downy mildew (See Colucci, S.J. et al.).

Treatment, rate of product per Acre	Disease severity			Yield per plot		
	28 Sep*	5 Oct	13 Oct	No. Fruit	Weight (lb)	No. Sunscald
Revus 250SC, 8 fl oz + Activator 90L, 0.125 % V/V alt w/ Quadris Opti 5.5SC, 2 pt	2.0 e**	2.0 d	3.0 e	21.5 a	34.2 a	0.0 b
A14576 Difenconazole 500SC, 6.84 fl oz + Activator 90L, 0.125 % V/V alt w/ Quadris Opti 5.5SC, 2 pt.....	1.0 e	5.8 d	4.0 e	21.5 a	31.2 a	0.0 b
Revus 250SC, 8 fl oz + Bravo Weather Stik 6SC, 2 pt alt w/ Quadris Opti 5.5SC, 2 pt.....	2.0 e	7.5 d	4.5 e	19.8 a	28.5 a	0.0 b
Prophyt 4L, 4 pt + Manzate Pro-Stick 75DG, 2 lb.....	1.0 e	4.0 d	6.0 de	23.8 a	34.4 a	0.0 b
Tanos 50WG, 8oz + Manzate Pro-Stick 75DG, 2lb alt w/ Previcur Flex 6F, 1.2 pt + Bravo Weather Stik 6SC, 2 pt..	1.0 e	6.8 d	6.8 de	20.5 a	30.8 a	0.0 b
Manzate Pro-Stick 75DG, 2 lb.....	2.5 e	7.5 d	9.3 de	25.0 a	36.4 a	0.0 b
Ridomil Gold MZ 68WG, 2.5 lb alt w/ Quadris Opti 5.5SC, 3.2 pt.....	5.0 e	5.0 d	10.5 de	20.3 a	30.6 a	0.0 b
A9651D 68WG, 2.5 lb alt w/ Quadris Opti 5.5SC, 3.2 pt.....	3.3 e	4.0 d	11.0 de	21.3 a	31.9 a	0.0 b
Previcur Flex 6F, 1.2 pt	6.8 e	14.3 d	11.0 de	20.8 a	29.5 a	0.0 b
Tanos 50WG, 8oz + Manzate Pro-Stick 75DG, 2 lb alt w/ Gavel 75DF, 2 lb	4.0 e	6.3 d	11.8 de	22.3 a	32.7 a	0.0 b
Sonata 1.38L, 2 qt + Biotune 39.2L, 1pt/100gal + Previcur Flex 6F, 1pt alt w/ Sonata 1.38L, 2 qt + Biotune 39.2L, 1pt/100gal + Dithane 75DF, 2 lb	3.5 e	10.0 d	13.0 de	23.3 a	35.2 a	0.0 b

Cabrio 20EG, 2.4 oz alt w/ Bravo Weather Stik 6SC, 2 pt	8.8 e	10.8 d	18.8 cde	22.5 a	32.8 a	0.0 b
Prev-Am 0.99L, 50 fl oz/100 gal + Gavel 75DF, 2 lb alt w/ Prev-Am 0.99L, 50 fl oz/100 gal + Tanos 50WG, 8 oz	6.8 e	15.0 d	18.8 cde	22.8 a	33.2 a	0.0 b
Sonata 1.38L, 2 qt + Biotune 39.2L, 1 pt/ 100 gal + Previcur Flex 6F, 1 pt alt w/ Sonata 1.38L, 2 qt + Biotune 39.2L, 1 pt/ 100 gal + Curzate 60DF, 3.2 oz.....	11.3 de	13.8 d	22.5 cd	18.8 a	26.1 a	0.0 b
Sonata 1.38L, 2 qt + Biotune 39.2L, 1 pt/100 gal + Previcur Flex 6F, 1 pt alt w/ Sonata 1.38L, 2 qt + Biotune 39.2L, 1 pt/100 gal.	16.3 de	30.0 c	27.5 c	20.8 a	29.8 a	0.0 b
Prev-Am 0.99L, 50 fl oz/100 gal + Tanos 50WG, 8 oz alt w/ Prev-Am 0.99L, 50 fl oz/100 gal + Previcur Flex 6F, 1.2 pt.....	27.5 bcd	41.3 bc	62.5 b	22.3 a	32.0 a	0.8 ab
Sonata 1.38L, 2 qt + Biotune 39.2L, 1 pt/100 gal	27.5 bcd	51.3 b	90.8 a	22.8 a	33.7 a	0.0 b
QRD 22097 100WP, 0.14 oz	47.5 a	81.3 a	95.8 a	17.3 a	24.8 a	1.0 ab
Sonata 1.38L, 3 qt + Biotune 39.2L, 1 pt/100 gal.....	25.0 cd	51.3 b	96.0 a	21.3 a	30.2 a	0.5 ab
QRD 22097 100WP, 0.07 oz	41.3 abc	73.8 a	96.0 a	20.0 a	25.3 a	0.8 ab
QRD 22097 100WP, 0.04 oz	35.0 abc	70.0 a	96.8 a	18.0 a	25.6 a	1.5 a
Non-treated	42.5 ab	78.8 a	97.3 a	20.8 a	29.0 a	0.5 ab

* Disease rating scale based on percentage of necrotic foliage (0-100)

** Treatments followed by the same letter(s) within a column are not statistically different ($P=0.05$, Student- Newman Keuls)