

TITLE: Detection and Management of Anthracnose in Strawberry Production in the Southeast

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SUMMARY: We developed PCR-based technologies to detect *Colletotrichum* species in strawberry production systems and implemented fungicide evaluation trials to manage anthracnose ripe fruit rot.

PART II: FUNGICIDE EVALUATION TRIAL:

The test was located at the Horticultural Crops Research Station in Clinton, NC. Plots were established 27 Oct 05 with non-inoculated plants, and consisted of four 6-in. tall, 27-in. wide, plastic mulched beds on 60- in. centers. Plots were 8 ft long and contained 16 plants on a 12-in. spacing staggered in two rows 12 in. apart. Two inoculated plants (*Colletotrichum acutatum*) were inter-planted 27 Oct 05 between plots to increase disease pressure throughout the growing season. Commercially recommended fertilization and insect management practices were followed. Treatments were randomized in four complete blocks. Fungicide sprays were initiated on 30 Mar 06 at 10% bloom. Sprays were applied weekly (10 apps) from 30 Mar through 31 May. We also evaluated four sprayer types; a Solo hand pump back-pack sprayer equipped with 1 nozzle, a CO₂ pressurized and an Echo 2-cycle motorized back-pack sprayer, both with hand-held booms equipped with 2-nozzles, and a Solo 2-cycle motorized mist blower. Fruit were harvested weekly from 13 Apr through 7 Jun. Total yield and percent of marketable and cull fruit (undersized, misshapen) were calculated based on weight. Weather conditions were unseasonably dry throughout the spring growing season with temperatures above average enhancing fruit quantity and resulting in relatively low disease pressure.

The emphasis of this trial was to evaluate fungicide spray strategies to manage anthracnose with reduced number of sprays and/or effective rotation of fungicides with different modes of action to limit the potential of selecting for fungicide resistant populations. All fungicide treatments significantly reduced the incidence of anthracnose ripe fruit rot (Table 1). Unfortunately, 4 early applications are not as effective as a full season spray program. Rotating Pristine and Captan was not as effective as rotating Switch and Pristine. This is the first year we have obtained enhanced efficacy with Switch in our anthracnose trials.

Since we had extra plot space, we elected to increase the number of treatments and evaluated type of sprayer – a consideration for the small acreage grower. A hand-pump sprayer was not effective for managing anthracnose. (We use a CO₂ sprayer in all our trial work since it is so efficient to use for spray trials). Each sprayer significantly reduced fruit rots and increased yield and number of marketable fruit when compared to the unsprayed check. The mist blower reduced anthracnose fruit rot the most when compared to other sprayers. All sprayers reduced anthracnose fruit rot compared to the treatment that received no fungicides. Anthracnose fruit rot incidence was moderate throughout most of the harvest season among all treatments, though pressure significantly increased later the season.

Table 1: Effect of fungicide products, schedules and application technology on incidence of anthracnose ripe fruit rot and yield.

Treatment and rate/A	*Percent marketable by weight	*Percent anthracnose by weight	*Total yield (g/plot)
EFFECT OF FUNGICIDE PROGRAM			
No spray	54.8 a	38.7 d	4538 a
Captan 50 WP 4.0 lb + Topsin-M 70 W 1.1 lb, Pristine, 23.0 oz Switch 62.5 WG 11 oz Pristine, 23.0 oz	68.3 b	24.5 b	5168 ab
Captan 50 WP 4.0 lb + Topsin-M 70 W 1.1 lb Pristine, 23.0 oz Captan 50 WP 4.0 lb Pristine, 23.0 oz Captan 50 WP 4.0 lb Pristine, 23.0 oz Captan 50 WP 4.0 lb Pristine, 23.0 oz	71.6 bc	22.7 b	6332 bc
Captan 50 WP 4.0 lb + Topsin-M 70 W 1.1 lb Pristine, 23.0 oz Switch 62.5 WG 11 oz Pristine, 23.0 oz Switch 62.5 WG 11 oz, Pristine, 23.0 oz Switch 62.5 WG 11 oz Pristine, 23.0 oz	77.9 d	13.2 d	6751 c

EFFECT OF SPRAYER TYPE			
No spray	54.8 a	38.7 a	4538 a
CO2 sprayer	73.3 b	19.3 c	6679 bc
Solo hand-pump sprayer	66.9 c	25.1 b	5443 ab
Echo 2 cycle motorized sprayer	76.5 b	16.9 c	6325 bc
Solo motorized mist blower	84.1 d	9.2 d	7369 c

Values followed by the same letter within a column for each set of treatments (within fungicide, within sprayer technology) are not significantly different according to Fisher's protected LSD (P = 0.05).

Spray schedule for the spray equipment was: Captan 50 WP 4.0 lb + Topsin-M 70 W 1.1 lb; Pristine, 23.0 oz; Switch 62.5 WG 11 oz; Pristine, 23.0 oz; Switch 62.5 WG 11 oz; Pristine, 23.0 oz; Switch 62.5 WG 11 oz; Pristine, 23.0 oz.