

STRAWBERRY (*Fragaria x ananassa* 'Florida Radiance')
Botrytis fruit rot; *Botrytis cinerea*

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Evaluation of biorational products for control of Botrytis fruit rot in annual strawberry, 2016-17.

The effectiveness of biorational products in managing Botrytis fruit rot (BFR) was evaluated in a field experiment set up on a commercial farm in Plant City, FL. Bare-root transplants from a North Carolina nursery were transplanted into raised beds covered with black plastic mulch on 29 Sep 2016. During mulching, beds were fumigated with Pic-Clor 60 (200 lb/A). Plants were spaced 16 in. apart within and 15 in. between rows. Beds were 28 in. wide on 4-ft centers and each contained two staggered rows of plants. Overhead irrigation was used for 10 days after planting to aid plant establishment. Additional irrigation and fertilization were made via drip tape until the end of the season. The 20 treatments were arranged in a randomized complete block design with four blocks in adjacent rows. Plots were 10-ft long containing 12 plants each and were separated by 3-ft without plants. Treatments were sprayed using a CO₂ back-pack sprayer calibrated to deliver 100 gal/A at 60 psi through a boom mounted with two hollow-cone T-Jet 8002 nozzles. Fifteen applications were made from 25 Nov 2016 to 3 Mar 2017. Most of the treatments consisted of successive weekly sprays of the same fungicides, except for one containing Switch 62.5WG sprayed when weather conditions were favorable for infection and Captan 80WDG during the other weeks. Weather favorability to infection was assessed by following the Strawberry Advisory System (StAS) (<http://agroclimate.org/tools/sas/>). Weather-triggered applications were made on 9 Dec (week 3), 15 Dec (week 4), 20 Jan (week 9), 10 Feb (week 12), and 24 Feb (week 14). Fruit were harvested and graded twice a week from 5 Dec 2016 to 11 Mar 2017 (25 harvests). The number of marketable and BFR-affected fruit were used to determine disease incidence. Data were analyzed by fitting a generalized linear mixed model, and means were separated according to Fisher's Protected LSD test ($\alpha=0.05$) using the statistical software SAS.

According to the StAS, there were only 5 days during entire experimental period in Central Florida when weather conditions were highly suitable for BFR development (15 to 22 °C and ≥ 12 hours of leaf wetness). Thus, the average BFR incidence for the entire season in the non-treated control was low (3.3%) compared to the 2013-14 and 2014-15 seasons when incidence reached 16.0% and 26.1% respectively. Disease was also evaluated during the incidence peak, including harvests when BFR incidence in the non-treated control was higher than 5%. In the non-treated control, BFR incidence reached 14.4% during the disease peak. For the overall season evaluation, Thiram 24/7 + Synbiont Crop Enhancer was the only treatment that reduced BFR incidence. During the disease peak, the same treatment in addition to Bravo Weather Stik, Thiram 24/7, Omega 500 F, and the treatment including Switch 62.5WG were the only ones effective in reducing BFR.

Treatment (products and rates/100 gal.)	Application timing ^x	Botrytis fruit rot incidence (%) ^y	
		Disease Peak	Season
Thiram 24/7 (3pt) + Synbiont Crop Enhancer (1:250 v/v)	weekly	2.2 f	1.0 h ^z
Bravo Weather Stik (1.5 pt)	weekly	6.0 def	1.4 gh
Thiram 24/7 (3pt)	weekly	5.2 ef	1.6 fgh
Omega 500 F (1.25 pt)	weekly	7.6 cdef	2.0 efgh
Switch 62.5WG (14 oz) Captan 80WDG (1.9 lb)	3, 4, 9, 12, 14 otherwise	7.4 cdef	2.6 defgh
Timorex Gold (16 oz)	weekly	10.9 bcde	2.7 cdefgh
XM01 (3.4 pt) + VBS_FAQ (0.25% v/v)	weekly	11.4 bcde	2.8 cdefgh
Regalia 12% (52 fl oz)	weekly	11.5 bcde	3.2 bcdefgh
Non-treated control	-	14.4 ab	3.3 abcdefg
Synbiont Crop Enhancer (1:250 v/v)	weekly	10.7 bcde	3.4 abcdefg
Serifel (8 oz)	weekly	16.5 ab	3.8 abcdef
BVT (Clonostachys) (13.3 oz)	weekly	10.6 bcde	3.9 abcdef
STK73 (12 fl oz)	weekly	12.8 abc	3.9 abcdef
STK73 (24 fl oz)	weekly	12.2 abcd	4.0 abcde
BBL-01-02 (2.1 qt)	weekly	15.0 ab	4.1 abcde
Prestop WG (12.5 oz/A)	weekly	13.5 abc	4.4 abcde
BBL-02-03 (2.1 qt)	weekly	14.7 ab	4.6 abcd
Timorex Gold (12 oz)	weekly	18.2 a	5.0 abc
XM01 (3.4 pt) + Kinetic (6.4 floz)	weekly	18.3 a	5.1 ab
XM01 (3.4 pt) + Dyne-Amic (3 pt)	weekly	12.0 abcd	5.6 a

^x Week of application over a period of 15 weeks from 25 Nov 2016 to 3 Mar 2017.

^y Incidence of BFR during disease incidence peak corresponding to harvests on 3 Feb, 24 Feb, 28 Feb, and 3 Mar 2017; Season includes all harvests from 5 Dec 2016 to 7 Mar 2017.

^z Means in a column followed by the same letter are not significantly different according to Fisher's Protected LSD test ($\alpha = 0.05$).