

BLUEBERRY (*Vaccinium corymbosum* 'Bluetta')
Mummy Berry; *Monilinia vaccinii-corymbosi*

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Evaluation of fall, soil applied Actinovate for suppression of spring mummy berry apothecia, 2015-2017.

Actinovate AG treatments were arranged in a randomized complete block design, with each treatment replicated 8 times, in a field of 'Bluetta' blueberries planted in 1999 on 5 x 10 ft spacing. Round wire mesh corrals (cages) were placed between bushes and 100 mature mummies (pseudosclerotia) were placed into each corral, in direct contact with the soil, on 24 Sep 15. Each corral of pseudosclerotia was drenched with 500 ml Actinovate AG (2 tsp/gal) on 24 Sep 15, 27 Oct 15 or 2 Dec 15. A duplicate (control) set of pseudosclerotia corrals were also drenched with 500 ml water on each application date. A timing trial was set up in a similar manner where mummies were set out onto the ground within wire corrals or up in bushes in mesh bags on 24 Sep 15, 27 Oct 15 or 2 Dec 15. Mummies that were suspended in mesh bags in bushes were then placed onto the ground within wire corrals in Jan 2016.

Spring 2016 weather conditions were warm and wet in mid February pushing plant growth ahead of average by 2 weeks. Pseudosclerotia in an adjacent block were at germination/emergence on 29 Feb 16, differentiation on 7 Mar 16 and at sporulation on 15 Mar 16. Last apothecium was found on 31 Mar 16 for a 16 day primary infection period. Stage of pseudosclerotia development above ground was determined for each treatment on 18, 22, 25 and 28 Mar 16.

Open, sporulating apothecia were not observed in any plot drenched with water or Actinovate or in the timing trial in the spring of 2016. A few stipe initials (pseudosclerotia stage differentiation) were observed in some Actinovate trial plots but much fewer than expected overall (Table 1).

Table 1. Stipe initials (pseudosclerotia stage differentiation) observed in Actinovate trial corrals in spring 2016.

Month	Temperature (°F)*		Treatment	Ave # of Stipe Initials**
	Air	Soil		
Sept	37 to 83	55 to 60	Water	0.0
			Actinovate AG at 2 tsp/gal...	0.3
Oct	40 to 69	52 to 56	Water	0.1
			Actinovate AG at 2 tsp/gal...	0.6
Dec	39 to 60	39 to 60	Water	0.0
			Actinovate AG at 2 tsp/gal...	0.0

* Temperature range (in degrees Fahrenheit) during the first week after treatment application.

** Means did not differ significantly based on Fisher's protected LSD ($P=0.05$).

Spring weather conditions for 2017 were considered cool and wet but with more normal plant growth relative to time of year. Pseudosclerotia in an adjacent block were at germination/emergence on 7 Mar 17, one was at differentiation on 14 Mar 17, a few at sporulation on 20 Mar 17, apothecia were easy to find from 25 Mar 17 to 9 Apr 17 with no more found on 14 Apr 17 for a 20 day primary infection period.

Whole, intact pseudosclerotia were still easily observed on 27 Mar 17 in many of the corrals despite moss growth, slugs, and earthworm activity. Many pseudosclerotia were broken but still recognizable. Only a few corrals had no or only 1 recognizable pseudosclerotia. Based on midden observations, it appeared that earthworms did not specifically gather pseudosclerotia but these mummies are swept up while worms forage for leaves. A total of 23 apothecia were observed in 10 out of 24 water drenched corrals but only 2 apothecia were found in 1 out of 24 Actinovate treated corrals on 26 Mar 17. A total of 45 apothecia were observed in 16 of 48 non-treated corrals on 26 Mar 17. The number of apothecia observed in water treated corrals was significantly higher than Actinovate treated

corrals (Table 2). The number of apothecia declined in all 4 subsequent observations (29 Mar, 1, 6 and 9 Apr) until no apothecia were observed on 14 Apr 17.

Table 2. Apothecia observed in Actinovate trial corrals in spring 2017.

Drench Treatment	Ave # of Apothecia/100 pseudosclerotia (26 Mar 17)*
Water only	0.96 a
Actinovate AG at 2 tsp/gal...	0.08 b

* Analysis based on a factorial design with 2 factors where drench treatment was one factor and month of placement was the other factor. There was no significant interaction between factors. Means followed by the same letter were not significantly different based on Fisher’s protected LSD ($P=0.05$). Non-transformed means presented but data analysis based on Log (1+X) transformation.

Why apothecia were not observed in 2016 is unknown. A change in experimental protocol from black plastic corrals to open wire mesh corrals may have been a contributing factor. Based on observations during 2017, pseudosclerotia can survive and produce apothecia 2 years after contact with the soil surface and may be suppressed when treated with Actinovate. Before recommendations can be made for growers, future trials need to be conducted in a field that has not previously had blueberries infected with mummy berry. In addition, trial replicates need to use 1,000 pseudosclerotia for each replicate to detect survival differences of around 1%.

Note: Part of this information was published last year in the 2016 booklet.