BLUEBERRY (*Vaccinium corymbosum* 'Berkeley')
Mummy berry; *Monilinia vaccinii-corymbosi*

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Evaluation of fungicides and biologicals for management of mummy berry, 2017.

Fungicide treatments were arranged in a randomized complete block design in a block of 'Berkeley' blueberries planted in 1999 on 5 x 10 ft spacing. Each treatment consisted of 6 single-bush replicates. Most fungicide treatments were applied using a hydraulic handgun sprayer at approximately 110 psi at a rate of 290 gal water/A. Approximately 2 gal of a spray suspension were applied per 6 bushes. Treatments were applied on 28 Mar (late floral bud break), 4 Apr (early vegetative bud break), 11 Apr (mid vegetative bud break), 21 Apr (early bloom), 4 May (full bloom) and 18 May (late bloom). The product Botector was applied using a low-pressure Stihl pump style backpack sprayer reserved only for biologicals. Each fungicide-treated bush was flanked on each side by non-treated bushes. Badge X2 (7 lb/A) was applied on 28 Oct 16 (>50% leaf drop) to prevent bacterial blight. Omni Supreme Oil (1.5 gal/A) was applied on 13 Feb for management of scale insects. Herbicides were not applied during the course of the trial to manage weeds. Bushes were pruned 5 to 10 Jan by thinning out small, dead and spindly shoots and removing older non-productive stems. Four commercial honey bee hives arrived in a nearby cherry orchard on 6 Apr. Plots were fertilized on 30 May with approximately 150 lb/A (based on in the bush row area) of ammonium sulfate 20-0-0-22. Overhead irrigation was started on 30 May and continued twice per week for 3 hour sets during the growing season. The number of floral clusters and vegetative shoots per bush with symptoms of primary mummy berry was evaluated on 8 to 9 May. On 19 Jun, approximately 300 green berries were harvested arbitrarily from each Berkeley bush and placed in a refrigerator. Over the next week 200 berries were arbitrarily selected, cut in half and evaluated for symptoms of russeting and secondary mummy berry (white mycelial mats within the carpels of the berry).

Spring weather conditions for 2017 were considered cool and wet but with more normal plant growth relative to time of year. Pseudosclerotia (mummies) were at germination/emergence on 7 Mar, one was at differentiation on 14 Mar, a few at sporulation on 20 Mar, apothecia were easy to find from 25 Mar to 9 Apr with no more found on 14 Apr for a 20 day primary infection period. Primary mummy berry symptoms were first observed on both flower clusters and shoots starting 18 Apr (without sporulation). Classic symptoms of secondary mummy berry were first observed on 22 May. Non-treated bushes had the most floral and vegetative strikes per bush, however, the number of strikes on bushes treated with Actinovate alone were not significantly different. Lowest number of floral strikes were observed on bushes treated with multiple applications of Proline, however, the number of floral strikes on bushes treated with multiple applications Quash were not significantly different. Lowest number of vegetative strikes were observed on bushes treated with multiple applications of Proline or Botector, however, the number of strikes on bushes treated with Proline once or Quash were not significantly different. Bushes treated with Actinovate alone had the most mummy berry, however, the percentage of fruit with mummy berry on non-treated bushes or bushes treated with Stimplex were not significantly different. Lowest mummy berry was found on bushes treated with multiple applications of Proline, however, the percentage of fruit with mummy berry on bushes treated with multiple applications of Quash, or the "bee friendly" Actinovate/Proline/Botector program were not significantly different. There was no significant difference among the various treatments with regard to fruit russeting (4.1% overall). The Actinovate plus Stimplex tank mix resulted in fewer primary symptoms of mummy berry than no treatment at all for floral strikes but was not much better than Stimplex alone. No phytotoxicity was observed in bushes treated with any of the various materials used.

Treatment & Rate/A or /100 gal as indicated below	Time of Application [x]	Floral strikes per bush [y]	Vegetative strikes per bush [y]	Mummy Berry (% Fruit) [z]
Non-treated ……	None……..	42.3 a	5.3 a	38.5 a
Actinovate AG at 12 oz……	All……..	34.3 ab	4.8 a	39.0 a
Stimplex at 48 fl oz/100 gal.....	All……..	21.0 bc	2.0 bc	31.2 a
Actinovate AG at 12 oz plus Stimplex at 48 fl oz/100 gal….	All……..	12.5 bc	3.0 ab	28.5 a
Actinovate AG at 12 oz then Proline 480 SC at 5.7 fl oz then Botector at 10 oz ……..	A and B C D, E and F…..	9.2 c	0.0 d	3.3 bc
Proline 480 SC at 5.7 fl oz ……	D only……	9.7 c	1.2 cd	13.8 b
Proline 480 SC at 5.7 fl oz …….	A, C, D, E, F..	0.2 d	0.0 d	0.3 c
Quash WDG at 2.5 oz …….	D only……	14.2 bc	1.0 bcd	13.8 b
Quash WDG at 2.5 oz …….	A, C, D, E, F..	0.5 d	0.2 d	3.5 bc

[x] Treatments were applied on A = 28 Mar (late floral bud break), B = 4 Apr (early vegetative bud break), C = 11 Apr (mid vegetative bud break), D = 21 Apr (early bloom), E = 4 May (full bloom) and F = 18 May (late bloom).

[y] Analysis of variance was based on log (x+1) transformation. Means followed by the same letter do not differ significantly based on Fisher's protected LSD (*P=0.05*).

[z] Means followed by same letter do not differ significantly based on Fisher's protected LSD (*P=0.05*).