

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

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Evaluation of various fungicides for management of mummy berry, 2014.

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. Fungicide treatments were applied using a hydraulic handgun sprayer at approximately 100 psi at a rate of 363 gal water/A. Approximately 2.5 gal of a spray suspension were applied per 6 bushes. Treatments were applied on 13 Mar (floral bud break), 24 Mar (vegetative bud break), 8 Apr (first flowers open), 20 Apr (full bloom), and 3 May (end of bloom). Each fungicide-treated bush was flanked on each side by non-treated bushes. Nu-Cop 50 DF (8 lb/A) was applied on 29 Oct 13 (>50% leaf drop) to prevent bacterial blight. Makaze (generic glyphosate at 3 oz/gal) was applied on 10 Apr to control weeds. Bushes were pruned 7 to 13 Jan by thinning out small, dead and spindly shoots and removing older non-productive stems. Plots were fertilized on 18 Apr and 16 May with approximately 296 lb/A (based on in the bush row area) of 20-0-0-24. Overhead irrigation was started on 2 Jun and continued two times per week during the growing season. The number of floral clusters and vegetative shoots per bush with symptoms of primary mummy berry was evaluated on 22 Apr and 2 May. On 9 Jun, approximately 300 berries were harvested arbitrarily from each Berkeley plant and placed in a refrigerator. Over the next week 200 berries were arbitrarily selected, cut in half and evaluated for symptoms of secondary mummy berry (white mycelial mats within the carpels of the berry) and fruit russet.

Spring growing conditions had normal precipitation but warmer temperatures overall. Apothecia started to emerge and open on 17 Mar and continued until the last one was observed on 7 Apr. Primary mummy berry symptoms were first observed on both flower clusters and shoots starting 14 Apr. Classic symptoms of secondary mummy berry were first observed on 9 Jun. The highest number of floral and vegetative mummy berry strikes per bush was on non-treated bushes. The number of floral mummy berry strikes on bushes treated with Indar once, the high rate of Protexio or Elevate were not significantly different than those found on non-treated bushes. Lowest number of floral mummy berry strikes was found on bushes treated with Proline just once, however, the number found on bushes treated with Regalia then Proline alternate Pristine, any Quash treatment or just one application of Tilt were not significantly different. The number of vegetative mummy berry strikes on bushes treated with Regalia plus Actinovate or Protexio alone were not significantly different than those found on non-treated bushes. Lowest number of vegetative strikes was found on bushes treated with Proline once, however, the number found on bushes treated with Regalia then Proline alternate Pristine, any Quash treatment or just one application of Tilt or Indar were not significantly different. The highest amount of fruit with secondary mummy berry symptoms (fruit rot) was on bushes treated with Regalia plus Actinovate followed by non-treated bushes. The amount of fruit with secondary mummy berry symptoms on bushes treated with Protexio alone, Elevate, Indar once or Tilt once was not significantly different than on non-treated bushes. Lowest secondary mummy berry fruit rot was found on bushes treated with Quash during bloom, however, the number found on bushes treated with Regalia then Proline alternate Pristine, any Quash treatment or just one application of Proline were not significantly different. A single application of Quash or Proline at early bloom, just after the last apothecium was found but before primary symptoms are observed, was as effective against mummy berry as 5 applications throughout the pre-bloom and bloom periods. No phytotoxicity was observed in bushes treated with any of the various materials used. A hailstorm with pea-sized hail marked up fruit on 24 Apr. There was no significant difference among treatments with regard to russeted fruit.

In the past we have seen much better control with Regalia or Actinovate when either is used alone. Investigations after this spray season found that the Actinovate used in this trial had expired in Oct 13. Viability was low when tested on Jul 14. Further testing found that mixing Regalia and Actinovate together, as some organic growers have done, reduced the viability of Actinovate. The mix resulted in fewer colony forming units after one week (58 to 83%), delayed and reduced colony growth. Based on these results, it is not recommended to tank mix these two products.

Treatment & Rate/A or /100 gal as indicated below	Time of Application ^x	Floral strikes per bush ^{Y,Z}	Vegetative strikes per bush ^Z	Mummy Berry (% Fruit) ^Z	Russet (% Fruit) ^Z
Non-treated	None.....	38.2 a	16.7 a	31.0 a	2.6
Regalia at 0.5 gal plus					
Actinovate AG at 12 oz plus					
Nu-Film-P at 32 fl oz/100 gal	All.....	23.3 bc	14.7 ab	33.5 a	2.3
Regalia at 0.5 gal then	A, B				
Proline 480 SC at 5.7 fl oz ALT	C, E				
Pristine 38 WDG at 23 oz.....	D.....	2.7 d	0.5 d	3.5 b	2.9
Quash 50 WDG at 2.5 oz plus					
Induce at 32 fl oz/100 gal	All.....	0.7 d	0.2 d	3.9 b	0.8
Quash 50 WDG at 2.5 oz plus					
Induce at 32 fl oz/100 gal	A and B....	1.2 d	5.0 cd	8.7 b	1.6
Quash 50 WDG at 2.5 oz plus					
Induce at 32 fl oz/100 gal	C, D and E	1.2 d	0.8 d	0.3 b	1.0
Quash 50 WDG at 2.5 oz plus					
Induce at 32 fl oz/100 gal	C only.....	2.7 d	0.5 d	1.3 b	2.0
Proline 480 SC at 5.7 fl oz	C only.....	0.8 d	0.3 d	4.4 b	0.6
Indar 2F at 6 fl oz.....	C only.....	31.7 ab	5.3 cd	29.6 a	1.0
Tilt at 6 fl oz.....	C only.....	13.7 cd	5.5 cd	28.0 a	1.1
Protexio 3.34 at 14.3 fl oz.....	All.....	24.7 bc	13.2 ab	26.7 a	0.4
Protexio 3.34 at 19.2 fl oz.....	All.....	28.3 ab	16.7 a	28.9 a	1.8
Protexio 3.34 at 19.2 fl oz plus					
Quash 50 WDG at 2.5 oz.....	All.....	2.0 d	0.3 d	4.6 b	1.3
Elevate 50 WG at 1.5 lb	All.....	26.5 abc	9.2 bc	25.1 a	0.9

^x Treatments were applied on A = 13 Mar (floral bud break), B = 24 Mar (vegetative bud break), C = 8 Apr (first flowers open), D = 20 Apr (full bloom), and E = 3 May (end of bloom).

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