

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

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Evaluation of various products for management of mummy berry, 2013.

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 436 gal water/A. Approximately 3 gal of a spray suspension were applied per 6 bushes. Treatments were applied on 24 Mar (floral bud break), 30 Mar (vegetative bud break), 3 Apr, 9 Apr (pink bud), 18 Apr (early bloom), 25 Apr (>50% bloom), 2 May (late bloom), and 9 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 25 Oct 12 (>50% leaf drop) to help prevent bacterial blight. Supreme Oil (5 gal/100 gal water) was applied on 18 Feb to control scale insects. Makaze (generic glyphosate at 3.2 oz/gal) was applied on 7 Mar and 11 Apr and Rely (1.7 oz/gal) was applied 17 Jun to control weeds. Bushes were pruned 4 to 9 Jan by thinning out small, dead and spindly shoots and removing older non-productive stems. Plots were fertilized on 26 Apr, 16 May and 4 Jun with approximately 160 lb/A (based on in the bush row area) of 21-0-0-24. Overhead irrigation was started on 3 May and continued 2 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 1 May. On 18 Jun, approximately 300 berries were harvested arbitrarily from each Berkeley plant and placed in a refrigerator. Over the next few weeks 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 were unusually dry with 3 weeks of warm 80 F weather at the end of April and beginning of May during the bloom period. Apothecia started to emerge and open on 25 Mar and continued until the last one was observed on 15 Apr. Primary mummy berry symptoms were first observed on both flower clusters and shoots starting 19 Apr. Classic symptoms of secondary mummy berry were first observed on 28 May. 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 Echo alternate Serenade or Botector were not significantly different than those found on non-treated bushes. Lowest number of floral mummy berry strikes was found on bushes treated prebloom with Quash, however, the number found on bushes treated with Regalia then Quash or just one application of Quash at early bloom were not significantly different. All fungicide-treated bushes had significantly less vegetative mummy berry strikes than non-treated bushes. Lowest number of vegetative strikes was found on bushes treated every other week though both the primary and secondary infection periods with Quash, however, the number found on bushes treated with any application of Quash were not significantly different. The highest amount of fruit with secondary mummy berry symptoms was on non-treated bushes. All fungicide-treated bushes had significantly less secondary mummy berry than on non-treated bushes. Lowest mummy berry fruit rot was found on bushes treated with any application of Quash. A single application of Quash at early bloom, just after the last apothecium was found but before primary symptoms are observed, was as effective against mummy berry as 4 applications throughout the pre-bloom and bloom periods.

Bushes treated with Regalia at 1 gal/A had subtle necrotic flower spots and significantly more russeted fruit than non-treated bushes. Bushes treated with Echo also had significantly more russeted fruit than non-treated bushes. The most russeted fruit was found on bushes treated with 8 applications of Regalia throughout the pre-bloom and bloom periods.

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.....	27.2 a	24.8 a	22.2 a	1.0 c
Serenade Optimum at 16 oz plus Nu-Film-P at 32 fl oz/100 gal	All.....	17.8 bcd	10.3 cd	14.4 b	1.9 c
Echo 720 at 4 pt alternate Serenade Optimum at 16 oz plus Nu-Film-P at 32 fl oz/100 gal	A, D, G C, F.....	23.6 abc	12.5 bc	14.3 b	5.2 b
Actinovate AG at 12 oz plus Nu-Film-P at 32 fl oz/100 gal	All.....	14.4 de	7.0 de	17.3 ab	0.3 c
Botector WP at 7 oz/100 gal.....	All.....	26.6 ab	15.8 b	15.3 b	2.1 c
Regalia at 1 gal.....	All.....	15.4 cde	9.2 cd	15.7 b	13.7 a
Quash 50 WDG at 2.5 oz plus Nu-Film-P at 32 fl oz/100 gal	A, C, E, G.	0.8 f	0.2 f	1.3 c	0.8 c
Regalia at 1 gal THEN..... Quash 50 WDG at 2.5 oz plus Nu-Film-P at 32 fl oz/100 gal	A, B, C, D E, G.....	4.4 f	0.8 f	4.3 c	5.1 b
Quash 50 WDG at 2.5 oz plus Nu-Film-P at 32 fl oz/100 gal	A, C.....	0.8 f	1.2 f	6.3 c	0.2 c
Quash 50 WDG at 2.5 oz plus Nu-Film-P at 32 fl oz/100 gal	E, G.....	9.4 def	2.3 ef	4.3 c	0.6 c
Quash 50 WDG at 2.5 oz plus Nu-Film-P at 32 fl oz/100 gal	E.....	8.0 ef	3.3 ef	3.8 c	0.9 c

^x Treatments were applied on A = 24 Mar (floral bud break), B = 30 Mar (vegetative bud break), C = 3 Apr, D = 9 Apr (pink bud), E = 18 Apr (early bloom), F = 25 Apr (>50% bloom), G = 2 May (late bloom), and H = 9 May (end of bloom). Any application of Actinovate, Botector, Regalia or Serenade was followed in 7 days with another fungicide application. All other product applications were followed in two weeks with another fungicide application.

^y Due to lack of flowers on one non-treated bush, analysis is based on only 5 replicates.

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