

CONTROL OF MUMMY BERRY OF Highbush BLUEBERRY¹

H.S. Pepin² and D.J. Ormrod³

Abstract

Ferbam remains the most effective fungicide for control of *Monilinia vaccinii-corymbosi* on highbush blueberry. Fungicide 1991 (benomyl) and dodine gave good control, as measured in terms of yield increase, even though the systemic Fungicide 1991 was used at a low rate of application. Zineb and captan did not significantly increase yield, although zineb was most effective in reducing leaf shoot and flower cluster infections. Berry size was not affected by any of the fungicides.

Introduction

Mummy berry of highbush blueberry has risen to epiphytotic proportions in the lower Fraser Valley of British Columbia during the past few years. In March, apothecia of *Monilinia vaccinii-corymbosi* (Reade) Honey produce ascospores that infect opening leaf and flower cluster buds to initiate the blight phase of this disease. Conidia produced on the buds then infect the ovary of the opening flowers from mid-April to mid-May to initiate the mummy berry phase.

Control of the blight phase depends on either the destruction of the apothecia on the ground before ascospore liberation or the application of a fungicidal dust or spray to the aerial portions of the bush to protect the opening buds.

A number of workers have studied the effects of various fungicides on control of this disease. Gilgut (2) obtained partial control with ferbam. Ferbam or zineb was recommended by Lockhart (3) for control of the blight phase in lowbush blueberry. Fulton (1) found zineb to be more effective than captan. None of these gives more than partial control under Fraser Valley conditions. Recently systemic fungicides have been developed for the control of plant diseases. The effectiveness of one of these, Fungicide 1991⁴ (1-(butylcarbamoyl)-2-benzimidazole carbamic acid, methyl ester) (Dupont, Wilmington, Delaware), was compared with other fungicides for control of the blight phase of mummy berry in this experiment.

¹ Contribution No. 158, Research Station, Canada Department of Agriculture, Vancouver, British Columbia.

² Plant Pathologist, Research Station, Canada Department of Agriculture, Vancouver, British Columbia.

³ Plant Pathologist, British Columbia Department of Agriculture, Cloverdale, British Columbia.

⁴ Fungicide 1991 is now known by the trade name Benlate; the common name of the active ingredient has been designated benomyl.

Methods

A field of mature highbush blueberry 'Rancocas'⁵ heavily carp-ted with developing mummy berry apothecia, was used. Twenty-four bushes in a block, six bushes by 4 bushes, were sprayed on March 18, March 28, April 8, April 20, and May 1 with ferbam, 3 lb/acre; captan, 2 lb/acre; zineb, 3 lb/acre; Fungicide 1991 50% WP, 0.125 lb active ingredient plus 2 oz Surfactant F/acre; dodine, 1.5 lb/acre; and no treatment. Each treatment was replicated four times in randomized blocks with one bush per replicate. Bushes were ranked in order of size from 1 to 24.

Bushes were examined on May 14. Leaf shoot and flower cluster infections were counted and recorded for each bush. Mummy berries in each replicate were recorded on July 17. Fruit was picked four times: July 19, July 29, August 5, and August 26. Weights and cup size (number of berries in a half-pint [US]) were recorded for each replicate. Analysis of covariance was calculated for each set of data to eliminate any effects of bush size.

Results and discussion

The fungicides used in this trial were compared under conditions of heavy mummy berry infection. The corrected data are recorded in Table 1. Cup size and weight of berries was not affected by any of the fungicides. All fungicides tested reduced the number of mummy berries by approximately one half over the control but were not significantly different from one another.

Zineb, dodine, ferbam, and Fungicide 1991 all significantly reduced infections of leaf shoots and flower clusters. Ferbam, Fungicide 1991, and dodine increased yield, but zineb, which decreased infections the most, failed to show any significant increase in yield. No treatments showed any evidence of phytotoxicity.

Although Fungicide 1991 was not very effective in controlling leaf shoot and flower cluster infection,

⁵ Derived from (*Vaccinium corymbosum* L. 'Brooks' x *V. lamarckii* Camp. 'Russell') x *V. australe* Small 'Rubel'.

Table 1. Influence of fungicides on mummy berry of highbush blueberry

Treatment	Active ingredient (lb/acre)	Yield* (lb/bush)	Blight infections* (no./bush)	Mummy berries* (no./bush)	Cup size**
Ferbam	3.000	35.3 a***	105.6 b	858.3 a	153 a
1991	0.125	30.6 ab	140.2 c	500.4 a	139 a
Dodine	0.500	28.9 ab	84.8 ab	894.9 a	137 a
Zineb	3.000	26.3 bc	67.6 a	788.6 a	144 a
Captan	2.000	24.1 bc	146.9 cd	636.9 a	147 a
Check	0.000	21.5 c	172.4 d	1349.4 b	139 a

* Data adjusted to bush size by regression analysis.

** Cup size = no. of berries/half-pint (US).

*** Means not followed by the same letter are significantly different at the 5% level (Duncan's Multiple Range Test).

it reduced the number of mummy berries more efficiently than any other fungicide. This reduction was not statistically significant, but it may explain the increase in yield, which was second only to ferbam. It would appear that either Fungicide 1991 or dodine could be used in place of ferbam, but a systemic that does not require complete coverage for control would have an advantage. The rate of application of Fungicide 1991 was relatively low. Future trials will test the effectiveness of higher rates.

Literature cited

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