

Effectiveness of Scholar for controlling blue mold decay in stored apples, 2001-2002.

The objective of this trial was to evaluate effectiveness of Scholar applied at various rates and in combinations with other products that might be included in postharvest treatments of apples. Empire fruit were harvested at maturity on 26 Sep 2001. Fruit were held in at 35° F cold air storage until 20 Nov 2001. Fruit firmness was 17.5 lb at the time the experiment was initiated on 20 Nov. Each fruit was wounded using a large cork fitted with three finishing nails spaced about three-eighth in. apart in a triangular pattern. Wounds created on the fruit were approximately one-eighth in. deep by one-sixteenth in. in diameter and simulated stem punctures, a common entry site for *P. expansum* in apples. Baskets containing wounded fruit were dipped for 30 sec into treatment solutions that contained the various treatments plus 10,000 conidia/ml of *P. expansum*. Each treatment was replicated four times using 25 fruit per replicate. Twenty percent of the inoculum was from a benzimidazole-resistant isolate of *P. expansum* (P-301) and 80% was from a benzimidazole-sensitive isolate (P-99). Inoculum was prepared by using sterile water that contained 0.01% Tween 20 to wash conidia from 8-day old cultures growing on potato-dextrose agar plates. Spore densities of the stock solutions were determined using a hemacytometer and appropriate amounts of stock solution were added to each treatment tank. The pH of the treatment solutions was measured just before fruit were treated and varied from a low of pH 7.3 for the treatment involving Decco 405 Calcium Chloride used alone to a high of pH 8.0 for the treatment involving Scholar at 16 oz. Following treatment, fruit were allowed to dry for 2 hr. They were then placed on spring cushion trays, packed into fiberboard boxes, and moved to cold air storage at 34° F. Incidence of decay was evaluated monthly beginning in Jan. Fruit were considered decayed if there was evidence of decay at any of the three wounds.

All of the treatments involving Scholar provided excellent control of *P. expansum*. Activity of Scholar was not adversely affected by the addition of calcium chloride, Mertect 340F, or diphenylamine (DPA). When used alone, Mertect 340F failed to provide adequate control of *P. expansum* even though 80% of the inoculum came from a benzimidazole-sensitive isolate.

Materials and rates of formulated product per 100 gal of drench solution*	% fruit with blue mold decay		
	17 Jan	14 Feb	14 Mar
Control.....	76.9 c**	90.0 c	94.0 c
Decco 405 Calcium Chloride (CaCl ₂) 1.35 gal.....	81.0 c	93.0 c	94.0 c
Mertect 340F 8 fl oz.....	42.0 b	69.0 b	79.0 b
Scholar 50W 2 oz.....	0.0 a	0.0 a	0.0 a
Scholar 50W 4 oz.....	0.0 a	0.0 a	2.0 a
Scholar 50W 8 oz.....	0.0 a	0.0 a	0.0 a
Scholar 50W 16 oz.....	0.0 a	1.0 a	2.0 a
Scholar 50W 16 oz without DPA.....	0.0 a	0.0 a	0.0 a
Scholar 50W 2 oz + Decco 405 CaCl ₂ 1.35 gal.....	0.0 a	0.0 a	1.0 a
Scholar 50W 16 oz +Decco 405 CaCl ₂ 1.35 gal.....	0.0 a	0.0 a	0.0 a
Scholar 50W 2 oz + Mertect 340F 8 fl oz.....	0.0 a	0.0 a	1.0 a
Scholar 50W 16 oz +Mertect 340F 8 fl oz.....	0.0 a	0.0 a	0.0 a

*Decco No-Scald DPA was used at 1000 ppm (40 fl oz/100 gal) in all treatments except for the one treatment indicated.

** Within columns, means followed by the same small letter do not differ significantly ($P \leq 0.05$) as determined using Fisher's Protected LSD applied to arc-sine transformed data. Arithmetic means are shown in the table.