EcoScience Produce Systems Corp.

Biological Control of Postharvest Diseases of Pome Fruit -- Research Field Trial

Efficacy of Bio-Save 10 LP with and without chemical fungicide (TBZ) on Washington Pome Fruit

Final Report

Personnel and Location

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Cooperators: Three Commercial Washington Apple Packers, Wenatchee Washington

Trial Objective and Design:

To determine the efficacy of Bio-Save 10 LP and Thiabendazole for the management of blue mold (*Penicillium expansum*) and mucor rot naturally decayed artificially wounded red and golden delicious apples.

The goal of the following testing was to artificially injure pome fruit and store the fruit at a relatively higher than normal temperature to quickly promote as much decay as possible and look at the comparative effects of the treatments.

Apples were removed from CA storage and received one wound (injury) with an apple wounding tool (3mm wide, 4 mm deep). The wounded fruit were placed into mesh bags, 10 fruits per bag. Water was obtained from each of the packing houses from the Pre-sort bin fill tanks and placed into 5 gallon pails. Bio-Save treated water was obtained from the Bio-Save suspension tank and also placed into 5 gallon pails. The TBZ solutions were made by adding TBZ to the packing house bin filler water in 5 gallon pails. All of the water appeared to contain considerable debris. The replicates bags of fruit were immersed into the treatments for 15 seconds allowed to air dry for a few minutes. The fruit was boxed and shipped via UPS to Orlando for analysis.

This procedure was followed at three different apple pre-sort locations. Two of the apple varieties were red delicious, one sample was golden delicious.

Treatments: 1. Untreated 2: Bio-Save™ 10 LP 3. Thiabendazole

Results and Conclusions:

Bio-Save™ was very effective in controlling decay of blue mold and mucor rot. The Bio-Save™ had statistically less decay than the untreated treatment. There were statistical differences in the Bio-Save™ treated fruit verses the Thiabendazole treated fruit in packing houses A and C, although there was no significant difference in packing house B. There was also no significant difference in the Bio-Save ™dilution 1:100 verses 1:140. The following graphs indicate the percent decay based on the number of decayed fruit shown for packing houses A, B, and C. See following graphs.

In the packing house C test, of the 100% fruit decayed in the water treatment, 23 % decayed from Mucor rot. In the TBZ treatment 8.6% decay was from Mucor rot. The remaining decay was due to blue mold. There was no mucor rot found in the Bio-Save™ treatment.

DISEASE INCIDENCE OF APPLE FIELD TRIAL

% DISEASE INCIDENCE

	WATER	TBZ	BIO-SAVE™
Packing house A	17.8 **C**	8.3 **B**	0.0 **A**
Packing house B	42.5 **C**	0.0 **A**	5.3 **A**
Packing house C	100.0 **C**	19.3 **B**	0.0 **A**

Means followed by different letters are statistically different, i.e., **A** best results, **C** indicates worst results,. (Duncan's multiple range test, $p < 0.01$).