

Late Season Approaches to Vine Mealybug near Harvest in Table Grapes

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Vine mealybug is one of the most prolific pests of table grapes. Its exponential growth rate and affinity for feeding within clusters close to harvest make its management of highest priority for grape growers dealing with infested vineyards.

Traditionally, vine mealybug is managed with a combination post-harvest and or delayed-dormant Lorsban treatments in combination with in-season treatments of the growth regulator buprofezin (Applaud), and neonicotinoids such as Admire or Venom. However, in many cases these treatment programs do not suffice and additional contact insecticides are needed close to harvest to keep the clusters free of mealybugs.

Over the past few years, Lannate has been the product of choice for late-season insecticide treatments aimed at keeping clusters free of mealybugs. This has been due to its contact mode of action and ability to use the product close to harvest when PHIs for other products preclude their use.

In late May of 2008 we conducted an insecticide trial to evaluate the effectiveness of 1 lb of Lannate, as well as an alternative program of a tank mix of 2.5 oz of Assail 30SG and 12 oz of Applaud 70DF, on vine mealybug. The trial was located in a mature vineyard that was grafted over to the variety Summer Royal in 2006. A total of 0.4 acres was divided into 12 plots that were each 2 rows by 10 vines long, and that were each assigned in a randomized complete block design to one of the two treatments or an Untreated Check. Treatments were applied at 200 GPA on 20 May using an air-blast sprayer. Plots were evaluated prior to treatment, 3 days after treatment (DAT), 8 DAT and 17 DAT by doing timed searches on six or eight vines in the center of each plot. Searches were performed by stripping bark and counting all motile forms of vine mealybug that could be found within 3 minutes.

Results showed that Lannate and the Assail/Aplaud tank mix both caused significant reductions in the number of vine mealybugs per 3-minute search on all post-treatment evaluation dates. Comparisons of the two treatments to each other revealed no significant differences, with both knock-down and residual activity very similar.

There are, however, some additional considerations that growers and PCAs should make when interpreting this data for their own use. On one hand, efficacy of these treatments is likely overestimated because 1) bark stripping to the trunk during our pre-counts caused increased exposure of the mealybugs to the pesticides than would occur normally, and 2) vines were young and therefore had relatively small amounts of bark compared to mature vines. On the other hand, efficacy of these treatment programs is likely underestimated because 1) at our treatment timing most mealybugs were still under the bark and not as exposed as they would be when mealybugs get up on the leaves and enter the clusters, and 2) timed searches underestimate high mealybug populations. This means that vines with low populations might have every mealybug counted during the 3 minutes, whereas only a portion of the mealybugs can be counted in 3 minutes on a heavily infested vine.

In conclusion, both the Lannate and the Assail/Applaud treatments provided good knock-down of vine mealybug close to harvest. However, these treatments were far from perfect, and should only be utilized as a last resort. This is especially true due to the cost of the Assail/Applaud tank mix, as well as the ongoing regulatory scrutiny of Lannate residues that has the potential to cause table grapes to be removed from the label.

Table 1. Effects of insecticide treatments on vine mealybug density

Treatment	Rate form. prod. per ac	Mealybugs per 3-minute times search			
		Pre-counts	3 DAT	8 DAT	17 DAT
Lannate SP ¹	1 lb	124.7 a	53.1 a	4.1 a	41.5 a
Assail 30 SG+ Applaud 70DF ¹	2.5 oz + 12 oz	146.9 a	62.0 a	3.2 a	52.3 a
Untreated Check		156.3 a	93.6 a	39.5 b	108.9 b
<i>F</i>		1.37	1.60	9.12	8.31
<i>P</i>		0.3245	0.2776	0.0152	0.0187

¹ Latron B-1956 used as a surfactant at 0.0156% v/v

Means in a column followed by the same letter are not significantly different ($P > 0.05$, Fisher's protected LSD) after square root ($x + 0.5$) transformation of the data. Untransformed means are shown.