

**PEAS Emergency Addendum Standard Only for Vineyards Infested with Vine Mealybug (*Planococcus ficus*):**

**Introduction and background:**

Vine Mealybug is an exotic insect accidentally introduced to Southern California in 1994. It has been steadily moving up the state since then. Once introduced to an area, the sucking insect can reproduce rapidly and cause heavy damage to wine, table and raisin grapes.

Since its appearance in California, extensive testing of materials by the University of California has repeatedly shown that chlorpyrifos, an organophosphate material, is the most effective material against this pest. The current recommendation is to apply this material twice a year plus one treatment of another, lower impact pesticide, to combat the spread of the pest to other vineyards. Even one application of chlorpyrifos is enough to cause growers to be dropped from the current Lodi Rules/Protected Harvest program. An alternative to organophosphates and development of integrated pest management (IPM) techniques for battling this pest are required.

Once the mealybug is established in a vineyard and populations have been “knocked back” by the chlorpyrifos, growers can replace at least one chlorpyrifos treatment per year with a low-impact alternative such as a neonicotinoid or insect growth regulator insecticide after the first year or two. However, no currently registered alternatives perform well enough to replace chlorpyrifos completely. Pheromone disruption is available also, but works very poorly except at very low pest levels.

In order to drive the development of alternatives and techniques as quickly as possible, the Lodi Woodbridge Winegrape Commission (LWWC) and Protected Harvest have been investigating alternatives on several fronts:

- Literature searches have confirmed the available existing tools for fighting this pest.
- Existing relationships with researchers and Bayer have been tapped to identify what is in the development pipeline. Two materials have been identified for action, one of which, tentatively named “Movento”, has the potential to replace chlorpyrifos as the first line of defense.
- LWWC has agreed to host educational demonstration trials of Movento with Bayer staff starting this winter.
- Existing relationships with IR4 staff and California Department of Pesticide Regulation have been tapped to investigate applying for Section 18 registrations for Movento and speeding its regular registration.
- Protected Harvest and Lodi Woodbridge Winegrape Commission are investigating funding sources to research and implement IPM techniques to reduce pesticide alternatives.
- Perhaps most importantly, we propose amending the Lodi Rules standards to allow for an initial use of chlorpyrifos for a limited amount of time when vine mealybug appears in the vineyard. As time progresses, growers will be required to move to less and eventually no organophosphates. This will allow the Lodi Rules program to continue to build and recognize in the market the other IPM practices being utilized by growers, while using certification as a

tool to encourage adoption of vine mealybug IPM by participating growers on a progressive timeline.

Even without Protected Harvest's program, contacts and grower support efforts, it is certain that an IPM program would eventually be developed for vine mealybug. However, with our efforts it can happen much more quickly. All of the above activities have taken place in just 2 months time. Adoption of the new IPM will happen more rapidly through the certification program.

Vine mealybug appeared in the Lodi appellation in 2003. Despite efforts to reduce its spread, it has moved around the area more rapidly than expected. Two major vineyards had to be dropped from the program this year when their vineyards were found to be infested with the pest and chlorpyrifos was applied to combat it.

### **Changes to Lodi Rules Program**

#### Current Standard for all vineyards:

To qualify for certification, the PEAS environmental impact units (EIU's) for all pesticides used during the year (post harvest of current year to harvest of the following year) cannot exceed 50.

#### PEAS Emergency Addendum Standard Only for Vineyards Infested with Vine Mealybug (Planococcus ficus):

To qualify for certification, the PEAS EIUs for all pesticides used during the year cannot exceed 50 until the year when VMB has both been discovered in the vineyard and the grower initiates the University of California's pesticide protocol for VMB management. This year will be labeled Year 1. For Year 1 and Year 2, the PEAS EIUs for all the pesticides used during the year cannot exceed 625. In Year 3 and following, the PEAS EIUs for all the pesticides used during the year cannot exceed 350.

From Year 4 onward growers have to have a written VMB IPM plan. The Lodi Rules committee will bring a proposal to the board for the specifications of this plan by 2008.

By 2011 the Protect Harvest Board will revisit this Emergency Exemption Standard to address its efficacy and consider further reductions in the PEAS threshold based on available pest management tools.

### **Justification for the Addendum:**

#### *Why an Addendum Now?*

Vine Mealybug (VMB) is new to the Lodi region, being found for the first time in 2003. The female mealybugs are wingless so left to their own devices they will spread very slowly. However, VMB can be spread through contaminated vineyard equipment that moves from an infested vineyard to an un-infested one, on people, and on animals, such as birds. It turns out that VMB is spreading through the district faster than any of us expected, despite growers being

careful to clean their equipment before moving to a new vineyard. To complicate matters, it can be in the vineyard up to 2 years before it is found for the first time. It is already clear that enough vineyards will become infested with VMB that it will significantly reduce the number of vineyards that can be in the Lodi Rules program if an addendum is not approved. Just this year, Lange Twins Estates, who are new to the Lodi Rules program this year had to pull two vineyards out of the program half way through this year because they found VMB in them. Moreover, VMB was discovered this year in some of the prized Old Vine Zinfandel vineyards that have been in the Lodi Rules program since its inception. The wines from these vineyards will play a very significant role in the early days of the Lodi Rules program from a marketing perspective. If these vineyards have to be removed from the program the success of the Lodi Rules program will be seriously reduced.

#### *Allowing 625 EIU Threshold for Year 1*

Even though VMB is spreading faster than we thought it still makes sense in the early days of VMB in Lodi to slow the spread throughout the district. To minimize the chance of spread it is essential that VMB numbers in an infested vineyard be lowered to an undetectable level. The only efficacious protocol for doing this is, after the infestation has been found for the first time, using Lorsban (chlorpyrifos) post-harvest and then again delayed dormant the following spring. Then an in-season application of Applaud is used (an insect growth regulator pesticide). By reducing the rate of spread as much as possible, fewer vineyards will become infested in the short term, minimizing the amount of Lorsban used in the Lodi region. The 625 EIU PEAS threshold is based on Figure 1.

#### *Reducing EIU Threshold for Year 3 to 350*

The intensive use of Lorsban in Year 1 should reduce the VMB population to very low levels so that by Year 3 one treatment of Lorsban per season should be sufficient to maintain VMB in the vineyard at a very low level.

#### *Requiring a VMB IPM Management Plan in Year 4*

Strategies will be developed over the next 4 years that will allow Lodi growers to develop a VMB IPM management plan which can then be fully implemented by Year 4. The plan will entail 1) monitoring to ensure that VMB populations have not resurged, 2) an ant baiting program that reduces the ant populations which would otherwise interfere with VMB biological control agents, 3) confirmation that VMB parasites are in the vineyard, 4) parasite releases to establish them in vineyards without a population, 5) use of reduced risk pesticides with low PEAS EIU's for when VMB flares up. The ant baiting protocols do not exist at present and will be developed over the next 4 years in Lodi. The VMB parasite will be released in infested vineyards in Lodi over the next 4 years to establish local populations. The justification for requiring a written IPM plan is so growers do not simply rely on a reduced-risk pesticide spray program to manage VMB in their vineyards.

#### *Future reductions*

We want to encourage development of IPM and OP alternatives. Through our efforts, we have learned that Bayer Corporation just submitted to EPA and California DPR a registration package for a material with the trade name Movento that shows very promising efficacy on VMB. Initial research by the University of California shows that it may be as efficacious as Lorsban. It is a reduced risk pesticide in a new chemical class (tetronic acids). It is hoped that this material, like other reduced risk materials, will have a PEAS EIU of less than 10, though this is still unknown (Bayer has not yet released the information required to calculate it).

There is every indication that a good IPM program for VMB can be developed in Lodi. By 2011 (5 years after the first certified vineyards detected the pest), Protected Harvest and LWWC will review all available tools to explore further reductions in the EIU threshold. If an effective, low-risk material becomes available, it is conceivable that the EIU threshold can return to 50, even for vineyards with VMB.

**Figure 1**  
**A Year's EIU's for the Pesticides Used in a 'Typical' Lodi Rules Vineyard**  
**With Vine Mealybug in 2007**

Input Date	chemical name	rate	chemical units	Impact units
1/5/05	RoundUp Original	2.0	Pints	0.04
2/1/2005	Lorsban 4E-HF	4	pints	286.51
4/14/2005	Sulfur dust	16	lbs	2.46
4/26/2005	Sulfur dust	16	lbs	2.46
5/1/2005	Copper Sulphur Dust	10	lbs	0.89
5/2/2005	Sulfur dust	16	lbs	2.46
5/13/2005	Sulfur dust	16	lbs	2.46
5/21/2005	Sulfur dust	15	lbs	2.31
6/1/2005	Sulfur dust	16	lbs	2.46
6/1/2005	Applaud DF	0.75	lbs	0.09
6/10/2005	Sulfur dust	16	lbs	2.46
6/22/2005	Sulfur dust	16	lbs	2.46
6/30/2005	Flint	1.98	ozs	0.20
7/15/2005	RoundUp Original	1.5	pints	0.03
7/20/2005	Elite 45 WP	5.55	ozs	0.51
7/20/2005	Provado Solupak 75% WP	0.47	ozs	2.57
11/1/2005	Lorsban 4E-HF	4	pints	286.51
Total Impact Units				596.89

**Figure 2**  
**A Year's EIU's for the Pesticides Used in a 'Typical' Lodi Rules Vineyard**  
**With Vine Mealybug in 2010**

Input Date	chemical name	rate	chemical units	Impact units
1/5/06	RoundUp Original	2.0	Pints	0.04
4/14/2011	Sulfur dust	16	lbs	2.46
4/26/2011	Sulfur dust	16	lbs	2.46
5/1/2011	Copper Sulphur Dust	10	lbs	0.89
5/2/2011	Sulfur dust	16	lbs	2.46
5/13/2011	Sulfur dust	16	lbs	2.46
5/21/2011	Sulfur dust	15	lbs	2.31
6/1/2011	Sulfur dust	16	lbs	2.46
6/5/2011	Movento	?	oz	?
6/10/2011	Sulfur dust	16	lbs	2.46
6/22/2011	Sulfur dust	16	lbs	2.46
6/30/2011	Flint	1.98	ozs	0.20
7/15/2011	RoundUp Original	1.5	pints	0.03
7/20/2011	Provado Solupak 75% WP	0.47	ozs	2.57
7/20/2011	Elite 45 WP	5.55	ozs	0.51
Total Impact Units				33.76