

2018 Integrated Pest Management

Mealybug

No Tolerance Program



Leaf Roll - Mealybug “NO TOLERANCE” Program

Grapevine Leafroll Virus and its vector the Vine Mealybug in Monterey County Vineyards is of great concern. Like phylloxera 30 years ago, this issue could kill the long term viability of our industry and most certainly constrain our growth. The threat posed by Leafroll Virus is much greater to Monterey County than Pierce’s disease ever was. Contributions made by the collective of university experts have advanced our understanding of Leafroll and its vector. In doing so it is clear that in order to control the spread, it must be based on a concerted effort among growers rather than on individual accomplishments.

The underling document outlines a sustainable approach to the mitigation and control of Leafroll Virus. Utilization of technology based field scouting, trap monitoring program, IPM strategies, and localized coordination will collectively bring the spread of Leafroll into manageable containment.

1. **Field Scouting** will be performed at an equal interval frequency using the Mobile GPS based scouting app developed with HeavyConnect a local agricultural technology company. To maximize our results using this app we must implement the following:
 - a. Continuous Scout trainings, to ensure identification of pest at various stages
 - i. Identify individuals whom will perform scouting duties.
 - ii. Establish frequency and threshold – scouting protocols
 - iii. Develop SOP document for scouting app.
 - iv. Develop documents for identification of Vine Mealybug at various stages.
 - v. Educate on importance of location based scouting.
 - vi. Scouting portal to review weekly scouting records per site
 - vii. Maintain consistent reoccurring hands-on trainings.
 - viii. Localized data portal for access to scouting records.
2. **Monitoring Programs:**
 - a. Trap monitoring of vineyards starting in spring when male mealybug start to become active.
 - i. Frequent trap data updates – area wide or by “neighborhood watch groups”
 - ii. 1 trap per 20-40 acers on average depending on known presents of vector.
 - iii. Increase trap counts if nessacary.
 - b. Monitoring of mitigation methods and application efficacies.
 - i. Revolve around field scouting threshold numbers and depletions.
 - c. Implementation of near-bloom and pre-harvest season remote sensing of ranches to help identify potentially infected vineyards.
 - i. Ground verify potential areas of interest and sample for LRV.
 - d. Do other crops need to be monitored?
3. **Biological Controls:**
 - a. Integration of predatory insects can be beneficial long term.
 - i. Train scouts to identify common beneficial – “mealybug destroyer”
4. **Cultural Controls:**
 - a. Use of cover crop such as Vetch in area applicable.
 - b. Equipment Cleanliness Program (tractors, implements, spray rigs) are being washed every day after using them, to avoid the risk of introducing pest to new developments.
 - c. Development of equipment wash-down stations (easy build)

- d. *Consistent rouging program to identify vines that are expressing symptoms and remove.*
5. *Coordination of Timing and rates:*
 - a. *Timing (tractor and driver availability) Prioritize spraying and chemigation!!!*
 - b. *Move crews to different blocks if needed.*
 - c. *Maximize rates and spray volumes for better coverage.*
 - d. *Properly calibrate equipment, including nozzle adjustments.*
6. *Clean Vines:*
 - a. *Taking the time to visit the nurseries.*
 - b. *Ask for scouting records or establish scouting protocols.*
 - c. *Develop mealybug protocols for nurseries supplying vines for Monterey County Vineyards.*
 - d. *Ask a lot of questions.*
7. *Education:*
 - a. *Keep learning and educating those around us.*

Treatment Program – in accordance to CSWA AND SIP standards.

Dormancy

- Prior to bud break increased trap counts in conjunction with local chemical provider traps to better monitor for male mealybug. GPS based Mobile collection of the data for consumption into Geographic Information System Database.

Mating Disruption

- Relatively and depending on trap counts and or season progression additives starting near the 4th fungicide pass (Check Mate) mating disrupters will be added to tank mixes and continue the cycle every 4-5 weeks.
- Continuous monitoring of traps to review counts based on threshold of 30-40 male mealybugs.

10- 12" inch shoot: Drip Application

- **Admire Pro (Category 3)**
- **Active Ingredient:** 42.8 Imidacloprid
- **PHI:** 30 days
- **REI:** 12 hours
- **MOA:** IRAC 4A- Admire Pro is a member of the neonicotinoid chemical class.
- **Max Application:** 2
- **Rate:** (2) 7oz/a or (1) 14oz/a
- **Target/ Goal"** ADMIRE PRO SYSTEMIC PROTECTANT is a suspension concentrate (flowable) formulation, shake well prior to measuring/ mixing. The rate of admire pro systemic applied affects the length of the plant protection period. Use the higher rates when infestations occur later in crop development.

Bloom or 35-45 days after drip application (Foliar application)

- **Movento (Category 3)**
- **Active Ingredient:** Spirotetramat
- **PHI: 7 days**
- **REI: 24 hours**
- **MOA:** IRAC 23- Movento contains an active ingredient with a mode of action classified as a group 23, lipid biosynthesis inhibitor. Movento has a unique MOA that becomes active when ingested by insect pest that feed on plant.
- **Max Applications:** 2 per season
- **Rate:** 6 oz./ acre
- **Target/ Goal:** Movento is a systemic insecticide which targets immature stages and manages adult female mealybug, reducing fecundity and limiting the survival of their offspring which provides a more effective overall reduction of pest pressure. Some of the benefits of movento is its two- way movement. It moves up and down the plant to provide excellent pest control in dense canopies and up plants roots. It offers long lasting protection of new plant growth, and provides minimal risk to natural predators when use as directed.

30-45 days after 1st Movento application (Foliar application)

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Or

- **Sivanto (Category 3)**
- **Active ingredient:** flupyradifurone
- **PHI:** 0 days
- **REI: 24 hours**
- **MOA: IRAC: 4D** – its broad spectrum insecticide and a new class of chemical known butenllides and is a systemic product. This is a translaminar product.
- **Max Application:** 2 per season
- **Rate:** 12-14 oz/ acre
- **Target:** vine mealybugs, and leafhoppers