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## Attack of the Snails

Yet again a different growing season. We always farm for last year's conditions - and we are always wrong! Bloom is delayed this year -- I can see harvest being up to a month late.

A lot of rain sets up the chance of Powdery Mildew, but low temps through May have mitigated the pressure so far. Last year Micole Moore wrote a very good discussion of the powdery mildew index (PMI). I'm going to include that at the end- in full. As moderate and higher temps show up this week, the PMI will increase.

The persistent rains have also introduced new problems that we have not seen too often. Fast growth has seemed to exacerbate nutrition problems in some vineyards. New pests are showing up.

## Powdery Mildew Control

I hope you are spraying for Powdery Mildew continuously through the season. Each vineyard is more or less susceptible, but almost all may have an attack as the moisture/fog/rain conditions fluctuate throughout the year. If you wait 'til you see it, it's too late. It is always present in the atmosphere here. ROTATE TREATMENT - don't depend on only one product and build resistance!

## Snails

I've seen more snails in May than I've ever seen around the property. Snails love the protected environment of a grow tube. No birds, no wind, moist and lots of food trapped inside. They will completely devour all the leaves on a newly growing plant. If there is a larger plant, they will crawl up during the night and munch on leaves around the cordon.

Inspect your grow tubes and remove the snails. Humanely if you want ... or not. Also, if there are not snails, there may be a black widow spider! Never put your hand into a grow tube with out lifting it off the ground and inspecting it.

## Insect Control

Don't forget to include Dipel to each acre's spray program. Dipel stops the very youngest Western Grapeleaf Skeletonizer caterpillars before they can start their destruction. Watch for the early signs of 1st & 2nd instar feeding and look for the butterflies fluttering around the vineyard. The 3rd instar starts to get the stripes and poisonous hairs, they are too big for Dipel and voracious, don't let them get going. Rich McClellan reports that a double dose (1 pound per acre) of Dipel is effective on cut worms.

## Sunshine

Most of the work in June is aimed at getting the right amount of sunshine onto your grape clusters and onto the leaves. A couple of rules: it takes 10 - 15 leaves to ripen a cluster of grapes, grape clusters need dappled sunshine to develop the best flavors. Here in Ramona we are lucky to have great sunshine most days of the summer, especially during ripening season from late June through harvest. We are farther south than all the European wine regions and we have altitude. Both factors make it most unlikely that we need to do leaf thinning around our clusters. I only do leaf thinning in a couple of small areas where the vines get uncontrolled water from nearby nursery rows or landscaping runoff. This time of year you want to avoid "California Sprawl" that is common for table grapes in the Central Valley. Here are pictures of the same rows of Cabernet that have been thinned and trained for sunshine control. I will probably be tending more towards the "before" image this year! As usual, I'll farm for last year's conditions! And I'll probably be wrong.



## Micole Moore on the PMI

**Powdery Mildew Index (PMI).** Once initial infection occurs, ideal temperatures for growth of the fungus are between 70° and 85°F. Temperatures above 95°F for 12 continuous hours or longer cause the fungus to stop growing. The powdery mildew index assesses the risk of disease development by relating it to air temperature and tells you how often you need to spray to protect the vines. When using the powdery mildew index, always monitor the vineyard for signs of the disease. If evidence of the disease is not recent, don't treat. You may monitor temperatures in your own vineyard and calculate the PMI using the rules below, or you may use weather equipment that has the UC Davis PMI built into its software

Initiating the index. After you find powdery mildew, an epidemic will begin when there are 3 consecutive days with 6 or more continuous hours of temperatures between 70° and 85°F as measured in the vine canopy.

1. Starting with the index at 0 on the first day, add 20 points for each day with 6 or more continuous hours of temperatures between 70° and 85°F.
2. Until the index reaches 60, if a day has fewer than 6 continuous hours of temperatures between 70° and 85°F, reset the index to 0 and continue.
3. If the index reaches 60, an epidemic is under way. Begin using the spray-timing phase of the index.

*Spray timing.* Each day, starting on the day after the index reached 60 points during the start phase, evaluate the temperatures and adjust the previous day's index according to the rules below. Keep a running tabulation throughout the season. In assigning points, note the following:

- \* If the index is already at 100, you can't add points.
  - \* If the index is already at 0, you can't subtract points.
  - \* You can't add more than 20 points a day.
  - \* You can't subtract more than 10 points a day.
1. If fewer than 6 continuous hours of temperatures between 70° and 85°F occurred, subtract 10 points.
  2. If 6 or more continuous hours of temperatures between 70° and 85°F occurred, add 20 points.
  3. If temperatures reached 95°F for more than 15 minutes, subtract 10 points.
  4. If there are 6 or more continuous hours with temperatures between 70° and 85°F AND the temperature rises to or above 95°F for at least 15 minutes, add 10 points. (This is the equivalent of combining points 2 and 3 above.)

Use the index to determine disease pressure and how often you need to spray to protect the vines. Spray intervals can be shortened or lengthened depending on disease pressure, as indicated in the table below.

### SPRAY INTERVALS BASED ON DISEASE PRESSURE USING THE POWDERY MILDEW INDEX

Index	Disease pressure	Pathogen status	Suggested spray schedule			
			Biologicals <sup>1</sup> and SARs <sup>2</sup>	Sulfur	Sterol-inhibitors <sup>3</sup>	Strobilurins <sup>4</sup>
0-30	low	present	7- to 14-day interval	14- to 21-day interval	21-day interval or label interval	21-day interval or label interval
30-50	intermediate	reproduces every 15 days	7-day interval	10- to 17-day interval	21-day interval	21-day interval
60 or above	high	reproduces every 5 days	use not recommended	7-day interval	10- to 14-day interval	14-day interval

<sup>1</sup> *Bacillus pumilis* (Sonata) and *Bacillus subtilis* (Serenade)

<sup>2</sup> SAR = Systemic acquired resistance products (AuxiGro, Messenger)

<sup>3</sup> tebuconazole (Elite), triflumizole (Procure), myclobutanil (Rally), fenarimol (Rubigan), and triadimefon (Bayleton)

<sup>4</sup> methyl (Sovran), and pyraclostrobin/boscalid (Pristine)

### RESISTANCE MANAGEMENT

Alternating fungicides with different modes of action is essential to prevent pathogen populations from developing resistance to fungicides. This resistance management strategy should not include alternating or tank mixing with products to which resistance has already developed. Do not apply more than two sequential sprays of a fungicide before alternating with a fungicide that has a different mode of action.