Economic Impact of Short Shoot in Oregon Vineyards

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Outline

Introduction to mites and damage

Seasonal symptoms:
- Winter
- Spring
- Summer
- Autumn

Sustainable control

Current trials & control

Conclusions
Mite ID: Mites attacking vines

Eriophyid mites

Spider mites
Two types of mites

Main difference in winter biology:

- Mites found inside buds
- Mites found on other plant parts during winter
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Budmite symptomology
Vine bud mite: summer symptoms

The bites on the young leaves induce spatially separated swellings (nodes) covered on their lower side with a very dense white or pink and later brown coating.
Vine rust mite biology

- Winter females generally near the buds
- In spring, females feed on bud tissue
- Between 8 and 12 leaves they migrate to the underside of the leaves until October-November.
- Some migrate towards the new young buds.

Winter, before pruning

Winter, after pruning

Spring and summer
Fig. 7. Estimated number of generations of *Calipitrimerus vitis* on time during 2006 in Oregon.
When to act
Seasonal Symptoms: Winter & early spring
Rust mites on early spring shoots
Seasonal Symptoms: Spring
Early season symptoms
Spring monitoring
Mite infestations & shoot length
Seasonal Symptoms: Spring

Fig. 2b. Mean rust mite incidence on shoot length category on April 28, 2006 in three blocks in Sherwood, Oregon. Short shoots were 1 to 3, medium were 4 to 7 and long shoots were 8 to 20 millimeters in length respectively.
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Seasonal symptoms: Summer
Eriophyiid mite:
Early summer symptoms

Thin flattened and zig-zag shoot growth

Photo, M. Bernard
Seasonal dispersal
Shoot samples & correlate infestations with damage
Mite infestation & damage
Seasonal symptoms: Summer

Drawstring and cupped leaves
Increasing symptoms as season progresses
Fig. 3b. Percent crop damage on date in Block 1 and blocks 2 & 3 in Dundee, Oregon during 2006. Wilks lambda=.23408, F(8, 98)=13.069, p=.00000
Seasonal symptoms: Late Summer
Seasonal symptoms: Summer

Fig. Percent crop loss per shoot number in three blocks in Dundee. Block 1, 2 and 3 had mean seasonal rust mite incidences of 1475.5 (SEM, +508.8), Block #2 663.3 (SEM, +262.6) and Block 3 207.56 (SEM, +124.82) per row.
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Seasonal symptoms: Late Summer

Bronzing visible on leaves in early morning during late summer and autumn
Seasonal symptoms: Late Summer

- Bronzing visible on leaves in early morning during late summer and autumn.
Seasonal symptoms: Late Summer

Late summer, bronzing patches
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Log mites per 25 leaves on date on a conventional farm during 2006 in two vineyards of Pinot Noir Grapes in Dundee, Oregon. Black arrows indicate sulphur sprays and arrows with diamonds synthetic fungicide sprays.

Sustainable control
Sustainable control

- Willamette mites
- Pheidoseiid mites

Log mites per 25 leaves on date in an organic farm during 2006 in two vineyards of Pinot Gris Grapes in Corvallis, Oregon. Black arrows indicate sulphur sprays.
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