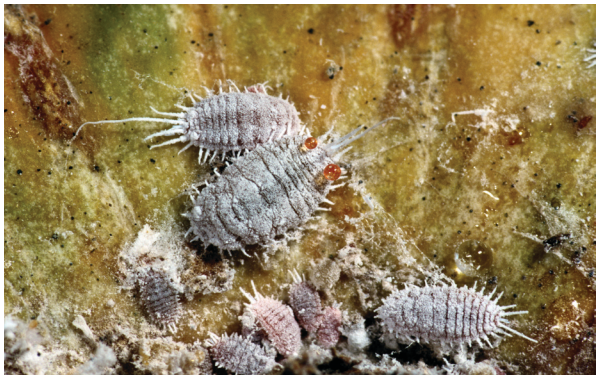
Mealybugs



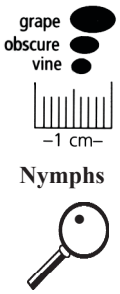
Grape Mealybug
Pseudococcus maritimus
When poked with a sharp object it excretes a pink to red ball of fluid

Obscure Mealybug
Pseudococcus viburni
When poked with a sharp object it excretes a clear to yellow ball of fluid

Vine Mealybug
Planococcus ficus
Adults have short caudal filaments

Mealybug Adult with Ovisac
Female vine mealybug with eggs inside an ovisac

Mealybug Crawlers
The three mealybug species are indistinguishable at the crawler or immature stages



Vine Mealybug Infestation
Adults and immatures tended by ants

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Mealybugs

Mealybugs feed on the phloem and excrete a sugary solution called honeydew. Honeydew can be seen as shiny, sticky areas on leaves, clusters and trunks. Sooty mold grows on the honeydew giving surfaces a black-greenish appearance. A wet trunk is an indication that a colony of mealybugs is feeding under the bark and honeydew is seeping through the bark. Ants tend the mealybugs to obtain honeydew. The amount of honeydew visible on a vine depends on the mealybug species and the number of ants tending the colonies. Mealybugs may be present if honeydew, sooty mold, wet trunks or ants are seen on vines.

Grape Obscure and Vine Mealybug Seasonal Lifecycle

	Grape Mealybug *(Pseudococcus maritimus)*	Obscure Mealybug *(Pseudococcus viburni)*	Vine Mealybug *(Planococcus ficus)*
Number of Generations	• Two generations per year: overwintering and summer	• Two to three overlapping generations per year	• Three to four overlapping generations per year in Northern California and up to 6 generations in the San Joaquin Valley. • All life stages may be present year-round on a vine.
Honeydew production	• Moderate	• Moderate to high	• High
Winter	• Overwinter as eggs or as first or second instar nymphs in or near white, cottony egg sac under loose bark on above-ground parts of the vine. • Young instar nymphs tend to be near spurs.	• Overwinter as eggs inside cottony egg sac and nymphs under loose bark on the above-ground parts of the vine. • Most individuals are found under the bark on the upper portion of the trunk or on the cordon.	• Overwinter primarily as nymphs and mated females under loose bark at the graft union, in old pruning wounds on the trunk and below the base of the spurs. • Most individuals are found under the bark at the graft union.
Spring	• As temperatures warm, young nymphs move towards the base of spurs, then onto new shoots. • Overwintering brood develops through 4 nymphal stages reaching maturity in late May and June.	• As temperatures warm, nymphs move onto new shoots. The greatest portion of the population remains hidden under the bark.	• As temperatures warm, the nymphs develop into adults, mate and lay eggs where they overwintered. • After egg hatch, crawlers move up the trunk and can be found below bark on the trunks, cordons and at the base of spurs. • By late spring, nymphs can also be found on basal leaves. • Nymphs develop into adults, mate and lay eggs.
Summer	• Most females return to old wood to lay eggs that hatch from June to early July. • Summer generation young nymphs move to shoots and also to fruit and foliage that is touching old wood. • Some females maturing in late August and September lay their eggs on the fruit. The majority of females return to lay eggs on the old wood.	• Populations may increase dramatically. All stages are found under loose bark on trunks, cordons and below the base of spurs. Individuals will be on the basal portions of the shoots and leaves in the fruit zone as well as on clusters that touch older wood.	• Populations increase dramatically. • All stages are found on canes, clusters, leaves and petioles well above the fruit as well as under the bark on trunks, cordons and spurs. • Females lay eggs on all above-ground parts of the vine. Of these three species, only vine mealybug lays eggs on leaves above the fruit zone.
Fall	• Most females return to old wood to lay overwintering eggs.	• Nymphs migrate under the bark to trunk and cordons.	• Starting in November populations decline and nymphs migrate to the lower trunk. In light soils they can be found on the roots.