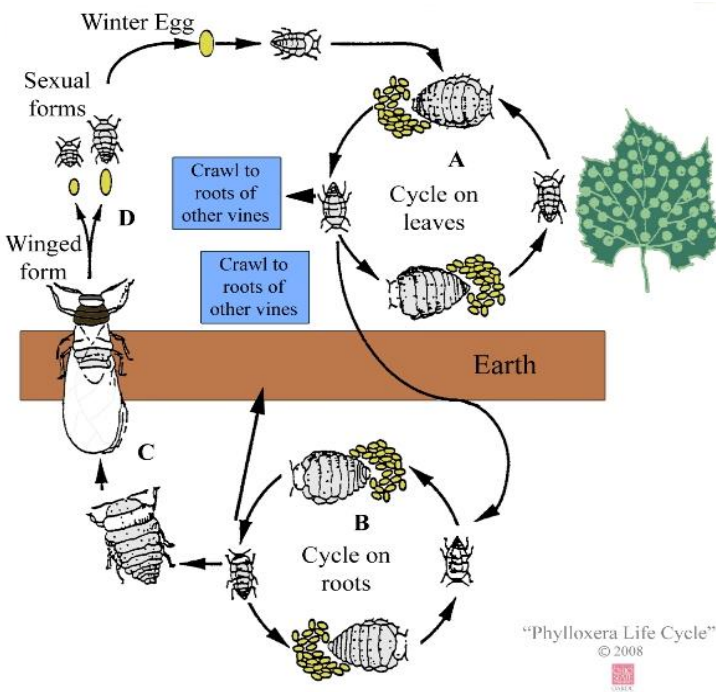


Grape Phylloxera, *Daktulosphaira vitifoliae* (Fitch)

Description and Life Cycle

Phylloxera is one of the most destructive grape pests worldwide. This small aphid-like insect has a complex life cycle that involves survival on the roots throughout the year and on the leaves during the growing season. The sequence of events in the life cycle is different for the foliar and root forms of this insect. The foliar form survives the winter as an egg under the bark of the grapevine. Asexual, wingless forms hatch in the spring and crawl onto the new leaves, where they develop galls. Young crawlers settle on the upper surface of immature leaves, causing galls to form on the under surface of the leaves. The only opening in a gall is to the upper leaf surface. Once mature, the female begins to lay eggs within a gall. Nymphs hatching from these eggs crawl to new leaves at shoot tips, settle on the leaves, and form new galls (Fig. 1A).

In the case of the root form of grape phylloxera, the insects overwinter as immature forms on the roots. These forms mature in the spring and produce eggs that hatch into nymphs. The nymphs then start new galls on the roots (Fig. 1B). Winged forms develop in the spring, summer or fall and emerge from the soil to lay eggs on stems (Fig. 1C). These eggs hatch and produce the true sexual forms that produce the overwintering eggs laid under the bark (Fig. 1D). Several generations of each form of phylloxera may occur each season. Although the two forms behave differently, both belong to the same species of phylloxera that occurs on the leaves and roots of grapes.



The insect forms galls on the leaves and roots of grapevines. The vine will die if its roots become heavily infested with phylloxera. If leaves become heavily infested, premature defoliation and retarded shoot growth may result.

Figure 1. Grape Phylloxera Life Cycle



*Fig. 2: (Left)
Phylloxera galls causing
leaves to curl and (Right)
Phylloxera infested leaves*

Management and Cultural Control

While rare, phylloxera damage can significantly harm large areas of vineyards. Insecticides can be used with much success against this insect when applied at the appropriate time. Please see the Midwest Fruit Spray Guide for insecticide options. Currently the only successful non-insecticidal option is the application of resistant rootstocks. Resistant rootstocks have been used with much success in California and are organically acceptable. It is important to note, however, that once visible phylloxera is nearly impossible to eradicate. Any control measures must be implemented before emergence.

Since Native [American] grapes tend to have a resistance to grape phylloxera, they do not need to be monitored specifically. French hybrid grapes and vinifera however, are very susceptible to phylloxera and must be monitored and controlled.

There are few natural predators, including the Multi-colored Asian Lady Beetle, which feed on phylloxera. They should not be heavily relied on though due to their unpredictability.