HILL COUNTRY MASTER GARDENERS

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INSECT VECTORS

An insect vector (from the Latin for "carrier") is an insect capable of transmitting a pathogen either from plant to plant or in the case of mosquitoes, ticks, fleas etc.; from insect to mammal. Generally, insect-vectored diseases that infect people or pets need to complete their life cycle inside the insect first before it can be transmitted. Therefore it is not likely that an insect can spread disease directly from person to person.

Below are some common insect plant vectors and their corresponding diseases:

Aphids	150 plant viruses	Especially mosaic viruses
Beetles (esp. Bark Beetles)	Many plant viruses	Dutch Elm disease; Chestnut blight
Flies (apple & cabbage maggots)		Bacterial rot of fruit
Leafhoppers	80+ pathogens	Viruses (esp. Pierce's disease of grapes & aster yellows
Thrips	Many	bacterial, viral and fungal (Tomato spotted wilt virus)
Whiteflies	20+ viruses	Especially yellow mosaic & leaf curl

The transmission of a pathogen takes place either through the piercing-sucking mouth parts or just from their six dirty little feet tracking from plant to plant. This is the case with the *nitidulid beetle* that feeds on the fungal mats of oak wilt stricken trees. The pathogen is picked up on their bodies and spread as they fly to other oaks. (See photos below)

Even beneficial insects are capable of vectoring diseases from plant to plant. Our beloved honey bees can transmit fire blight of apples, pears, and other woody ornamentals simply by collecting pollen.

Unfortunately, there is not much that can be done once a plant is infected with these types of pathogens. With oak wilt and other viral, bacterial or fungal plant diseases about all you can do is replant with disease resistant varieties. Removal of weeds that may be harboring insects or use of crop rotation, if space allows, may also help.

Nitidulid beetle that feeds on the fungal mats of oak wilt stricken trees

Left: Crack in bark caused by fungal mat

Right: Oak wilt fungal mat under the bark of a red oak tree.

Photos courtesy US Forest Service