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NEWS RELEASE

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Plant Parasitic Mistletoes

Mistletoes are parasitic plants affecting many trees in Kern County. Some management options are available, but are often labor intensive. A growth regulator has been registered for mistletoe control and may be useful in some situations.

Leafy mistletoe, *Phoradendron spp.*, is found in shade trees on the San Joaquin Valley floor, such as ash and maple, and in native oaks throughout Sierra foothill rangeland. In winter, clumps of mistletoe in deciduous trees become obvious as dark green clusters silhouetted against the sky. Stomata of leafy mistletoe remain open at lower water potentials than the stomata of host trees, contributing to drought stress during summer. Leafy mistletoe reduces the vigor of the host trees, and heavy mistletoe infestation apparently contributes to tree mortality of native oaks.

Leafy mistletoe spreads by seeds which mature in autumn. The sticky seeds are contained within the white berries borne on female plants, and are readily distributed by birds. If the seed lands on a suitable host plant, it produces rootlike structures called haustoria. These penetrate the tree bark and extract water and minerals. Later, green shoots of mistletoe emerge, flower, and in the case of female plants, produce berries. (The leafy mistletoe used in holiday decorations is *Viscum album*, a European plant which was introduced and is harvested in some northern California locations, but is not found in the southern San Joaquin Valley.)

In the higher foothills and mountains, dwarf mistletoe occurs. Dwarf mistletoe, *Arceuthobium spp.*, is not as obvious as the leafy type, but is more injurious to susceptible trees. Found on digger pines and other forest conifers, this mistletoe causes limb dieback and often tree death. Dwarf mistletoe shoots are golden to yellow-green, resembling the scaly leaves of a juniper, erupting from swollen areas of branches and trunks. Seeds of dwarf mistletoe can be propelled up to 50 feet from the plant by an ejection mechanism. Birds are

not as important as vectors of dwarf mistletoe, but can spread seeds to the tops of trees. Once a mistletoe plant develops high in the crown, susceptible understory trees will likely be infested.

The most effective method of mistletoe control remains pruning to remove infested branches. When pruning, be sure to cut a foot or two below the clump because mistletoe haustoria grow some distance within the branch. Cut to a lateral branch or remove the branch entirely rather than leaving a stub. Cutting only the mistletoe will give temporary control since shoots usually begin to reappear after nine to twelve months. If a tree is filled with mistletoe, it may be best to remove the whole tree, preventing spread to surrounding trees in the forest. There are other strategies for management in forested land where number and size of trees make individual attention difficult.

Ethephon is a chemical which releases ethylene, a naturally occurring plant growth regulator. It has been registered for dwarf mistletoe control in conifers and for leafy mistletoe control in deciduous trees. Dr. Ralph Phillips, Extension Livestock and Range Advisor, and I first evaluated this material in 1990 for use in rangeland oaks. Berry drop was complete following application, and we also noted mistletoe cluster thinning and some leaf drop at the low rates we tested. However, the ethephon did not completely remove entire mistletoe clusters. In 1992, we applied higher rates to another set of infested oaks. Cluster-thinning was more extensive but some phytotoxicity was observed in the spring as foliage began to emerge. Ethylene apparently affected dormant buds causing foliage to be sparse on trees treated at the highest rates, which were considerably higher than those presently specified on the label. Results from other studies conducted in northern California have been more encouraging, indicating effective control of leafy mistletoe in shade trees at label rates.

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