Helpline Hot Topic for December 2019

Mistletoe – Myth and Reality

By Cynthia Zimmerman

"Mistletoe, the same plant you kiss under at holiday time, may be an effective aid against certain types of cancer." -- *Chris Kilham founder of Medicine Hunter, Inc.*

The public in general thinks of mistletoe in two ways: part of holiday décor and tradition and/or a big ball of ugliness hanging in a tree. In reality mistletoe is a rather fascinating plant that may be both blessing and curse. As Master Gardeners we recognize it as a hemiparasite or partial parasite. It grows on the branches or trunks of trees, sending root-like organs called haustoria into the cambium of the tree, and gaining sustenance from the tree's carbohydrates and moisture even though it has chlorophyll and can produce its own food by photosynthesis.

Traditionally, European lore indicates that from the earliest of times mistletoe was considered a magical, mystical, and sacred plant. Druid and other pre-Christian traditions dictated decorating the home with mistletoe by gathering it at the mid-summer and winter solstices. In the Middle Ages it was hung from the rafters to ward off evil spirits and hung over the doors to prevent the entrance of witches. In Scandinavia enemies could declare truce or warring spouses kiss and make-up under this plant of peace. By the eighteenth-century the mistletoe kissing ball came on the scene. A young lady standing under the mistletoe could not refuse a kiss; if no kiss came she could not expect to marry during the coming year. Today's fun of kissing under the mistletoe undoubtedly comes from this last tradition.

Horticulturally speaking, in California there are actually two types of mistletoe – broadleaf and dwarf. What we typically think of as mistletoe attacks broadleaf trees such as oaks and some conifers. In Fresno the Modesto ash trees, so widely planted 50 years ago, are highly susceptible. This mistletoe has thick green stems, oval-shaped leaves with sticky white berries in the fall. Birds are usually the cause of the dispersion of this type of mistletoe

The second type is dwarf mistletoe which attacks conifers. It is a smaller plant with short stems and scaly yellow to orange leaves that resemble a juniper. This type of mistletoe develops seeds in summer to late fall and literally ejects its seeds up to 50 feet. The dwarf mistletoe tends to be more damaging causing witches' brooms on the conifers.

A small amount of mistletoe in a healthy tree can be tolerated but a severe infestation can weaken the tree, stunt it, and even cause it to die. If a tree is stressed due such conditions as insect infestation or drought, the symptoms from mistletoe can become much more serious. Over the past few years, I've noticed many of the trees in and around Fresno that are struggling from past years of drought also are filled with mistletoe, which additionally reduces their vigor and causes dead branches. Heavily infested trees with dead and dying limbs can be a significant fire danger, particularly in wildfire prone areas.

Controlling mistletoe is not as easy as just surface removal from the tree. This type of effort can help reduce the spread but it will return. In order to get rid of it you must remove the infested branches at least 1 foot below the point of attachment. If removing a major limb would seriously disfigure the tree, then the mistletoe can be pruned off and the infested area wrapped with sturdy black polyethylene plastic and secured with twine or tape so that no light can get to the area. The plastic needs to remain for up to two years until the mistletoe dies. This method may require rewrapping the area as the plastic deteriorates. When trees are so infested that pruning is not an option, the only recourse is removal of the trees. There are chemicals called plant regulators that will temporarily remove mistletoe, but they are not long-term controls.

There are some other interesting facts about mistletoe you might not know:

- Worldwide there are more than 1,300 mistletoe species; 30 in the continental U.S. and Canada and six in Hawaii
- Mistletoe got its name from the fact that birds spread it through their droppings. In Anglo-Saxon "mistel" means "dung" and "tan" means "twig," hence, "dung-on-a-twig."
- Forests infested by mistletoe may produce three times more cavity-nesting birds than non-infested forests due to the large number of dead and dying trees.
- Some birds including spotted owls and Cooper's hawks, and several tree squirrels actually nest in witches' brooms.
- Butterflies (the great purple hairstreak, the thicket hairstreak, and the Johnson's hairstreak) lay their eggs on mistletoe and their young eat the leaves with adults feeding on the mistletoe nectar.
- The white berries provide food in winter for some birds, deer, elk, squirrels, chipmunks and porcupines.
- Mistletoe is considered toxic but its toxicity is mild and should not cause serious illness unless great amounts are consumed. It's still a good idea to keep it away from small children and pets.

Currently clinical mistletoe trials are being conducted at the Johns Hopkins Sidney Kimmel Comprehensive Cancer Center. Recently in Europe, mistletoe extract is being used to combat colon cancer and showing signs of being more effective against cancer and less toxic to humans than standard chemotherapy. Basic research shows that mistletoe extracts may stimulate the immune system to fight cancer. According to Memorial Sloan Kettering Cancer Center mistletoe therapy may improve symptoms and quality of life for cancer patients, but definitive information is still lacking.

There just might be something to the idea that mistletoe is a magical plant.