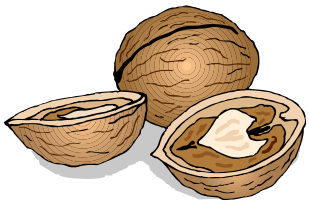
University *of* California
Agriculture and Natural Resources
Cooperative Extension



WALNUT NEWS

STANISLAUS COUNTY FEBRUARY 2012

San Joaquin, Stanislaus, Merced and Contra Costa Counties

Quad-County Walnut Institute

Thursday, February 16, 2012

1:00 pm - 4:30 pm

Evelyn Costa Assembly Room
San Joaquin County Agricultural Center
2101 E. Earhart Avenue, Stockton, California 95206

1:00 **Reports of Walnut Research Trials in San Joaquin County**
Be on the Look-out for Thousand Canker Disease
Joe Grant, UCCE Farm Advisor, San Joaquin County

1:40 **The State of the Walnut Industry 2012**
Dennis Balint, Executive Director/CEO, Carl Eidsath, Technical Support Director, Jennifer Olmstead, Marketing Director-Domestic, California Walnut Board & California Walnut Commission

2:10 **Update on the Forde, Gillet and Sexton Varieties**
Impact of Botryosphaeria Disease in 2011
Kathy Anderson, UCCE Farm Advisor, Stanislaus County

2:40 Break

3:00 **Causes and Corrections for Walnut Quality Problems**
Dr. Bruce Lampinen, Walnut and Almond Orchard Systems Specialist, UC Davis

3:30 **Steps to Overcoming Nematode Problems in Walnut Replant Situations**
Dr. Mike McKenry, Nematology Specialist, UC Kearney Ag Center

4:00 **The Role of Biocontrol in Walnut Production**
Dr. Nick Mills, Professor Entomologist AES, UC Berkeley

1.5 hours continuing education credit available

Orchard Compaction: A Pressing Problem. A compacted "plow pan" layer often forms about 8 to 10 inches below the surface in both mowed and tilled orchards. This is a widespread problem in orchards regardless of soil type. Growers are often unaware of its presence and impact. In some cases, no-till orchards haven't been ripped for decades. A greater understanding of soils and the effect of compaction on tree growth and yield will help in developing approaches to minimize the problem and increase productivity.

Soils are complex mixtures of mineral particles that vary in both size (sand, silt, clay) and arrangement. Soil texture refers to the proportion of sand, silt and clay in a soil. Soil structure means how the particles are arranged; it largely determines the amount of pore space, the spaces between the particles, in the soil. Pores are an important part of healthy soils for several reasons. They affect water intake and movement through the profile, the amount of water a soil can hold for use by the tree, and drainage below the root zone. Soil water content increases above compacted layers and may create conditions that encourage root and crown diseases. Compacted soils are more subject to runoff and erosion. I have seen a number of orchards where the ground was wet in the top few inches but water never reached the roots. Compaction also affects air exchange between the soil and the atmosphere. Did you know that roots need to "breathe"? Roots and the beneficial microorganism that live in the soil need to take in oxygen and release carbon dioxide. Microorganisms fix nitrogen from the air and help break down organic matter which releases nutrients to the tree. These are important points to keep in mind because cultural practices have a direct impact on soil quality and sustaining tree health.

Soil becomes compacted primarily because of the pressure applied by the weight of orchard equipment. It compresses the soil particles together causing the soil to be denser with less pore space. It is more difficult for roots to push through dense soil and so root growth can be reduced. The best strategy to minimize compaction is to prevent it from occurring in the first place. The risk for compaction is greatest when soils are wet. Driving on wet soils is the single biggest cause of compaction. A dry soil is much more resistant to compaction than a moist or wet soil. Sandy soils are particularly susceptible to compaction as the weight of equipment can cause the sand grains to interlock. Soils with high organic matter are also less susceptible to compaction.

Test for compaction by probing the soil with a pointed metal rod, bucket auger, soil tube or shovel. It is more easily done on a somewhat moist soil. Apply even pressure and push the probe into the soil. Compaction is the resistance found about 8 to 10 inches below the soil.

The following approaches will help minimize compaction.

- Avoid driving or using equipment in the orchard when the soil is wet
- Plan ahead and reduce the number of trips across the orchard
- Increase organic matter in the soil with cover crops or by adding amendments.
- Incorporate wood chips with an orchard tiller after shredding.
- Select tires that distribute equipment weight over a larger area.
- Use industrial type tires with wider lugs to better distribute weight.
- Use low compaction tires (turf or balloon tires) or tracks
- Use the low/correct inflation pressure for radial ply tires. This information is available from equipment dealers.
- Use the same wheel tracks in the drive row.

Alleviate compacted layers by ripping or chiseling when the soil is dry as it is in many orchards at this time. A shank depth capability below the compacted area is necessary. Curved shanks require less draft than straight shanks to loosen the same amount of soil. Space the shanks no further apart than the depth of ripping and cover the width of the middle to within a few feet of the trunks to avoid injury to larger roots. A single shank down the middle is of limited value. Do not worry about injuring smaller roots; root pruning actually stimulates root growth in much the same way that heading cuts in the canopy promote new shoot development.

Tree Planting. Suitable ground preparation, healthy planting stock and proper planting are critical factors in successfully establishing a productive orchard. It is fairly common to see improperly planted walnut trees that lack vigor and require two years to establish a trunk. In the worst cases, tree growth is adversely affected for the life of the orchard. Get walnut trees off to a good start by paying attention to details and following these planting guidelines.

- Keep tree roots shaded and moist, but not saturated, before and during the planting process. Keep tree roots protected before and during planting, as contact with the dry air can damage them.
- Planting on a mound or berm allows water to drain away from the crown area.
- Avoid digging with an auger when the ground is too wet because the sides of the hole will glaze or seal and restrict both water movement and root growth. Break down the sides of the augered hole before planting.
- Do not dig holes or set out trees more than a few spaces ahead of the planting crew.
- Dig holes just large enough to accommodate all the roots easily without crowding and bending. Do not prune healthy roots to fit the tree in the hole as this decreases the amount of stored food available for tree growth. Remove damaged roots.
- Plant the tree at the depth it grew in the nursery.
- Use an antagonistic bacteria spray to prevent crown gall, especially when planting Paradox rootstock.
- Do not add fertilizer to the hole as the tree contains enough nutrients for root and initial shoot growth.
- Spread the roots and partially fill the hole with loose, seedbed moist soil. Firm the soil under and around the roots by hand to get the good root-soil contact needed for strong growth. Repeat until the tree hole is filled.
- Tank in the trees within a few hours after planting. Use just enough water to settle the soil around the roots and eliminate air pockets. Do not water again until the trees are growing well.
- Balance out root losses by heading trees back at 12 to 16 inches above the graft union at, or soon after, planting leaving four to six healthy buds. Trees that are not cut back will have poor shoot and trunk growth.
- After planting, pull up any trees that have settled and tamp the soil around the tree.
- Paint the trees with a white interior water-base latex paint down to ground level to protect against sunburn before temperatures become warm enough to cause injury.
- Place stakes about 12” to 18” away from the trunk and loosely tie the tree during the growing season. This allows the tree to move in the wind resulting in a larger trunk diameter. In addition, scaffold limbs and trunks will not be damaged by rubbing against the stake.

Scale pests. Examine scaffolds, limbs, branches and prunings for walnut scale, San Jose scale, frosted scale, Italian pear scale and European fruit lecanium scale. Look for evidence of parasitization as characterized by emergence holes in the body of the dead, mature scale. A high level of parasitization may keep populations down, thus eliminating the need for treatment.

Walnut scale covers are tan-gray and often found in daisy-shaped clusters. Removing the scale cover reveals a yellow body with indented margins. Natural enemies usually can be relied on to keep walnut scale from causing damage. If scales are present but a high degree of parasitization is observed, treatments will not be needed. San Jose scale overwinters in the black cap stage. In late January, they resume growth and later resemble walnut scale without the indented margins on the body. If you find 5 or more black caps per foot of last year’s wood and less than 90% parasitism, treatment is warranted. Frosted scale overwinters as brownish, flat nymphs on twigs and small branches. The adult scale cover is shiny brown and about 0.25 inch in diameter with several ridges across the back. If you find 5 or more nymphs per foot of last year's wood throughout the orchard and less than 90% parasitized nymphs, treatment is warranted. The European fruit lecanium scale has essentially the same life cycle. The immature stages closely resemble those of the frosted scale, but the adults do not form the thick, frostlike cover in spring. Instead, the cover is domed, shiny brown, and about 0.25 inch (6 mm) in diameter with several ridges along the back. If you find 5 or more nymphs per foot of last year's wood throughout the orchard and less than 90% parasitized nymphs, treatment is warranted. The Italian pear scale cover is circular, about 0.06 inches in diameter, and light gray with a brown peak slightly off center. The body under the cover is reddish, purple or pink. It is hidden under moss and lichens. The key to managing Italian pear scales is to control the lichens. Regular blight treatments in spring will provide control of moss and lichens. See the UC IPM website (.ipm.ucdavis.edu) and click on pest management guidelines (walnuts) for more pictures and information on scale life cycles, natural enemies and scale management techniques.

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