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## Disadvantages

**1. Potential Nitrogen Deficiency.** A nitrogen deficiency may occur early in the decomposition process or if mulches are incorporated into the soil.

**2. Excess Moisture Buildup.** Fine-textured mulches may contain very high moisture content. Excess soil moisture may also result when irrigation is not reduced to compensate for reduced evaporative loss.

**3. Reduces Air Temperatures.** Air temperatures are cooler above the mulch, which may increase the potential of frost damage. (see low temperature differential graph)

**4. Delay in Developing Hardiness.** Late fall vigor causes a delay in developing hardiness in mulched citrus trees.

**5. New Weeds and Diseases.** Weed seeds and plant diseases can potentially be introduced with mulches since the yard trimmings have not been composted or processed at high temperatures.

**6. Increases Rodent Damage.** Some rodent activity has been shown to increase when mulches are applied.

**7. Cost of Application.** Application of the mulch material can be expensive. One 6-inch application will cost more than thinner mulch applications, but will be more cost-effective since it will lengthen the period of time before another application is needed for effective erosion control.

## Tips

- Visually check every load of mulch material for contaminants when delivered.
- Woody, coarse-fiber mulches work best in tree crops.
- Plan for least travel from loading to spreading.
- Mulch may be accumulated until sufficient material is available to make spreading economical. Maximum height of stockpiles should not exceed 6 feet.
- Avoid spreading when the ground is wet.
- Insure that mulch is not in contact with tree trunks.
- Mulch all of an irrigation block.

## Sources of Mulch in the Ventura County Area

Contact Jim Downe
U.C. Cooperative Extension
Ventura Office
(805) 645-1458

For other sources in California, visit the CIWMB Web site at **www.ciwmb.ca.gov/Organics/.**

# Stop Runaway Soil, Use Mulch!

## An Erosion Control Guide for Citrus Growers

Ventura County Resource Conservation District

University of California Cooperative Extension, Ventura Office

California Integrated Waste Management Board

The Ventura County RCD and U.C. Cooperative Extension conducted a multiyear erosion control demonstration using municipal yard trimmings as mulch on commercial citrus orchards. This guide summarizes their findings and offers mulch use recommendations.

## Advantages

**1. Conserves Soil Moisture.** Reduced evaporation and fewer weeds keep moisture in the soil.

**2. Improves Infiltration.** Water infiltration is improved due to reduced surface sealing from rain and irrigation impact.

**3. Reduces Soil Erosion.** Mulch promotes water infiltration into the soil during irrigation or a storm event, resulting in less soil erosion and reduced overland flow by as much as 85 to 90 percent.

**4. Improves Soil Fertility.** The decomposition and leaching of nutrients from mulch into the soil increases the nutrients available to the tree.

**5. Reduces Weeds.** Mulch thicknesses greater than 3 inches will greatly reduce the weed population.

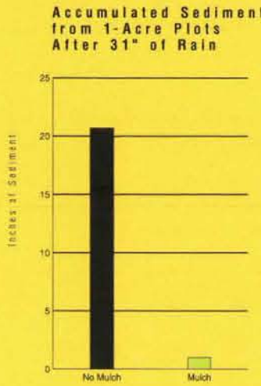
**6. Improves Soil Structure.** Mulch increases soil biological activity, which improves the soil structure.

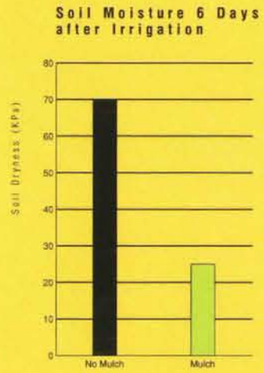
**7. Reduces Soil Compaction.** Less puddling occurs due to increased infiltration, reducing the hardening effect that occurs when the puddles dry. The mulch also acts to disperse vehicle weight within the citrus rows.

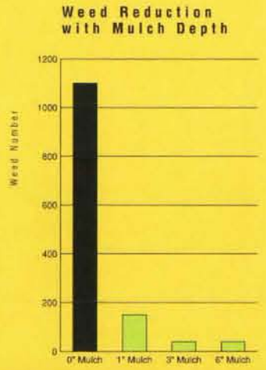
**8. Moderates Soil Temperatures.** Mulch moderates soil temperatures by insulating the soil so that it stays warmer in winter and cooler in summer.

**9. Reduces Snail Activity.** Mulched surfaces discourage snail migration.

## Citrus Plot Data




## Estimated Cost

Estimated equipment and labor cost for spreading only:

**Machine Spreading: $150-$900 per acre**

Many factors will affect the cost of a mulch application, including cost of mulch, thickness of the application, delivery cost, distance from stockpile to spreading area, maneuverability in the orchard, steepness of orchard slopes, and whether or not hand labor is needed to pull mulch away from the trees. Because of the initial costs of application, it is less expensive to apply one 6-inch application than two 3-inch applications.

Mulch placed in orchard with tractor.

Machine spreading mulch.

## Observations

- **Texture.** Coarse-textured mulches are harder to spread with machinery because the shredded woody materials tend to cling to one another. However, the coarse-textured mulch offers greater erosion protection and decomposes slower.
- **Rate of Application.** An application of less than 3 inches has less effect on weed suppression and must be reapplied every year.
- **Rate of Decomposition.** The rate of decomposition varies. The hotter and moister the climate, the faster the rate of decomposition. Fine-textured mulches decompose faster. Coastal climates, when coarse mulch is used, will see 1-2 inches of decomposition each year.
- **Contaminants.** Some plastic or other inert contaminants can be anticipated in municipal yard trimmings collected through curbside recycling programs. Generally, the more sorting that occurs, the more expensive the material becomes.