EFFECTS OF MULCHES ON THE GROWTH OF PLANTS
Donald R. Hodel and Jim Downer
University of California Cooperative Extension
2615 So. Grand Ave., Suite 400, Los Angeles, CA 90007
702 County Square Dr., Ventura, CA 93003

Mulches are used in landscapes to improve plant growth, reduce labor, and save money. Mulches reportedly save water, control weeds, moderate root-zone temperatures, add nutrients, encourage beneficial soil microflora and fauna, and improve such soil properties as porosity, water infiltration, structure, and cation exchange capacity. Unfortunately, information on the effects of mulches on palms is lacking in California since nearly all mulch studies have concerned non-palm plant materials.

In March 1993, we began a study in Ventura, California to determine the effects and suitability of various mulches on palms in the landscape. Specifically, we wanted to know how various mulches affected palm size and leaf production, available soil moisture, and plant water use. The palm species used were Archontophoenix cunninghamiana (king palms), Syagrus romanziophiana (queen palms), and Washingtonia robusta (Mexican fan palms). Chipped Eucalyptus sideroxylon trimmings, tall fescue turfgrass clippings, living tall fescue turfgrass planted around the palm's base, and no mulch (bare earth) were the four treatments.

After a sufficient dry-down period on Washingtonia (3" ETo), soil mulched with grass clippings and Eucalyptus chips had tensiometer readings 35% and 14% lower respectively at 6-inch depths and 19% and 42% lower respectively at 18-inch depths than unmulched soil. Soil with living turfgrass had a tension 90% higher at an 18-inch depth than unmulched soil. Porometer readings of water lost or transpired from Washingtonia leaves after the same dry-down period showed that plants mulched with Eucalyptus chips had a transpiration rate 9.7% higher than unmulched palms and 13.6% higher than those with living turfgrass; both porometer readings indicate Washingtonia mulched with Eucalyptus chips had more water available for plant use after the dry-down period.

King palms mulched with Eucalyptus chips and grass clippings had 38% and 25% greater stem calipers respectively and 37% more leaves than unmulched ones. While unmulched king palms had stem calipers 35% greater than those with living turfgrass, leaf production did not differ significantly. Although there were no significant differences between unmulched queen palms and those mulched with Eucalyptus chips and grass clippings, those with living turfgrass had significantly smaller stems and fewer leaves. Washingtonia showed no significant differences among the treatments although three months earlier those mulched with Eucalyptus chips and grass clippings had significantly larger stem calipers and more leaves.

Mulches of non-living organic material improved the growth of king and queen palms while living turfgrass was detrimental to early growth. Mulches improved the early growth of newly planted Washingtonia fan palms; however, these palms are such vigorous and prolific growers that mulches or turfgrass around their bases have little or no long-term effect.