

## ***Determining the Usefulness of Eucalyptus Mulches in Landscapes Plantings***

James Downer and Ben Faber

### ***Project objective:***

Determine if mulch made from Eucalyptus will inhibit or benefit growth of landscape plantings.

### ***Achievements:***

This grant partially funded four experiments:

- Eucalyptus mulches effect on establishment of Sycamore trees.
- Composted and fresh Eucalyptus mulches effect on weed seed germination. fresh and composted Eucalyptus usefulness mulches and growing media for three tree species.
- Effect of mulches on growth of three palm species.

### **Experiment 1**

#### ***Year 1***

Forty-eight California Sycamore trees planted from #1 containers in Ojai, CA showed no deleterious effects when mulched with either fresh or composted *Eucalyptus cladocalyn* F. Muell. Two years after planting (and mulching) the largest Sycamores (caliper) grew under composted and fresh Eucalyptus chip mulches. Mulched trees were less stressed (increased stomatal conductance), resisted dormancy longer and had greater root lengths than unmulched trees. Mulched soils held more available water than unmulched soils and produced 80% fewer weeds. Composting had little effect on tree performance and was deemed unnecessary.

### **Experiment 2**

#### ***Year 1***

Branches from seven species of Eucalyptus common to landscapes were harvested, shredded and composted for three months. After compost stabilized, fresh branches were harvested from the same trees and shredded. Standard nursery propagation flats were seeded with nine weed species from various plant families. Germination, fresh weight and dry weight of weeds was greatest under composted Eucalyptus and peatmoss mulches. Seeds germination and weed yield was least under fresh Eucalyptus mulches. *Eucalyptus sideroxylon* 'rosea' A. Cunn. ex Woolls, was the most inhibitory and *E. globulus* Labill. the least inhibitory of the fresh mulch treatments.

## **Year 2**

Greenhouse studies were conducted to determine if exogenously applied crude Eucalyptus leachates were toxic to barnyardgrass. Preliminary results showed crude extracts of *E. sideroxylon* to be inhibitory to germination and growth of barnyardgrass in absence of mulch. Old leaves and A-horizon soil collected from under *E. sideroxylon* trees were not inhibitory to barnyardgrass.

## **Year 2-3**

A field trial was installed with shredded fresh *E. globulus* and *E. sideroxylon* applied to a loam soil of four thicknesses to assess the effect of weed seed germination and biomass production under these mulches. Preliminary results suggest that 10cm mulch is required to suppress all weeds, but it is too early to determine if *E. sideroxylon* has greater suppressive characteristics than *E. globulus* in a field application. Another study on the effects of field applied Eucalyptus crude extracts (leachates) has been applied but not yet evaluated.

## **Experiment 3**

### **Year 1**

American sweetgum, citrus and avocado were grown in container media of 100% composted *Eucalyptus globulus* (E.G.), Nursery media (NM) or EG:NM (50:50). Containers were mulched with fresh EG or EG:NM or unmulched. Mulch had no effect on tree growth. All trees grew, but they grew best in NM and least in EG. This growth reduction was well correlated with container capacity (available water) of the media. EG media held the least water and trees with less water grew less.

## **Experiment 4**

### **Year 2**

Three palm species (*Syagrus romanzoffianum*, *Washingtonia robusta*, and *Archontophoenix cunninghamiana*) were planted (84 total palms) to establish as a trial comparing the effect of Eucalyptus,

and turfgrass clippings mulches to unmulched and turfgrass covered soils around each palm species. Unmulched palms and palms planted in turfgrass grew the least after one year. Both mulches controlled annual weeds very well but neither mulch controlled field bindweed which was eventually controlled with herbicides. Soils under mulched palms maintained tensiometer pressures 50% lower than unmulched palms at 15 and 45cm depth. Moisture conservation was similar under either mulch. No deleterious effects were noted from using fresh *E. sideroxylon* around any of the palms studied.

## **Another Experiment**

### **Year 2+**

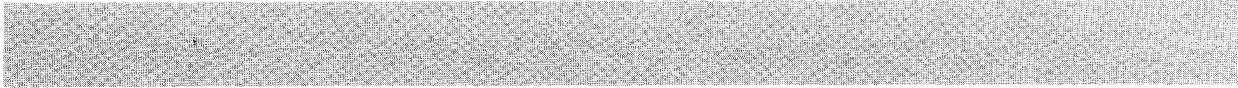
A final experiment is under construction to examine the effects of Eucalyptus globulus on suppression of *Phytophthora cinnamomi* on Avocado.

## **Extension of Information**

This information was extended to the public by newspaper (feature article, Star Free Press), newsletter (Landscape Notes), and radio (Bruce Asakawa, West Coast Garden Line). Presentations were made to industry at: California Association of Nurserymen local chapter meeting, Turf and Landscape Institute (Buena Park, CA, 1993), Turfgrass and Landscape Research Field Day and Conference (Riverside, 1993, 1994), California Plant and Soil Conference (Sacramento, CA, 1993), and to the scientific community at the American Society of Horticultural Science (ASHS) Meeting (Honolulu, HI, 1992, poster). A poster will also be presented at the 1994 ASHS Meeting on the *E. sideroxylon* weed suppression work.

## **In Summary**

Mulch products made from Eucalyptus are an asset to maintenance of fine landscapes. **Composted** Eucalyptus makes an excellent seed cover and will aid in germination and establishment of seedlings such as California Poppy. **Fresh** Eucalyptus is an excellent mulch for woody landscape plant materials



and palms; the main effects of its use are weed control and water conservation. There may be some potential for fresh mulches of *E. sideroxylon* to provide better weed control than other mulches, but this bears further study.

***Slide Captions***

1. Sycamore (yellow leaves) unmulched with copious weeds. Tree in background (green leaves) mulched with Coarse Eucalyptus chips, showing less stress.
2. Counting root intersection from Sycamore study for root length data.
3. *Eucalyptus sideroxylon* 'rosea' in the landscape, showing its own "natural mulch".
4. Weed suppression study with composted and fresh Eucalyptus chips of different species.
5. Sycamores mulched with Eucalyptus after two years of growth from trees transplanted out from #1 containers.
6. *E. sideroxylon* compost mulch over weeds showing good growth and germination.
7. *E. sideroxylon* fresh mulch over weeds showing suppression of germination.

---

James Downer and Ben Faber, Farm Advisors,  
Ventura County.