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Weed Management Workshop
Moderated by: Jim Downer, Farm Advisor-Environmental Horticulture, University of California Cooperative Extension, Ventura Co.

Weed Survival in Yardwaste Piles

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Since passage of the integrated waste management act of 1989, California has recycled its greenwaste (yardwastes). Green materials are gathered from residences or delivered to recycling centers by commercial landscape maintenance and tree trimming companies. Yardwaste is piled and then ground and either sieved or sold as coarse materials. Yardwaste has been used mostly as mulching material around landscape and orchard trees (Downer and Faber, 1999). Its use as a mulch has increased steadily during the 1990's so that it is now a valued resource for many landscape and orchard managers.

The effect of mulching on weed control is fairly well understood. Generally, when organic mulches are maintained at greater than 3.5 inches depth, over 90% of annual weeds are suppressed and do not emerge through the mulch material. However, we have observed perennial weeds encroaching from mulched areas. Yellow nutsedge (*Cyperus esculentus* L.) and bermudagrass (*Cynodon dactylon* (L.) Pers.) are frequently present in yardwaste.. Although the occurrence of weeds has been noted after mulching, there have been no reports of the spread of these weeds through the yardwaste recycling system.

Although yardwaste processors create large piles that undergo a heating and pest reduction process, this process is not uniform or consistent throughout yardwaste facilities. Stockpiling, inconsistent turning, aging and moisture content all favor the escape of living pest propagules from these facilities.

In an effort to better understand pathogen survival in the yardwaste recycling process, we conducted several experiments at Oxnard, California in 2001- 2003. The goal was to simulate a "worst case scenario" for yardwaste handling and weed contamination. We created static piles (ten cubic yards) of fresh (ground that day) yardwaste. No water was added after piling. Propagules of bermudagrass and yellow nutsedge were placed in nylon bags and buried at 100, 30, 15 cm depths inside the piles. Additional samples were fixed to the outside edge of the pile. Samples from each of these depths were retrieved at 0.5, 1, 2, 4, 7, 14, 21, 28 and 56 days after piling. The experiment had five replications (piles) and was conducted four times. The experiment has been run an additional two times using mature compost as the feedstock in an effort to create a "cold pile". The waste used for cold piles was up to 18 months old.

Viability of nutsedge tubers and bermudagrass stolons was assayed by growing them in a greenhouse for several weeks after retrieval from piles. The data were compiled as the percent of propagules that survived and resumed growth under greenhouse conditions. Both

bermudagrass and nutsedge were killed inside of static piles after 7 to 14 days and survived somewhat longer on the outside of the piles. In cold piles nutsedge was viable for up to one month at various depths, however, bermudagrass did not persist past two weeks.

It is clear from our studies that under certain conditions, both yellow nutsedge and common bermudagrass can survive the yardwaste recycling system. It appears that nutsedge is more persistent than bermudagrass. Static yardwaste piles tend to become very dry and the bermudagrass stolons rapidly desiccate, however the yellow nutsedge tubers seem to withstand the drying process and retain their viability. Neither propagule can withstand the interior temperatures of a static pile (which reached over 165^{o}F) for more than a few days. Consumers should consider yardwaste a source of noxious weeds. To ensure that landscapes and orchards are not contaminated, consumers should only purchase yardwaste mulches from a vendor that uses a consistent pathogen/pest reduction process.

References

Downer, A.J. and, B. Faber. 1999. Weed control problems using greenwaste. Procs. 51st Ann. Weed Sci. Soc. of Amer., Anaheim, CA