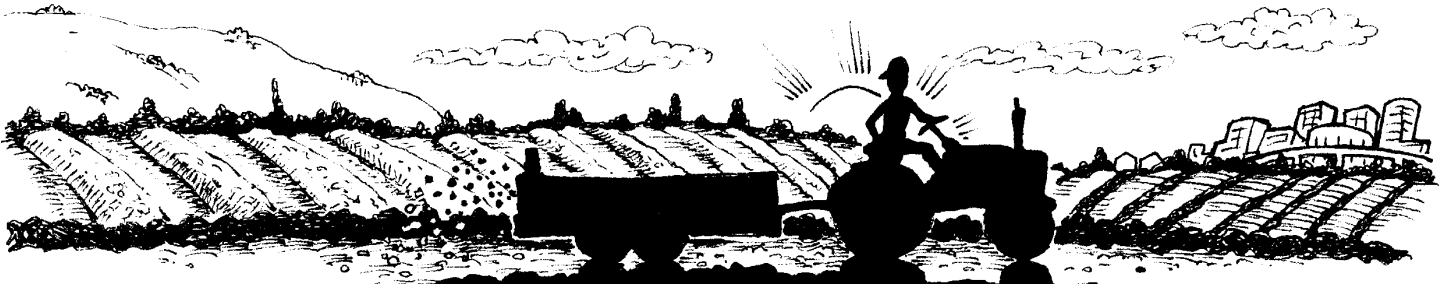

AGRICULTURE IN PARTNERSHIP WITH SAN JOSE

Growers' Newsletter



Newsletter for the Agriculture in Partnership Project, July 1998

City of San Jose Funds Research on Use of Yard Trimmings Products Research will take place at Bay Area Research & Extension Center

The City of San Jose has awarded grant funds for research on use of yard trimmings products to the University of California Cooperative Extension (UCCE) for Santa Clara County. Research projects will take place at the Bay Area Research and Extension Center (BAREC) under the direction of Craig Kolodge, County Director of UCCE.

BAREC, located on 17 acres of prime agricultural land in the heart of the heavily urbanized Silicon Valley, is unique in northern California for its research in home and community horticulture, turf management, urban forestry, small farm specialty agriculture, floriculture and nursery production. Emphasis is on horticultural research and education programs relevant to urban environment.

Urban/agriculture interface issues such as water management and urban landscape waste management will be critical areas of research focus in the future.

The following projects are underway as of June 1998:

Mulches for weed management in annual and perennial crops.

Principal investigator Clyde L. Elmore, Extension Weed Specialist, Weed Science Program, U.C. Davis.

Summary: Determine methods of using yard trimmings products as a surface mulch for weed management in transplanted and direct-sown annual flower crops. Determine quantity and timing of mulch for weed management in perennial woody crops (e.g. flower, ornamental, nursery and grape crops).

Performance of yard trimmings compost is being compared to performance of several herbicides and solarization. Treatments include mulch using finished compost and mulch using six-week compost. Plant vigor, weed control, phytotoxicity and yield evaluations are taken on all plots. Parallel trials are taking place under Elmore's direction at the U.C. Davis Weed Science Research Facility.



Zak Mousli, BAREC, checks seedlings. Yard trimmings compost products are evaluated as a tool for weed management in flower crops.

Elmore reports that mulch treatments have exhibited good weed control and vigor. However, field bindweed has emerged in the mulch treatments. He is hopeful mulch treatments will be effective enough to use in place of or in combination with herbicides under some situations.

Elmore will report on his research at the Turf and Landscape Research Field Day, Thursday, August 20, 8:00 AM to 12:00 noon, at BAREC. Call Larry Costello, U.C. Extension, (650) 726-9059 for more information on the field day.

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Yard trimmings as a substrate base for the commercial production of oyster mushrooms.

Principal investigator Maria de la Fuente, Farm Advisor, Santa Clara County.

Summary: Evaluate the efficacy of three yard trimmings substrate formulas for local production of oyster mushrooms. Evaluate three production methods on two or three commercial oyster mushroom varieties. Detailed data on production, biological efficiency and total yield will be collected. Field Day (to be announced) at BAREC will feature sampling of dishes made with oyster mushrooms and opportunities for consumer evaluation.

Organic mulches for weed control in transplanted broccoli and lettuce.

Principal investigator Steve Fennimore, Extension Specialist Vegetable Crops, U.C. Davis.

Summary: Determine efficacy of yard trimmings compost as a surface mulch for weed management in transplanted broccoli and lettuce crops. Five treatments will be compared:

- 2.5-inch depth compost
- 5-inch depth compost
- hand weeding
- pre-emergent herbicide
- black polyethylene mulch

The depth of compost required for effective weed control will be determined. Also, the time to crop maturity for the different treatments will be compared.

Orchard Mulching: Spring 1998 Results

Background: Uncomposted yard trimmings were applied five inches deep as a surface mulch in Fall, 1995 to Ravizza cherry orchard in Morgan Hill and Van Dyke apricot orchard in Gilroy. Monitoring focused on physical soil changes, effect on soil moisture, and impact of mulch on survival of introduced earthworms. Results of the project through December 1996 were reported in "Compost Demonstration Project on Use of Yard Trimmings Products: Agriculture in Partnership with San Jose," available from the CIWMB by calling (800) 553-2962 (California only) or (916) 255-2296 (outside California).

Spring 1998 Results: The field trials were monitored in order to get more information on long-term soil impacts of yard trimmings mulch. Earthworm abundance and biomass were also measured.

Soil electrical conductivity (EC) and pH were the same in mulched and bare plots at this final sample. The "mulch effect" of increased salinity and raised alkalinity disap-

peared after the first year of the study.

In contrast, soil moisture and temperature continue to be influenced by the mulch effect more than two years after mulch application. During the first year, the mulched plots maintained a soil moisture of about 20 percent, even when dry conditions caused moisture levels in the bare plots to drop. In 1998, soil moisture was much higher in the mulched plots (greater than 30 percent); bare plots held only 20 percent moisture. Samples were collected after about a week of mild, mostly sunny weather, following two months of above-average rainfall. Results suggest that water-holding capacity has increased in the mulched plots, probably as a result of increased soil organic matter. Soil temperature fluctuates in a wider range in the bare plots relative to the mulched plots. The mulch slows soil heat loss in early winter and slows soil warming in early spring. Soil chemistry was also tested. Results are shown in the table below. Total carbon and total nitrogen were almost twice as high in the mulch plots. Nitrate-nitrogen concentrations, while relatively low, were more than twice as high in the mulch plots. The significantly higher carbon and nitrogen concentrations in the mulched plots imply higher organic matter levels, which may explain the continuing mulch effect on soil moisture and temperature.

Earthworm density and biomass was measured five times over the course of the field trials. Earthworm survival was enhanced by the mulch. The mulch effect was strongest one year after application of the mulch. The mulch effect was still evident in spring 1998, but weaker. Because most of the labile organic matter in the mulch has decomposed, the availability of food for earthworms has diminished. Nightcrawlers, which were not present in the orchard prior to being released by the researchers, have survived in the release plots and colonized several non-release plots.

Researchers are Will Gehr and Matt Werner.

Impact of mulch on apricot orchard soil.

Measurement	Control	Mulch
Carbon (%)	2.12	3.92
Nitrogen (%)	0.18	0.29
Mineralizable N (ppm)	68.50	106.30
Ammonium N (ppm)	6.07	8.20
Nitrate-N (ppm)	4.45	9.93
Boron (ppm)	0.57	0.98
Calcium (ppm)	1634	2464
Magnesium (ppm)	372	531
Phosphorus (ppm)	115	130
Potassium (ppm)	472	532
(ppm=parts per million)		

Over the Fence: News from California and Beyond

City of San Jose Food Waste Composting Demonstration Projects

The City of San Jose has funded two in-vessel food waste composting demonstration projects. "In vessel" means that during the active composting phase the material is entirely enclosed in a container, and air emissions are treated to prevent odors. Food waste for the projects will be collected from City of San Jose businesses.

BFI Organics, Milpitas, will collect and compost waste from grocery store compactors. Preliminary studies have shown that 90 percent of the material is food, waxed and regular cardboard, paper, and other compostable materials. Non-compostables will be removed by hand before composting.

The material will be composted in rectangular metal boxes with air-tight lids, similar in size and appearance to a 50 cubic-yard roll-off garbage bin or portable storage shed.

Zanker Road Resource Management's Z-Best Composting Facility outside Gilroy will compost source-separated food waste from grocery stores. Restaurant waste may also be composted. Zanker will use an in-vessel system developed by Ag-Bag Environmental (<http://www.agbag.com/compost.htm>). The composting containers are bags of 9-mm black plastic that are 5-10 feet in diameter and up to 200 feet long. The bags resemble silage storage bags.

Food waste will be mixed with yard trimmings prior to loading into the Ag-Bag system. Material will be composted 8-16 weeks, then screened.

Finished compost from both projects will be tested for nutrient value, contamination and pathogen reduction at least once per quarter. Growers who would like to try the food waste compost should contact Hilary Gans, BFI Organics, at (408) 945-2836 or Greg Ryan, Z-Best Composting, (408) 263-2384.

SARE Funds Compost Education and Information Access for Western Agriculture

Agricultural professionals in the Western states will have an opportunity to participate in an innovative program about all aspects of agricultural composting. *Compost Education and Information Access for Western Agriculture* is a two-year comprehensive project funded by USDA Sustainable

Agriculture Research and Education program (SARE). The learning activities will include a series of regional satellite teleconferences; local workshops and tours; development of resource materials, including slide sets, video and manuals; a newsletter; internet web site; and an internet college level computer course. The project is a collaboration of Extension and research faculty from several western universities, USDA Natural Resources Conservation Service, and compost facility operators.

Anyone interested in hosting the satellite program or finding out additional details, please contact Bob Rynk, 208-885-7626, rrynk@uidaho.edu.

CIWMB Compost/Mulch Projects

Reports for compost/mulch demonstration projects are available from the California Integrated Waste Management Board (CIWMB). To order the following free reports, call the CIWMB Hotline at (800) 553-2962 (California only) or (916) 255-2296 (outside California). You can also fax your order to (916) 255-2220, or order from the CIWMB publications order website: <http://www.ciwmb.ca.gov/gra/opa/publist/pubframe.htm>.

Compost Demonstration Project on Use of Yard Trimmings Products: Agriculture in Partnership with San Jose. Pub#: 422-96-048.

Compost Demonstration Project, Fresno County: A Comparative Analysis of Soil Amendments Used in Peach Production. Pub#: 422-96-051.

Compost Demonstration Project, Stanislaus County: Green Material Compost Use on Ornamental Nursery Plants and Field Crops. Pub#: 422-96-053.

Compost Demonstration Project, Tulare County: Green Material Compost in Field Crop Production. Pub#: 422-96-052.

Compost Demonstration Project, Monterey Bay Region: Demonstrating New Opportunities for Growers. Pub#: 422-96-050.

Free Video: "Two Green Thumbs Up" video is now available to growers and farm advisors free of charge. The 20-minute video highlights the Northern California Compost Agricultural Demonstration projects listed above. Contact Christy Porter at the CIWMB at (916) 255-2410.

Agriculture in Partnership with San Jose is funded and administered by the City of San Jose Environmental Services Department. The purpose of Agriculture in Partnership is to disseminate information on production and use of compost, compost tea and mulch to agricultural and horticultural professionals. Information submissions and inquiries should be directed to Karin Grobe, (831) 427-3452, karing@cats.ucsc.edu or to Jo Zientek, City

of San Jose Environmental Services, 777 N. First St., #450, San Jose, CA 95112.

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Agriculture in Partnership Clearinghouse Established

We have established the Agriculture in Partnership Clearinghouse to collect and disseminate information on production and use of compost, compost tea and mulch. We have developed a library of information relevant to commercial farmers and flower and nursery crop growers in California.

Information is mailed to callers in response to requests for no charge. Emphasis is on:

- Research and demonstration projects.
- Education programs.
- Resources related to use of compost, compost tea and mulch.

We can gather information specific to your needs on request. Contact us at (831) 427-3452 if you:

- Have questions about compost, compost tea or mulch.
- Need more information about something in this newsletter.
- Have questions about spreading equipment or composting equipment.
- Have information to submit to the Clearinghouse.

Clearinghouse Documents Now Available

Yard Trimmings Products Use Guide (produced by Agriculture in Partnership staff, 1997).

Product Characterization Results (physical and chemical characteristics of compost and uncomposted yard trimmings).

Mulch and Compost Suppliers, San Jose Region.

Compost: Comparing the Products (tips for compost shoppers).

Yard Trimmings: Obtain a Quality Product (tips for buyers of uncomposted yard trimmings).

Yard Trimmings: Recommendations for Storage and Handling.

Regulations Governing Use of Yard Trimmings (includes information on composting regulations).

Resources for More Information on Compost and Mulch (includes information on compost, mulch, compost production, publications, classes).

Compost and Mulch Research and Demonstration Projects (information on projects in California and the West).

Compost and Mulch on the Web (favorite web sites).

Call Karin Grobe/Agriculture in Partnership at (831) 427-3452 to order, ask questions, or submit information.

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