

CO-HORT

A NEWSLETTER FOR TURFGRASS, LANDSCAPE, AND NURSERY ISSUES

ORNAMENTAL HORTICULTURE EXTENSION CONTINUING CONFERENCE

Tentative Schedule for OHECC at UC Riverside, May 7-9 1996

Tuesday	Wednesday	Thursday
10:30 am - noon General session	8 am - noon Presentations of research reports/ Workgroup meeting	8 am - noon Presentations of research reports
Lunch	Lunch	Lunch
1 - 5 pm Workshop: "Water quality in environmental horticulture"	1 - 5 pm Tour related to water quality	1 - 4 pm Presentations of research reports/ Workgroup meeting
6 pm BBQ		

Activities associated with OHECC

Monday, May 6, 1996: Turfgrass Training and Workgroup meeting
 Friday, May 10, 1996: Urban Horticulture Workgroup meeting

March 15, 1996: Deadline to submit titles for research presentations and register for OHECC

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NURSERY NETWORK

by Ursula K. Schuch

CUSTOMERS OF CALIFORNIA WHOLESALE NURSERIES

U.K. Schuch and G.J. Klein

Following are more results of the 1988 and 1993 surveys that were conducted to determine trade flows and marketing practices within the United States wholesale nursery industry. Survey methods and evaluation of the responses were described in the article 'Characteristics of California wholesale nurseries' in Co-Hort Vol. 1.4.

Customers of wholesale nurseries in California were retail nurseries, re-wholesalers, and landscape firms. The surveys found that sales to wholesale customers were very similar in both years. Retail firms accounted for 41%, landscape firms for 34%, and re-wholesale firms for 25% of sales to wholesale customers. Wholesale customers differed, however, for the different nursery sizes. Small nurseries conducted 46% of their business with retail firms in 1988, but respondents in 1993 had switched half of their business to re-wholesale firms. Large nurseries on the other hand sold 54% of their products to retail firms, and around 23% to landscape and re-wholesale firms each in 1993.

In 1993 the retail category was further divided and showed that landscape firms were the most important customers to wholesale nurseries (35% of sales), followed by garden centers (26%), re-wholesalers (25%) and mass merchandisers (12%). Mass merchandisers accounted for 29% of all sales for large nurseries, but for less than 2% of sales for medium and small nurseries. Large nurseries can provide large volumes of product at low prices, while small and medium operations have difficulty to compete in this market. Large nurseries that responded to the 1993 survey seem to be most diversified in their wholesale customer categories, with each of the four categories accounting for roughly one quarter of sales. Small and medium nurseries each sell most of their product to only two customer categories.

California was the most important destination for wholesale products in both years surveyed and accounted to 91% to 98% of sales. In 1988, large nurseries sold up to 4% of

their wholesale product to re-wholesales, retailers, or landscapers in Arizona, Texas, or Pennsylvania. The 1994 retail category for garden centers showed predominantly in-state trade. Garden centers are often small customers with a large variety of specialized needs, and therefore may be less profitable for out-of-state providers.

California nurseries shipped wholesale products to re-wholesalers in 19 states, to retail outlets including mass markets and garden centers in 19 states, and to landscape firms in four states outside of California. Trade flows out of California were directed primarily to surrounding states, up the west coast, the midwest, Texas, and parts of the east coast. In contrast to this regional bias, Florida nurseries shipped primarily to the southern states and up the east coast. Oregon and Tennessee, both major nursery producers, had the most general out-of-state shipping with 70% to 90% of their wholesale sales sent to 28 different states each.

Export sales have limited importance for California wholesale nurseries. Only 17% in 1988 and 24% in 1993 of all firms exported nursery products. Export sales accounted for an average 5% to 7% of the total sales for each nursery size. States with significant export sales in 1993 were Idaho (23%), Oregon (8%), and Washington (6%), all located on or near the Canadian border.

RESTRICTED ENTRY INTERVAL (REI) AFTER USING DIP'N GROW® LIQUID ROOTING CONCENTRATE

Last year Dip'N Grow was assigned a 24-hour REI because of the NAA content. Central posting and verbal warning that Dip'N Grow is in use and cuttings are treated must continue. However, if a pot or flat is not upset, "an unprotected worker may enter a treated area immediately after the application is finished." This will allow much easier follow-up after the application of Dip'N Grow to plant cuttings. EPA has determined that a "no contact" condition was present since the "treated area" was submerged in rooting media. Movements of pots or flats and other activities in mist rooms can be accomplished without Personal Protective Equipment and not violate REI.

Dip'N Grow® Worker Protection Questions and Answers:

Potting soil in pots:

Q: If potting soil is treated with a pesticide in one location in a nursery or greenhouse and then placed in pots and used to produce plants in another area of the nursery or green-

house, is the treated area the soil and therefore any REI restrictions would continue to apply in the second location?

A: Yes. The treated area is the area to which the pesticide was directed. In this case, the soil in the pots is the treated area. Therefore, any REI and associated requirements would continue to apply after the application. If the treated area is moved in containers, the REI and associated requirements are in effect for the treated area. (February 28, 1995)

Potting soil, movement off site:

Q: If the treated soil is sold (in pots with the crop) and moves off site, do any REI and other treated-area restrictions apply?

A: No. If the treated area in a pot with the crop is moved off the agricultural establishment, it is no longer covered under Worker Protection Standards (WPS). Therefore, no WPS requirements will apply at the new location. However, any label specific non-WPS REIs or other labeling restrictions must be met. (February 28, 1995)

Moving containers during REI:

Q: If the soil/plants in pots are treated, can the container be moved during the REI?

A: Yes, the container may be moved provided there is no contact with the treated area by workers. If only the soil is treated and not the pot along with the soil such as in an overhead spray, then any REI restrictions apply only to the soil which has been treated. Moving the pot without any contact with the soil would not be in violation of the REI. If plants are treated, a worker can move containers provided there is no contact with the plants or other treated surfaces, and pesticides cannot drop or drip onto the worker. If the pesticide application is directed at the container and plant, then both are considered the treated area and are subject to any REI restrictions. In either of the above situations, the notification requirements, found at 40 CFR 170.120, apply to the treated area whether it is the soil/plant or the soil/plant and pot. (February 28, 1995)

Greenhouses, spraying 12 inches from planting medium:

Q: The 40 CFR part 170.110 lists entry restrictions for greenhouses and nurseries associated with pesticide applications. One criterion for determining entry restrictions is spraying at a height of greater than 12 inches from the planting medium. In greenhouses with hanging baskets, is the 12 inch height measured from the top of the medium?

A: Yes. (February 28, 1995)

Entry under an REI for no-contact activities:

Q: May an unprotected worker enter a treated area under an REI immediately after the application if it is for activities with "no contact"?

A: Yes. An unprotected worker may enter a treated area immediately after the application is finished as long as any inhalation exposure level or ventilation criteria listed on the labeling has been reached, and he will have no contact with anything that has been treated with pesticide including pesticide residues on plants, on or in the soil, in water, or in the air. (March 7, 1995)

TURFGRASS TOPICS

by Victor A. Gibeault

SUBSURFACE DRIP IRRIGATION

Subsurface drip irrigation is the application of water into the rootzone from an applicator in the root zone for the resupply of water needed for turfgrass growth and development. It relies on capillary and gravitational water movement in the soil profile. There is continued interest in the use of subsurface drip irrigation for certain turfgrass sites because of the advantages that irrigation method can afford. As examples, the applicators are protected from damage and vandalism, there is less evaporation surface exposed, there is less weed potential, there is less liability problem from injury caused by raised irrigation heads or wet sidewalks and streets from runoff water, and there is reduced contact with water of poor quality if such water is used for irrigation. Examples of disadvantages of subsurface drip irrigation include the normally higher cost of installation, difficult repairs if needed, and not being able to see if the system is functioning until visible turf damage occurs.

Uses for the subsurface method of irrigation have usually been associated with special situations or areas where water availability is limited. Median strips on busily traveled streets to reduce runoff from the median to the street is a common example. In Hawaii, potable water is being replaced by non-potable fresh water, brackish water sources, or treated wastewater for many irrigated turfgrass sites.

State health department guidelines limit the use of overhead sprinkler irrigation to apply secondary disinfected reclaimed water, thereby forcing reuse water "underground." It has been found that a properly engineered and managed subsurface drip irrigation system has offered many advantages over other disposal methods, as reported recently in *Landscape and Irrigation* (December, 1995, 42-44). They note that possible health risks are minimized; that overspray and aerosol drift are minimized; that the method offers a psychologically and politically acceptable method of disposal; that odor, ponding and runoff are eliminated; that there is unrestricted irrigation scheduling opportunities; and that there is a favorable cost vs. benefit compared to other disposal methods. In another instance, the Center for Irrigation Technology at Fresno State University is testing a subsurface drip irrigation system on the soil infield and grassed sidelines of a women's softball field on campus. The outfield will be irrigated by sprinklers.

Several years ago subsurface drip irrigation was examined for water conservation opportunities in a study conducted at the UC South Coast Research and Extension Center in Irvine. Construction followed manufacturers specifications for depth and spacing based on the on-site soil. Cool-season and warm-season turfgrasses were established and turf quality and other specific measurements were made over the three-year study. All treatments were also irrigated with an above-ground sprinkler. In this study, it was found that there was not a water conserving benefit from the subsurface method of irrigation in comparison to sprinkler, in large part due to the incorrect depth and spacing of the irrigation lines. During the summer months, the shallow rooted Kentucky bluegrass and perennial ryegrass lost color and bleached to a white-tan as the season progressed. The grass immediately above the irrigation line stayed green, thus resulting in a stripped appearance. Damage to the deeper rooted tall fescue was much less severe aesthetically although stripping was obvious.

Deeply rooted hybrid bermudagrass performed equally with subsurface irrigation and sprinkler irrigation while Seashore paspalum gave slightly better performance with sprinkler. Bermudagrass rooting depth was determined to be 5.5 ft and the paspalum had a 4.5 ft rooting depth.

One important message from the study is the critical nature of the depth and spacing of subsurface lines for the specific soil and the specific grass that is grown (and the management practice influence on turfgrass rooting). If the depth or spacing is incorrectly specified or installed, the turfgrass response can be aesthetically unacceptable. Correction of

mistakes cannot be managed away, so reconstruction is normally required. As subsurface drip irrigation increases in use, the basic principles of soil type, grass species and rooting, and water requirement must be considered.

WILDLIFE LINKS PROGRAM

The United States Golf Association has established an environmental program, Wildlife Links, that represents the first comprehensive investigation of the game's relationship with wildlife and its habitat. Joining the USGA are the Golf Course Superintendents Association of America and the Ladies Professional Golf Association in committing funds in support of research. The program will be administered by the National Fish and Wildlife Foundation, which is dedicated to the conservation of natural resources through such goals as species habitat protection, environmental education, public policy development, natural resource management, habitat and ecosystem rehabilitation and restoration, and leadership training. The program's overall goal is to protect and enhance, through proper planning and management, the wildlife, fish, and plant resources found on golf courses.

Certain issues will be given research priority, including the determination of how golf courses can be maintained, both short and long-term, as biologically productive sites for wildlife. Examination of individual golf courses within the context of their surrounding landscape will be a major focus. As examples, an urban golf course may require different strategies than a rural one, while desert courses present a much different landscape for wildlife than wetlands venues. Regardless of their climatic orientation, the loss or fragmentation of wildlife habitat and its effect on wildlife, especially birds, will be a major factor in research projects.

For further information, contact Dr. Peter Stangel, National Fish and Wildlife Foundation, 1120 Connecticut Avenue, N.W., Suite 900, Washington, D.C. or call (202) 857-5676.

HORTICULTURAL JOB GROWTH

The Bureau of Labor Statistics has projected that the United States will see increases in the employment of horticulture-landscape employees. Looking from 1992 to 2005, the BLS predicts a 35% increase in jobs. In the recent past, from 1988-1992, there was an increase in the number of landscape and horticultural firms from 39, 414 firms to 55, 268 firms. In the same time period, there was an increase in the number of landscape employees from 214,439 to

304,212. (from: Grounds Maintenance, October, 1995, p.10.)

IMPACT OF PLANTS ON HUMAN HEALTH

At a recent Ornamentals Northwest Seminar in Portland, Oregon, Virginia Lohr from Washington State University, Pullman, queried the audience, asking "If there could be one new study done to document clearly that plants have a positive impact on something, which of the following would you want it to be about?" Listed were the following: improving peoples health, reducing dust levels in the air, reducing temperatures in cities, increasing tourism, increasing retail sales in business districts, reducing crime, making people friendlier, or other. Overwhelmingly (62%) respondents selected improving people's health, followed in distant second by the subject that plants make people friendlier (12%). Plants reducing crime was the next (9%) category of interest. At the 1992 symposium on "People-Plant Relationships," that group reported that human health and wellness should be the highest priority research area regarding human issues in horticulture. Virginia Lohr's survey of Pacific Northwest members of the horticulture industries support that priority ranking. (from: HortTechnology 5(4), October-December, 1995.)

BUFFALOGRASS ROOTING

Rooting characteristics of 22 buffalograss genotypes were determined by growing plants in clear, snad-filled polyethylene tubes in a glasshouse in Dallas, Texas. Grasses with superior rooting characteristics, which were defined as deeply rooted, with larger root mass and count in the lower root profile sections, included AZ-143, NTDG-1, and NE84-315. (from: HortScience 30(7): 1390-1392.)

LANDSCAPE LOG

by Dennis R. Pittenger

BACTERIAL SCORCH OF OLEANDER--A NEWLY IDENTIFIED DISORDER IN SOUTHERN CALIFORNIA

Nerium oleander has historically been a trouble-free, basic shrub in most of Southern California. It has been exten-

sively planted in desert and hot interior valley landscapes where it is used as a large background or screening plant, border plant along drives and roadways, and as a small single or multiple trunked tree. During the past few years, large numbers of mature oleanders throughout the Coachella Valley region (Palm Springs, Palm Desert and other areas) and some coastal areas of Southern California had been declining or dying from unknown causes. Symptoms of the decline initially resembled drought stress although affected plantings received regular irrigation.

"Bacterial scorch" has preliminarily been identified as the disease causing the decline by Dr. Fred Roth, plant pathologist and Professor of Horticulture at Cal Poly Pomona. It is a disease not previously reported on oleander and is most likely caused by *Xylella fastidiosa* or a closely related species. The preliminary identification was supported by ELISA (Enzyme-Linked ImmunoSorbent Assay) testing, and Dr. Roth is following Koch's postulates to obtain a positive identification.

Bacterial scorch is a general term referring to yellowing and browning of leaf tips and margins caused by Fastidious Xylem Inhabiting Bacteria (FXIB's) like *Xylella* spp. In oleander, symptoms resemble drought stress due to the plugging of xylem vessels by FXIBs. Any age plant is susceptible. Symptoms of bacterial scorch appear initially as branch and shoot tip dieback and scorched, yellow, light brown, or rusty colored leaf margins in early to midsummer with the symptoms becoming progressively worse through late summer. Scorch usually appears on one branch or on an entire section of the plant starting on the oldest basal leaves and progressing towards the tip. Eventually the section will die as it becomes desiccated and light brown in color. The dead portion can be traced back to a single point on the main stem. As the disease progresses, more sections of the plant die. The plant usually defoliates as it declines and the ground surrounding the plant may be covered with leaves. Eventually the entire plant is killed, often within one year of initial infection. Effects of the disease are far more devastating in the Coachella Valley than they are in the south coastal counties due to the extreme summer heat in the desert.

The suspected pathogen, *Xylella fastidiosa* is the same organism which causes Pierce's disease of grapes, phoney disease of peach, plum leaf scald, and bacterial scorch of elm, red maple, mulberry, oak, and sycamore. Pierce's disease of grapes has been reported in California since the 1880's. It was originally known as Anaheim disease, and it destroyed over 35,000 acres of grapes in Southern California. A number of other plants are natural hosts of *X. fastidiosa*, including bermudagrass, hairy crabgrass, rye-

grass, dallisgrass, California mugwort, coyote bush, toyon, stinging nettle, crape myrtle, and blackberry.

In grapes, *X. fastidiosa* is vectored by insects known as "sharpshooters." These leaf hopper-type insects feed on leaf juices and carry the bacterium from one plant to another during feeding.

A new sharpshooter, known as the clear-winged sharpshooter, *Homalodisca coagulata* (say), was recently reported by the Orange County Agricultural Commissioner's Office, and it is known to vector *Xylella* spp. in southeastern states where it feeds on numerous plants including grapes and citrus. As a result of this evidence, sharpshooters are suspected to be the main vectors of bacterial scorch of oleander, but further investigation is needed to prove this. Dr. Alexander Purcell, Entomologist and noted *Xylella* expert at UC Berkeley, along with colleagues at UC Riverside, is studying possible insect vectors and hopes to secure funding to find biological controls for the vectors. It is also possible that *Xylella* spp. are spread from plant to plant via root grafts or less likely through contaminated pruning equipment.

This disease has the potential to become a serious landscape and nursery production problem that reduces or eliminates the use of oleander in Southern California.

Possible control measures:

At the present time there are no effective chemical controls for *X. fastidiosa*. The most important cultural control is to maintain good plant health. Removal of the infected portion of the plant may slow the decline, but is probably ineffective as a control method. Research needs to be conducted to determine if there are any oleander cultivars resistant to *X. fastidiosa* and if it is practical to control insect vectors.

University of California Cooperative Extension Advisors Janet Hartin and Michael Henry along with Area IPM Advisor, Cheryl Wilen, and UCR Plant Pathology Specialist, Marcella Grebus have prepared a brochure titled *Bacterial Leaf Scorch of Oleander* that is available from Cheryl Wilen (phone (619) 694-2846). These individuals continue to work with other agencies and cooperators to address this new disease problem.

References:

Grebus, M. and M. Henry. Oct. 1995. Oleander decline in Southern California: Update II. UCCE reprint: p. 3.

Grebus, M., M. Henry, J. Hartin, and C. Wilen. Dec. 1995. Bacterial leaf scorch of oleander. UCCE Brochure.

Henry, M. Jan. 1995. Update on oleander decline. UCCE Riverside Co. reprint: p. 3.

Henry, M. 1996. Personal communication.

NEWS AND REVIEWS:

LANDSCAPE AND LAWN EXPENDITURES INCREASES

Americans' love affair with beautiful, healthy lawns and landscapes continues to grow as 17.6 million households spent \$13.4 billion on professional lawn and landscape services in 1994, according to a recent Gallup survey. These figures are 300,000 more households and \$900 million more than in 1993.

Other findings of the survey include:

- Baby boomers (ages 30-49) accounted for nearly half of the spending on professional landscape services at \$6.2 million.
- The average 1994 household spending on all these services was up 5 percent to \$761.
- Professional landscape design expenditures increased 56 percent to \$869 million.
- Landscape installation/construction expenditures rose by \$300 million to \$5.9 billion.
- Lawn and landscape maintenance spending increased \$200 million to \$6.6 billion.
- Consumers in the South and West accounted for \$9.3 billion (69 percent) of total spending.
- Women play a preeminent role in the decision to purchase professional landscape and lawn-care services.

The Gallup survey was based on interviews with 1,986 households about their 1994 spending on professional lawn and landscape services. It was sponsored by the American Association of Nurserymen, the Associated Landscape Contractors of America, the International Society of Arboriculture, the National Arborist Association, and the Professional Lawn Care Association of America. (from: California Landscape, August 1995.)

PUBLICATIONS AVAILABLE

The California Landscape Contractors Association (CLCA) is distributing two publications that will be of interest to those working with and in the landscape industry.

The Resource Recovery Handbook is a 54-page booklet that offers practical tips to assist landscape and nursery operations in reducing and recycling the assorted waste materials that they generate. The second publication is a policy paper entitled "Water Policy Crossroads." It focuses attention on the need for a long-term solution to the complex problems in the Bay-Delta region and specifically calls for the building of a Delta transfer facility. The paper was prepared and sponsored by 14 interest groups including three Green Industry associations.

Contact: Both items are available from the CLCA Headquarters at (800) 448-2522.

NEW FLOWERS AND VEGETABLES FOR 1996

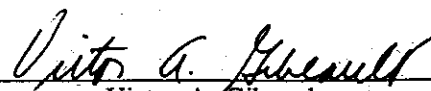
The National Garden Bureau has introduced 13 new annual flower and 9 new vegetable cultivars for 1996. Three of the flower cultivars were awarded All-America Selections (AAS) honors. The new releases are:

FLOWERS

Petunia F1 Hybrid 'Fantasy Pink Morn' (AAS)
 Petunia F1 Hybrid 'Heavenly Lavender' (AAS)
 Petunia F1 Hybrid 'Merlin Burgundy Picotee'
 Salvia splendens 'Sizzler Pink'
 Salvia farinacea 'Strata' (AAS)
 Stock 'Harmony Light Rose'
 Sunflower F1 Hybrid 'Moonbright'
 Sweet Pea 'Old Spice Cupani'
 Sweet Pea 'Sweet Dreams'
 Verbena 'Romance Silver'
 Vinca 'Pacifica Mixed'
 Viola F1 Hybrid 'Jewel Maroon & Yellow'
 Viola F1 Hybrid 'Sorbet-Lavender Ice'

VEGETABLES

Pepper F1 Hybrid 'Red Beauty'
 Pepper F1 Hybrid 'Valencia'
 Squash F1 Hybrid 'Autumn Cup'
 Squash F1 Hybrid 'Heart of Gold'
 Squash F1 Hybrid 'Pay Day'
 Tomato F1 Hybrid 'Bush Big Boy Hybrid'
 Tomato F1 Hybrid 'Miracle Sweet'
 Watermelon F1 Hybrid 'Huck Finn'
 Watermelon 'SuperSweet™'



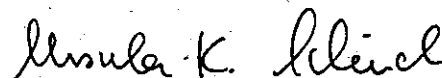
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Co-Hort is intended to be a quarterly publication and will be distributed to Farm Advisors, Specialists, and Department Faculty working in areas related to environmental horticulture. This publication is written and edited by Victor A. Gibeault, Dennis R. Pittenger, and Ursula K. Schuch, and prepared by Susana B. Denney, Administrative Assistant. Please address any correspondence concerning this publication to the editors.

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C A L E N D A R

MONTH	EVENT AND LOCATION	CONTACT
Feb. 14-15	1996 Landscape Industry Show, Long Beach Convention Center, Long Beach, CA	CLCA (800) 448-CLCA
Feb. 17-19	12th Annual Conference on Insect and Disease Management on Ornamentals, Society of American Florists, Westin Hotel, San Francisco Airport.	SAF (800) 336-4743
Mar. 10-13	1996 Golf Expo VIII, Town and Country Hotel and Convention Center, San Diego, CA	Ann Ramirez (619) 437-6250
Mar. 11	First Annual Southern California Workshop on Composting and Biocontrol of Plant Disease, UC Riverside	Cheryl Wilen (619) 694-2846
Mar. 27	28th California Nematology Workshop will be held from 8:15 a.m. to 4:30 p.m., Wednesday, March 27, 1996, at the University of California, Davis. Topics include: methyl bromide update, California Nursery Program changes, successes with nematode plant resistance, and new rules, guidelines and related issues for PCAs. 7 hours of PCA credit pending (includes laws and regulations hours). Registration fee is \$60.00 (\$75.00 after March 6, 1996).	For further information, contact Karen Fischer at University Extension, University of California, Davis, CA 95616-8727. Phone: (916) 757-8899; FAX: (916) 757-8634.
Mar. 28-29	CalScape Expo '96, annual Short Course for Interior Plantscapers, San Francisco, CA	Mary Golden (619) 723-9910
May 8-10	1996 Western Chapter of the International Society of Arboriculture, Honolulu, HI	Dave Hensley (808) 956-2150 email: dhensley@uhunix. uhcc.hawaii.edu

COOPERATIVE EXTENSION
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