



CORF News

California Ornamental Research Federation

Vol. 3, Issue 3

Summer 1999

Methyl Bromide Alternatives National Program Workshop

By Steve Tjosvold, Farm Advisor UCCE, Dr. Clyde Elmore, Weed Scientist, Plant Biology UCCE, Dr. Michael A. Mellano, Mellano and Co., and Steve Siri, Glad-A-Way Gardens

"The last meaningful use of methyl bromide is in 2002" according to David Riggs, Executive Director of the California Strawberry Commission. David made his comments at the USDA national methyl bromide alternatives workshop held in Monterey California this past April. His comment was prefaced by the facts that there are mandated significant annual "phase-out" reductions (i.e. 50% in 2001) in methyl bromide use, that new compounds would have to undergo toxicology testing and registrations, and that new methods would require a substantial learning process by growers before they were useful. His and other comments, made in the meetings with scientists and agricultural industry representatives, made clear that the near certain ban on methyl bromide use in 2005 is very serious and that we are not adequately prepared with chemicals or other alternatives.

Other California agricultural industries were well represented at the workshop. Giving the floriculture industry perspective was Michael Anthony Mellano of Mellano and Co.. Michael emphasized in the opening session that floriculture is characterized by "crop diversity and intensity". Stiff competition from third world countries (that will have methyl bromide till 2015) dictates that domestic producers maintain low costs and high quality finished products. Methyl bromide or a cost-effective equivalent is needed in order for U.S. floriculture producers to compete and minimize the risk associated with these highly intensive cropping practices.

Clyde Elmore, UC Cooperative Extension Weed Scientist and Steve Tjosvold, UC Cooperative Extension Farm Advisor prepared the presentation on the research perspective of the

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Emission Reduction of Soil Fumigants

By Dr. Jay Gan and Dr. Scott Yates, USDA-ARS Soil Physics and Pesticide Research Unit, Riverside and Dr. J. Ole Becker, Department of Nematology, UC Riverside

We recently completed laboratory and small field plot studies to reduce soil fumigant emissions. While covering treated fields immediately with high-density, nearly impermeable polyethylene sheets significantly reduced methyl bromide emissions, it did little to decrease 1,3-D emissions. The second approach lead to the application of a solution of the common fertilizer ammonium thiosulfate (ATS) onto the surface of fumigated soil. This

amendment accelerated the degradation of several fumigants and dramatically reduced their volatilization from treated soil. It was effective with methyl bromide, chloropicrin, 1,3-D and other experimental compounds, such as methyl iodide but not with metam sodium. In a preliminary field trial, spraying ATS onto the soil surface at 45 gallons per acre (~\$70) resulted in a 50-

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Growers Share Concerns Regarding Loss of Methyl Bromide

By Dr. Karen L. Robb, Julie Newman, Steve Tjosvold,, Farm Advisors UCCE

Field and greenhouse cut flower growers were asked how they are or will address the future loss of methyl bromide at their growing operations. All the growers agreed that replacing methyl bromide will be easier to accomplish in greenhouses than in field production.

Don Howell, of Pajaro Valley Greenhouses in Watsonville, has been developing and implementing new cultural techniques that improve soil conditions and do not require the use of methyl bromide fumigation. He has been slowly converting his greenhouse rose production to "bucket" or "hydroponic" culture. These cultural techniques use soilless media that do not require sterilization before planting. For the greenhouse specialty cut flower crops, he has been converting production areas into modified raised beds. These are not completely raised or separated from the field soil as is done in the traditional manner. He uses 1x 8 redwood sideboards for each bed and cuts away field soil to make a V-bottom. He fills the V-bottom and sideboards with container soil. The raised bed is steam

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Methyl Bromide on the Internet

<http://www.epa.gov/spdpublic/mbr/mbrqa.html> US EPA Methyl Bromide Phase Out Web Site. This page includes links to "Alternatives to MeBr," "Links to Other MeBr-Related Web Sites," as well as information for 1999 International Research Conference on Methyl Bromide Alternatives and Emission Reductions.

<http://www.acd.ucar.edu/gpdf/ozone> Stratospheric Ozone Law, Information & Science. This site includes information on the ozone layer.

<http://www.ars.usda.gov/is/mb/mebrweb.htm> This site summarizes methyl bromide research being done by scientists at several labs of USDA's Ag Research Service. Links to the *Methyl Bromide Alternatives* newsletter.

<http://www.epa.gov/docs/ozone/mbr/mbrqa.html> US EPA Stratospheric Ozone MeBr Information Site. Includes regulatory information on the phase out of MeBr.

<http://www.acd.ucar.edu/gpdf/ozone/mp/> Montreal Protocol Homepage. This site gives an overview of the *Montreal Protocol on Substances that Deplete the Ozone Layer* and lists meetings and reports.

<http://www.ussl.ars.usda.gov/METHBROM/mebr.htm> US Salinity Laboratory, USDA Ag Research Service.

Growers Concerns

Continued from page 1

sterilized before planting. So far, with his shallow rooted crops, the steaming apparently is adequate to control pests and weeds.

Coming up with an alternative to methyl bromide outside the greenhouses is going to be a much bigger issue, according to Don. "We tried not fumigating last year for several cut flower crops. But we had lots of problems and a drop in production. We don't have alternatives but are hopeful that there will be some".

Walter Van Wingerden, of Valley Flowers, Inc. in Carpinteria reports, "Research studies have unfortunately not come up with any exciting alternatives to methyl bromide. The only viable solution for us at Valley Flowers is field steam sterilization. We have already started using steam for some crops like delphiniums. Steam does a comparable job to methyl bromide in knocking down the weeds and pathogens. However, many weeds come back, particularly Malva because its germination is stimulated by heat. But at least the crop gets a head start, and steam sterilization makes it easier to maintain weed

See Growers Concerns - Page 3

A Word of Gratitude . . .

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Growers Concerns

Continued from page 2

control later. However, there are a lot of unknowns related to field steam sterilization. Some of these questions we'll soon find answers to by trial and error at our nursery. But some questions really need to be addressed in University research studies. We have no idea, for example, how far out from the boiler we can go with our lines before we lose too much pressure to provide adequate heat for pathogen and weed control. And we are not sure about the economics. Certainly for each crop you have to weigh disease susceptibility with the benefits of steaming. But it's also possible that the extra cost of steam sterilizing in the field does not justify the economic return of some crops. And steam sterilizing is not the solution for all field operations. Depending on where your nursery is situated and the fuel you use, there are air pollution regulations you have to adhere to. We happen to already have a boiler we are using for greenhouse heating, but if you don't have a boiler, the initial investment is expensive."

Mike A. Mellano, of Mellano and Company in San Luis Rey, has also tried a lot of

See Growers Concerns - Page 11

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Field Observations

Lesion and root knot nematodes on roses

Lesion (*Pratylenchus* sp.) and root knot nematode (*Meloidogyne* sp.) have been identified as a possible cause of a subtle loss in production of greenhouse cut roses. The grower's analysis of rose production indicated the nursery was producing 20% fewer roses than what would be considered the industry average, but the grower could not pinpoint the nature of the problem. After examination of the roots on some plants, the tiny root galls typically caused by female root knot nematodes were found. But for the most part, root systems appeared reasonably healthy. Shoot growth was somewhat weakened: in the worse case, shoots had relatively short stems and smaller leaves. Analysis of soil and root samples confirmed the existence of upwards of 400 lesion nematode and 1067 root knot larvae per liter of soil. Lesion nematodes do not usually have obvious symptoms noticeable to the naked eye on roses.

Control of nematodes is best achieved by methyl bromide or steam treatment before planting the next rose crop.

Cylindrocladium on heather

A new root and crown rot disease of heather was found in this region at a commercial heather nursery. The disease causes root necrosis and the crowns turn brown. Affected plants become gray-green, wither and eventually die. The disease was identified as being caused by the fungus *Cylindrocladium pauciramosum*. This is the first report of this fungus causing disease on heather and is the first record from North America.

The grower gained control by disposing of diseased plants, using only new containers, and beginning protective fungicide applications of triflumizol (Terraguard) or thiophanate-methyl (Cleary's 3336, FungoFlo).

Regional Report

Santa Cruz & Monterey Counties Irrigation Design and Maintenance Saves Water



As part of a program to improve water management, the Monterey and Santa Cruz County Cooperative Extension Service and Monterey County Water Resources Agency (MCWRA) conducted a joint project to evaluate irrigation system effectiveness in applying water efficiently in greenhouse cut flower production. Following these on-site evaluations, growers received individualized reports that made specific recommendations to improve their irrigation systems. In an article describing the results of this program "Improving Irrigation Systems Conserves Water in Greenhouse-grown Cut Flowers" just published in the March-April 1999 edition of California Agriculture, authors Kurt Schulbach and Steve Tjosvold (farm advisors) and Danyal Kasapagil (hydrologist, MCWRA) make some conclusions in regards to irrigation system design, retrofitting, and maintenance that influence the uniformity of those systems.

In the evaluation of the three commonly used micro-irrigation systems used in greenhouse cut flower production, the systems' ability to apply water uniformly varied widely. The most common type of irrigation system, the perimeter system, generally applied water more poorly than other tested systems. Center riser and drip irrigation systems generally applied water more uniformly than the perimeter system. All irrigation systems could be improved with a regular maintenance program consisting of flushing rust and other particulates from irrigation pipe and chemical control of biological growths in irrigation pipe.

The perimeter system, in general, consists of 3/4-inch PVC pipe around the perimeter of each of the production beds with half-circle sprayers directed toward the center of the beds. The flow rates were usually too high for

the 3/4-inch laterals, causing large friction losses and pressure drop in sprayers from the inlet down to the end of the bed. The center riser system consists of a single line of 3/4 or 1-inch PVC pipe down the center of each bed. Full circle sprayers were mounted on 18-inch risers spaced from 5 to 7 feet apart. The center riser systems all had high levels of uniformity.

A retrofitted perimeter or center-riser irrigation system could be improved by using a 1-inch line in the first half of the lateral and the second half could use a 3/4-inch line. This would provide good pressure uniformity at a lower cost than if 1-inch line was used throughout. Possibly the most effective method of improving pressure uniformity is to place the inlet to the laterals in the center instead of at the end of the bed. In a typical design, a 160 ft. lateral with the inlet at the end would have a pressure loss of 44% from one end to the other, while the pressure loss would only be 10% if the inlet were at the middle of the bed. However, this would require automatic valves because of the difficulty in manually turning on the valves when they are located in the middle of the plant rows.

Drip irrigation can provide excellent irrigation uniformity. The lower operating costs resulting from higher uniformity, lower operating pressure, reduced fertilizer needs, and in some cases reduced foliar diseases could make retrofitting some systems economical.

The entire report is available from Steve Tjosvold.

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Regional Report

San Diego County

Downy Mildew Trials on Misty Statice in Progress



Downy mildew continues to plague statice growers. Dr. Albert Paulus and Miguel Vilchez (Plant Pathology Department at UCR) and I have been conducting efficacy trials evaluating materials for control of downy mildew on Misty statice. We have conducted two trials to identify effective materials and are planning our third trial now. At least two products are looking promising. Once these trials are complete and we have identified a range of products with different modes of action, we will be evaluating combinations and rotations of these products. We are also evaluating timing of the applications. Our goal is to determine strategies that provide good control of this disease and that delay the onset of fungicide resistance. We will provide another update in the next issue of CORF News.

San Diego County Crop Report Released

The San Diego County Department of Agriculture, Weights and Measures has just released its annual crop report. The total value of crops grown in the county was \$1,178,447,233.00. The estimated economic impact was \$4,124,565,316.00 (using a conservative multiplying factor of 3.5). It is a little known fact (outside of the agricultural industry) that agriculture ranks fourth in San Diego County behind manufacturing, tourism, and defense.

Nursery and flower products continue to dominate the county's agriculture, comprising more than 60% of the county's agricultural value. These crops were valued at \$722,186,252.00. More than 25% of the value of agricultural products was indoor flowering and foliage plants! This is also the crop with the highest value per acre. The values reported represent FOB values for products; they are not net values and do not reflect cost of production.

You can obtain a copy of the report from

the Department of Agriculture, Weights and Measures or you can download the 1998 Crop Statistics from their web site at <http://www.co.sandiego.ca.us/cnty/cntydepts/landuse/agri/agweb.html>

CORF Bugs, Bugs, Bugs Meetings

Evaluations were very high from the Bugs, Bugs, Bugs Meetings, both in Half Moon Bay and in Escondido. Participants expressed appreciation for all the handout materials, especially the listings of registered materials for each pest. The morning sessions were comprised of discussions of five major pests, their biology, pest management strategies, and chemical control options for these pests. The afternoon sessions consisted of presentations from chemical companies on new products and how growers can best utilize the products that are currently registered.

Comments from the participants included: "Superb handouts! I read these things!" "Excellent seminar. Great information" "Very good turnout of chemical company sales representatives. Good opportunity to speak with them." And finally, "This was my first CORF workshop. Thank you for such a large amount of information in a short time. I look forward to attending more such programs in the future."

New website for San Diego County Cooperative Extension Office

We are pleased to announce the UCCE Farm and Home Advisor web page that can be accessed via the San Diego County site as well as through UC. This site's URL: <http://cesandiego.ucdavis.edu> We are still adding publications to this site, including Best Management Options, Resource Directories and recent county publications.

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Field Observations

The weather is finally warming up in San Diego County. The insects are warming up, too. Aphids have been and continue to be present in large numbers, as are western flower thrips. Now is the time to be on the lookout for leafminers, thrips, aphids, and whiteflies. Worms are also making their presence felt with the warmer weather. Mites can be expected to increase as the weather gets warmer and drier, too.

The prolonged wintry conditions in this county have made diseases like downy mildew more prevalent this year. We have also seen higher populations of psyllids, both blue gum psyllid and the eugenia psyllid this spring, as the cool weather favors the psyllid over their respective parasites. However, as temperatures are warming, the balance is shifting to the parasites.

More Chrysanthemum White Rust

Chrysanthemum White Rust was found again in San Diego County recently. This disease was also favored by the prolonged cool, moist conditions we have experienced this year. As a reminder, myclobutanil (Systhane) is registered for control of this rust as an eradicant. At least 5 weekly applications are required if white rust is present. However, it is not a good idea to continue to apply Systhane weekly indefinitely, as it has been associated with plant growth regulator effects. Dithane and Daconil can be used as preventative treatments.

Field Observations

Fungus Gnats and Shore Flies

Greenhouse potted-plant growers are experiencing an ongoing problem with fungus gnats and shore flies. It is important to distinguish between the two insects because not all control methods work for both pests. Adults can be examined on yellow sticky traps or when they are at rest on the soil surface.

Fungus gnat adults are "mosquito-like", that is, they are small and black, fragile-looking, have long legs and long antennae. The larvae of fungus gnats can be seen moving through the top 1/2-inch of growing media; the larvae are white to clear, they have a black head capsule, and often a black digestive system can be seen running through the length of the larvae.

Shore fly adults are more "fly-like". They have short legs, no observable antennae, are more robust-looking than fungus gnats, and they have several white spots visible on their dark wings. The larvae of shore flies are quite different from fungus gnats; they are yellow to brown in color, and not readily visible because they blend in with the growing medium.

There are many control materials on the market for fungus gnats and shore flies, but for ongoing control it is important to rotate between classes of insecticides. Cultural control is often overlooked in controlling these pests. They like damp conditions with high organic matter. It is therefore important to keep moisture and algae levels low in the greenhouse, particularly under benches, where the insects often feed and breed. Growers may also need to change growing mixes. The insects seem to do well in mixes with a lot of fir bark, so growers may need to try different mixes until they find one that is not as habitable to fungus gnats and shore flies.

Regional Report

San Mateo & San Francisco Counties

Herbs as Ornamentals: Safe Pest Control and Postharvest Handling



There has been an interest in herbs as ornamental plants in recent years, both as finished potted plants and as cut flowers.

Bedding plant growers have produced potted herbs for home gardeners for years, but there has been a recent demand for specialty herbs, such as potted rosemary for the "kitchen garden" and cut herbs for mixed bouquets (lavender, oregano, and rosemary).

Pest Control. Flower growers who are growing herbs, in the greenhouse or field, are at a disadvantage when they have pests on the herbs. Few pesticides are labeled for herbs, and even if herbs are grown only as flowers, they must be treated as food crops. Even though you grow it to be used as a flower, the end-user may still eat it!

Pesticide labels for ornamental herbs must say that they can be used on "herbs," or on the specific herb species. If you question whether your crop is an "herb," or whether the pesticide is labeled for it, check with your local Ag. Commissioner. It is even more problematic when herbs are grown in the greenhouse. Some pesticides are labeled for field production of herbs (production for processing), but they are not labeled for greenhouse use. You **must** follow the pesticide label for crop and location.

Some insecticides that are labeled for at least some herbs (always check the label) include:

Azatin XL - a broad-spectrum insecticide that controls aphids, fungus gnats, leafminers, mealybugs, thrips, whiteflies, etc.; labeled for greenhouse and outdoor use; soon to be labeled in California; *Olympic Hort. Products.*

Dipel - a *Bacillus thuringiensis* insecticide that controls lepidoptera larvae, including caterpillars, armyworms, and diamondback moth; labeled for greenhouse and outdoor use; *Abbott Labs.*

Ultra-Fine Oil - a broad-spectrum insecticide/fungicide that controls aphids, fungus gnat adults, leafminers, mealybugs, scales, spider mites, thrips, whiteflies, etc.; also gives some powdery mildew control; labeled for greenhouse and outdoor use; *Whitmire.*

M-Pede - an insecticidal/fungicidal soap that controls aphids, caterpillars, earwigs, leafminers, scales, thrips, mealybugs, shore flies, mites, whiteflies, powdery mildew, etc.; labeled for greenhouse and outdoor use; *Mycogen Corp.*

Pyrellin - a pyrethrin insecticide, containing rotenone, for aphids, thrips, mites, and other pests; *Webb Wright Corp.*

Cinnamite - a new broad-spectrum cinnamic aldehyde insecticide/fungicide that controls mites, aphids, and powdery mildew; will have a greenhouse and outdoor label; soon to be labeled in California; *Mycotech Corp.*

Postharvest Handling. Growers of ornamental herbs must be careful to avoid using commercial (or homemade) postharvest solutions or sprays containing silver thiosulfate (STS). Again, the consumer may use the herbs as food, and not just as ornamental plants. For this reason, it is important to avoid silver residues within or on the tissue. When using any postharvest solution on herbs, make sure that it is also labeled for use on herbs.

Mention of trade names are not meant to be endorsements or recommendations, nor are they meant to exclude other equally-effective products. It is the grower's responsibility to follow all label instructions, and to make sure that the material is labeled for use in California.

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CORF Grower Education Programs for 1999

Postharvest Treatments for Floral Crops

These hands-on workshops will focus on three very vital areas of successful postharvest handling; sanitation, using preservatives effectively, and temperature effects on postharvest quality. The workshop will be conducted in Spanish as well as English, with UC researchers and representatives from Floralife demonstrating how to extend floral product life. English sessions; 8am - 12pm
Spanish sessions; 12:30 - 4:30pm.
CDPR PCA continuing education hours pending approval.

SALINAS: October 19

CARPINTERIA: October 20

SAN DIEGO: October 21

HALF MOON BAY (English only):
October 28



Watsonville; Grower Tour & Research Demonstrations

October 7

The latest in the popular series of grower tours presents practical and research-based information to growers, shippers and pest control personnel in the floriculture and nurseries industries. The tour will visit several nurseries and industry-related sites. Field demonstrations will be conducted by the University of California farm advisors, specialists and faculty. Demonstrations will include the following:

Environmental Control of Powdery Mildew of Roses, *Dr. Jim MacDonald*

Solarization for Weed Control, *Dr. Clyde Elmore*

Fine Tuning Your Nitrogen Fertilizer Program, *Steve Tjosvold*

Rose Integrated Pest Management, *Christine Casey*

Rose Bending Update, *Dr. Heiner Leith*

Grower Tour to Innovative Nurseries of the Willamette Valley August 25-26

Travel with a group of CA growers to Portland where we will visit several area nurseries, retail sites. After the tour registrants may choose to attend the exciting Ornamentals Northwest Seminars and FarWest Tradeshow.

Wednesday, August 25

Gloekner Pacific Northwest Distribution Center. Distribution center for bulbs and perennials with large cold storage facilities for pre-treatment.

Oregon Flowers, Inc. produces cut flowers for the Pacific Northwest florists industry. Crops are primarily greenhouse grown bulbous species, with a few field grown items. **Swan Island Dahlias.** See nearly 50 acres of dahlias produced for cut flowers and catalog sales all over the US and the world. The vast majority of the varieties have been produced on site and selected for upward facing flowers, size, color, and long stems for cutting. **Clackamas Greenhouses, Inc.** At this nursery which produces potted flowers we will see several different styles of automated irrigation, from flooded floors to overhead moveable hanging baskets. **CEBECO Lilies, Inc.** CEBECO is a lily breeding company that produces basic stock for worldwide production and distribution. **Van Bloem Gardens, Inc.** This is a consortium of companies that purchase perennials and bulbs from around the world. They package and supply major chain stores such as Fred Meyer and many other western retail garden centers. **Woodburn Nursery Company** produces hundreds of nursery items as well as florist azaleas for shipment nationwide. You'll see propagation facilities, potting, greenhouse, and field production areas as well as cold storage facilities. **Al's Fruit and Shrub Center** is one of the top garden centers in the Pacific Northwest. It is located in Woodburn, Oregon but draws customers from both the Salem and Portland markets, which are well over 25 miles away. Do you need new ideas for marketing your flowers and plants? You'll learn from one of Oregon's best. We will also have a **catered evening dinner** with our host from Al's, Jack Bigej who looks forward to meeting our group and discussing production and marketing products from one of the world's finest industries - The Ornamental Industry!!

Thursday, August 26

Here and Now Gardens produce field-grown cut flowers primarily from perennial flower beds. We will observe several unconventional methods used in their production practices. **Oregon Roses Inc.**, producers of greenhouse cut roses and many acres of field grown cut greens for the florist trade. **Iwasaki Brothers, Inc.** This company is a major supplier of annuals, perennials, and holiday potted crops for much of the Pacific Northwest.

Ornamentals Northwest Seminars & Farwest Show

Immediately following the CORF Grower tour, the Ornamentals Northwest Seminars begin. The broad range of topics in these fascinating seminars offer something for growers from every segment of the industry. On Friday the Farwest Show, North America's top attended tradeshow, begins. Registration for Seminars is not included in the tour registration but you may use the CORF registration form to register for the seminars. Show registration is complimentary with your CORF tour registration. For an exhibitor list visit the OAN website at www.nurseryguide.com

Laws & Regulations Training for PCAs & PCOs

8am - 10am 2 hours CDPR PCA hours approved.

SAN DIEGO: December 7

WATSONVILLE: December 9

Registration Information on Reverse Side of Page



CORF Program Registration Information & Form

Watsonville Tour Registration Fees

Up to 10 days before each tour: \$65. Lunch is included in your registration fee. Minor changes in itinerary may occur. **Late Registration:** Late and at-door registration: \$85. At-door registration will be accepted only if space is available. Lunch is not guaranteed for late registrations.

Workshop Registration Fees

Up to 10 days before each workshop: \$50 per workshop. **Late Registration:** Late and at-door registration: \$70 per workshop. Registration at the door will be accepted only if space is available.

Refund Policy: There will be **no refunds**. However, another person may attend in your place.

For more information please call Mary Golden, CORF Program Coordinator at 707/462-2425.

REGISTRATION FORM. Please photocopy this form for additional registrations.

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If possible, provide us with your fax & email address so that we may send you important meeting information.

Please register me for the following education programs

	Early	Late	
Watsonville Grower Tour, OCTOBER 7	\$65	\$85	\$ _____
Postharvest Treatments for Floral Crops	\$50	\$70	\$ _____
___ SALINAS, OCTOBER 19 <input type="checkbox"/> ENGLISH <input type="checkbox"/> SPANISH			
___ CARPINTERIA, OCTOBER 20 <input type="checkbox"/> ENGLISH <input type="checkbox"/> SPANISH			
___ SAN DIEGO, OCTOBER 21 <input type="checkbox"/> ENGLISH <input type="checkbox"/> SPANISH			
___ HALF MOON BAY, OCTOBER 28 <input type="checkbox"/> ENGLISH			
Laws & Regulations Training for PCA's & PCO's	\$50	\$70	\$ _____
___ SAN DIEGO, DECEMBER 7			
___ WATSONVILLE, DECEMBER 9			

Grower Tour to the Willamette Valley	By July 26	After July 26	
CORF Grower Tour	\$275	\$320	\$ _____

Farwest Show Registration: free with CORF Tour registration.....\$0 \$0

Ornamentals Northwest Seminar Registration	By Aug. 2	After Aug. 2	
All sessions, 3 days.....	\$50	\$70	\$ _____
Single 3 hr session.....	\$25	\$35	\$ _____

Total registration fees enclosed \$ _____

Grower Tour to the Willamette Valley Information

Tour registration includes tour bus tickets, lunch on Wed. & Thurs., Wed. night dinner, and entrance to the Farwest Show.

Hotel Accomodations: CORF has reserved a block of 30 rooms at the **Red Lion Inn - Coliseum, (503)235-8311 or (800) Red-Lion**. Mention CORF to receive discounted rates: Single \$74; Double \$84. Reservations must be made by July 26th to guarantee a room. After that time the room block will be released. Continental breakfast included, Free airport shuttle.

Airline Information: Travel expenses are not included in your tour registration fee. **Delta Air Lines** offers special discounts to the Farwest Show. Save 5% to 10% off the price of your ticket. Call Delta, **(800) 241-6760** and refer to file #129078A. Seats are limited so book early.

Refund Policy: Prior to July 26 any amount paid to CORF is refundable, less a \$20 administrative fee. There will be no refunds after July 26. Refund requests must be submitted in writing.

Regional Report

Ventura & Santa Barbara Counties



CORF Disease Diagnostic Meetings

The Disease Diagnostic meetings recently held in Ventura were a big success with 71 people enrolled. Miguel Vilchez (Dept. of Plant Pathology, UC Riverside) did an extraordinary job collecting disease samples so that participants could get first-hand experience diagnosing diseases typically encountered in the nursery. Dr. Heather Scheck, Plant Pathologist for the Santa Barbara County Agricultural Commissioner's Office, also provided disease examples, as well as helpful resource materials. Participants walked away with arms full of valuable publications. Farm Advisor Steve Tjosvold reported that the meeting in Watsonville was also a success.

Ed Van Wingerden Finds that Consultants Benefit Association

Last issue I reported that the Santa Barbara Flower Growers Association was assessing its membership a fee for hiring a land use consultant and a public relations specialist. President Ed Van Wingerden cited evidence that this has already had a significant benefit to flower growers by increasing positive media coverage, and has allowed the Association to take a more proactive response to political pressure to curb greenhouse expansion.

New Research Project to Evaluate Reduced-Risk Pesticides and Practices

I recently received a grant to evaluate reduced-risk pesticides and practices from the California Dept. of Pesticide Regulation (DPR), along with Farm Advisors Karen Robb and Steve Tjosvold, and Extension Entomologist Heather Costa (Dept of Entomology, UC Riverside). I also will receive supplemental funds in July from the UC Hansen Trust to incorporate additional nursery sites in Ventura County. With this

funding, we plan to evaluate new reduced-risk pesticides, a special category of pesticides that receive a fast-track clearance through the US EPA and DPR registration processes because they pose less risk to humans and the environment than many conventional pesticides. Reduced-risk management approaches are practices that can be incorporated into IPM programs to reduce pesticide use and exposure to pesticides. Two such approaches that are relatively new are the use of UV-absorbing plastic greenhouse coverings (see CORF News 3(2): 5) and the use of reflective mulches. Reflective mulches have been successfully used in experiments on field vegetable and ornamental crops to deter certain pests, especially aphids, whiteflies, and leafhoppers. Further work is needed to validate that this technique is effective and cost productive on commercial floriculture crops. Another practice that is widely used in the industry that we will evaluate is the use of yellow sticky tape. There is anecdotal evidence from growers that sticky tape reduces pesticide applications by significantly trapping and reducing pest populations, but scientific evidence is lacking. The additional cost of the use of UV-absorbing plastics, reflective mulches, and sticky tape can potentially be offset by lower pest infestation rates, resulting in less applied pesticides and lower costs for pest control. It will also minimize the subsequent impact of pesticides on the surrounding environment, on workers and other humans exposed to pesticides, and on natural enemies in the production system.

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Field Observations

New Pest & Diseases

Downy mildew (DM) on hybrid static (Misty series) is a new disease in California. It was first reported in 1997 in San Diego County (CORF News 1(1):5) and in Monterey and Santa Cruz Counties (CORF News 2(1):4). Recently Dr. Heather Scheck reported the disease in Santa Barbara County too. This DM disease is caused by *Peronospora statices*, a fungus that was introduced to California from Europe or the United Kingdom. It causes yellow spots and brown, necrotic patches. Masses of fuzzy fungal growth may be found on leaf undersides. Some growers are still fighting DM because of the cool, moist spring. Preventative fungicides (see CORF News 3(1):7) are warranted in the field where there is DM history and wet conditions. Contact me if you are having problems. Dr. Scheck announced at the CORF Disease Diagnostic meeting that she offers laboratory diagnostic services at no cost for Santa Barbara County growers with suspected DM and other plant pathogen problems.

Root knot nematodes were recently found heavily infesting a lisianthus crop. Many of the plants were stunted and yellow as a result of this pest. Examination of the roots revealed numerous small galls produced by the nematodes as a result of their feeding. Nematode activity produces many infection sites for root rot diseases, and can reduce yields dramatically. Best control is soil fumigation or steam sterilization. Growers who produce crops in rockwool and other types of "hydroponics" have also reported problems with this nematode, so it is not confined to crops produced in soil.

Methyl Bromide Alternatives

Continued from page 1

floriculture industry. Each crop and site has its own complement of soil inhabiting diseases, nematodes, and weeds. Therefore, there are extraordinary challenges in researching methyl bromide alternatives in so many different floricultural crops. The cool coastal sites, where many growers are located, limit the use of solarization as an alternative. However, research into enhancing solarization with various amendments and techniques is proceeding. Environmental concerns limit the use of certain alternatives such as Telone and chloropicrin near environmentally-sensitive coastal areas and urban areas.

Near the end of the meeting, Steve Siri of Glad-A-Way Gardens summarized the outcome of workgroup sessions that analyzed the floriculture industry's needs related to methyl bromide alternatives. The workgroup noted that the industry has received no government research money to test methyl bromide alternatives in ornamental crops. Yet, much of the

industry's success relies heavily on methyl bromide use. Research on methyl bromide alternatives needs to be tested quickly to develop cost effective application treatments and methods suitable for the diverse needs of the industry. The group believes that methyl bromide, at the very least, would be needed as a rotational option for soil-borne pest eradication every 2-3 years. Research should continue to help minimize movement of methyl bromide into the atmosphere with techniques such as high barrier plastic tarps.

Although many alternatives in controlling pests in the soil or postharvest situations exist for specific situations and crops, there is no known substitute for the broad spectrum of pest control and ease-of-use characteristics with methyl bromide fumigation. The workshop participants kept referring to some common chemical strategies that seemed to have the most promise as alternative controls. These chemical alternatives were chloropicrin,

Telone II, Vapam/Basamid, methyl iodide or combinations of these. A summary of the advantages and disadvantages and registration status follows.

Methyl iodide has similar efficacy and application techniques as that of methyl bromide. However, it apparently is broken down by sunlight quickly into non-reactive components that would not harm the ozone layer. (Remember that methyl bromide is being banned because it reputedly reacts and depletes the protective ozone layer that covers the earth). The company MIF Partners, L.L.C. has licensed the University of California Patent covering the use of methyl iodide for soil fumigation. The company is seeking registration but the registration processes is, of course, time consuming, costly, and there are many uncertainties in the process.

Chloropicrin is known primarily for its use as an additive to methyl bromide. In small proportions (2%) it is the warning agent in an otherwise odorless methyl bromide

See Methyl Bromide Alternatives - Page 9

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Methyl Bromide Alternatives

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application. In greater proportions (33 to 43 %) it is an important additive to increase control of certain soil inhabiting pathogens. Alone or in combination with other methyl bromide alternatives, it has its strength for disease control and limited activity for weed and nematode control. Chloropicrin, known more infamously as tear gas, has obvious potential application problems especially near the farming-urban interface. As chloropicrin application rates increase there is evidence that application buffer zones might need to be expanded.

Telone II (1,3 dichloropropene), a soil fumigant used primarily for nematode control, also has some limited disease and weed control characteristics. Telone in combination with chloropicrin has achieved broad-spectrum pest control similar to methyl bromide in some experiments. The draw back is that the fumigant is a significant air pollutant, has objectionable odor, and has already been taken off the market once. In crops where it is registered, it has restrictions limiting

its use within a geographical township. It has no greenhouse and limited ornamentals registration. The registrant is looking at reducing loss into the atmosphere with drip applications and high barrier tarps.

Vapam (metam sodium) and Basamid (dazomet) react with soil moisture to form methyl isothiocyanate, a fumigant that can provide good control on soil inhabiting nematodes and certain weeds. Disease control has been somewhat limited. The effectiveness of these products is dependent on good application techniques. Vapam, a liquid, requires the use of the proper amount of water and application technique to move the fumigant into the soil. Basamid, a granule, requires the proper incorporation of the granule and soil moisture, and it is effective only to the depth of incorporation. Both need tarping for maximum effectiveness and a waiting period of several weeks before treated soil can be planted. Basamid is registered for greenhouses but Vapam is not. Both are registered for ornamentals.

There are not many certainties with this issue. Chemical registrations and application restrictions change as toxicological data is evaluated and political pressures are enforced. Application technology may help mitigate the adverse effects of some compounds or improve effectiveness. What is apparent, however, is the serious situation that the floriculture and nursery industry faces without the use of methyl bromide. The talk is about the methyl bromide ban in 2005, but the reality is that methyl bromide use is being restricted now. And this industry has been caught far behind other agricultural crops in researching alternatives.

Steve Tjosvold, Farm Advisor, UC Cooperative Extension, Santa Cruz County

Dr. Clyde Elmore, Weed Scientist, UC Cooperative Extension, Davis, California

Dr. Michael A. Mellano, Mellano and Co., San Luis Rey, California

Steve Siri, Glad-A-Way Gardens, Santa Maria, California



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Campus News & Updates

Submitted by Julie Newman, Farm Advisor UCCE

UC Davis News: Michael Reid Appointed Program Leader

Michael Reid, professor in the Dept. of Environmental Horticulture and expert in postharvest handling of floriculture crops, has been appointed Agricultural Productivity Program Leader. This position is one of four UC Division of Agriculture & Natural Resources (DANR) positions recently created to bring together the Agricultural Experiment Station, Cooperative Extension, and other organizations and industry groups in workgroups. These workgroups will plan and conduct programs that address high priority needs, with fiscal budgets administered by the program leaders. Dr. Reid served as Associate Dean for the Division of the Environment in the College of Agricultural and Environmental Sciences at UC Davis since 1994. He will continue his postharvest research in the Dept. of Environmental Horticulture with his new appointment as Program Leader. One workgroup that is being reformed under DANR's new workgroup structure is the

Floriculture & Nursery Workgroup, chaired by UC IPM Advisor, Cheryl Wilen in San Diego County. Plans for the new structure of this workgroup include increased participation and input from floriculture and nursery growers.

UC Riverside News & Research Updates

Floriculture & Nursery Specialist Position Reopened. Vic Gibeault, Chair of the Search Committee for the Floriculture and Nursery Extension Specialist position at UC Riverside, announces that this position has been reopened. If you know of any good potential candidates, please encourage them to apply. Position announcements may be obtained from the Office of Botany and Plant Sciences (909)787-2430, or by contacting Farm Advisors Karen Robb (858)694-2857, or Julie Newman (805)645-1459.

Using Parasitoids and IGRs for Control of Silverleaf Whitefly on Poinsettias

Intensive research over the last six years has demonstrated that the most effective

parasitoid that is commercially available for biological control of silverleaf whitefly on poinsettias is *Eretmocerus eremicus*. Weekly releases of three female parasitoids per plant have consistently produced final whitefly densities on commercially produced poinsettias that are similar to those on poinsettias that are treated with insecticides. Furthermore, biological control programs using *E. eremicus* have been used by growers to produce poinsettias with commercially acceptable whitefly densities without the direct supervision of university researchers. This result indicates that biological control technology can be implemented by trained growers willing to use this method for whitefly control. A major limitation to using *Eretmocerus eremicus* is cost which can be 30-40 times more expensive than using insecticides. However, biological control can be cost competitive when weekly releases of parasitoids are reduced to one female parasitoid per plant and combined with two mid-season applications made one week apart of an

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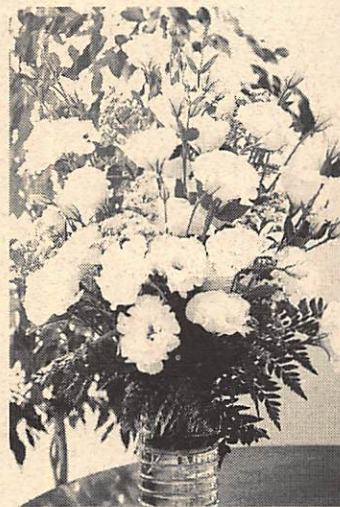
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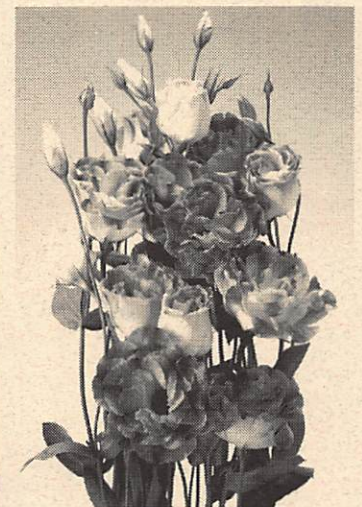
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Campus News

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IGR that is compatible with the parasitoids. Trials in small experimental greenhouses and large commercial greenhouses have demonstrated that using an IGR-parasitoid combination gives more effective control of silverleaf whitefly than using either parasitoids or IGRs alone at a cost competitive with typical insecticide control programs.

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Grower Concerns

Continued from page 3

alternatives, but doesn't feel comfortable with their performance. Mike continues, "Nothing we have tried that is registered has shown potential to replace methyl bromide. While we can extend the time between applications of methyl bromide and minimize its use with crop rotations, it's the complete loss of methyl bromide that is perplexing. Currently, methyl bromide is a risk management tool, which helps turn the tables to growers' favor. Without methyl bromide, it is risky to plant crops with large financial investments. Methyl iodide looks interesting as a

potential replacement, however, there are still many questions that need to be answered."

"Telone/chloropicrin combinations may have some potential, but the future availability of Telone is a concern. That leaves Vapam or Basamid. These products are okay on some weeds, but are limited as pathogen control agents. They are also much more difficult to use than methyl bromide. Shanking concentrated Vapam solution looks interesting, but potential problems with drifting off site need to be addressed. Basamid/Vapam and mulches and pre-emergent herbicides seem to be what will be used."

"We are working hard with pre-emergent herbicides, but are concerned about residual activity. In our case, we are fortunate to have some flexibility to leave fields fallow, but would prefer not to use pre-emergent herbicides so heavily due to quality effects and the risk involved in applying them. If too little pre-emergent is applied, you don't achieve the necessary control, if too much is applied, you have problems with phytotoxicity."



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Emission Reduction of Soil Fumigants

Continued from page 1

70% reduction of 1,3-D emission but did not compromise the control of plant parasitic nematodes. We consider this approach a fairly inexpensive, innovative approach to the fumigant emission problem. Though it remains to be seen how this method will perform under commercial crop production conditions, and how the efficacy against other plant pathogens and weeds is affected, the preliminary data are very promising.

This research was funded by the USDA Pest Management Alternatives Program and the California Fresh Carrot Board.

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New Publications

Dr. Ann King, Farm Advisor, UCCE

Pesticide Safety: A Reference Manual for Growers - Spanish version DANR Publ. 3394; \$7.00.

IPM Disease Guidelines for Floriculture (organized by pest, disease, and flower); UC DANR Publ. #3392, 1999, 77 pages, \$5.00; or on internet at www.ipm.ucdavis.edu.

Nitrogen and Water Management for Coastal Cool-Season Vegetables; DANR Publ. #21581, 1998.

Statistical Review of California's Organic Agriculture, 1992-1995; UC Ag Issues Center Publ. #OR-1, 1998, 98 pages, \$18.00.

Recognizing Tree Hazards: A Photographic Guide for Homeowners; DANR Publ. #21584, 10 pages, \$4.00.

Specialty and Minor Crops Handbook, 2nd edition. Contains 63 crop profiles, a glossary of Asian vegetables, etc.; DANR Publ. #3346; \$35.

All publications are available from the UC DANR Publications office; (800) 994-8849.

Calendar of Industry Events

July

10-13.....Ohio Short Course, 614/487-1117

14-17 .. FUN 'N SUN weekend in San

Francisco, CAFG&S, 408/496-6187

August

15-18 ... CSFA Floriculture Retreat, Cal Poly, San Luis Obispo, 916/448-5266

26-29.....CORF Grower Tour and Far West Trade Show. Portland, OR CORF 707/462-2425

September

12-16.....CCFC Tenative Trade Mission 831/728-7333

October

7.....CORF Grower Tour, Watsonville, 707/462-2425

8-10.....CSFA Convention & Top 10

Competition, 916/448-5266

14.....CAFG&S Member Convention Ventura, 408/496-6187

19-20....Western Nursery & Garden Show, Las Vegas, NV

19.....CORF Postharvest Treatments for Floral Crops, Salinas

20.....CORF Postharvest Treatments for Floral Crops, Carpinteria

21.....CORF Postharvest Treatments for Floral Crops, San Diego,

28.....CORF Postharvest Treatments for Floral Crops, Half Moon Bay

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