



CORF News

California Ornamental Research Federation

Vol. 2, Issue 3

Summer 1998

Leafminers in Floriculture Crops

by Dr. Michael Parrella, Dept. of Entomology, UC Davis

Leafminers have been pests of ornamental crops grown in greenhouses since the mid-1970s. Leafminers in the genus *Liriomyza* Mik constitute the most important species, although the species complex has changed over the past 25 years. The dominant leafminer species attacking floricultural crops all over the world is *L. trifolii* (Burgess). The pea leafminer, *Liriomyza huidobrensis* (Blanchard) has dramatically increased its pest status in greenhouses over the past five years. Traditionally associated with chrysanthemums grown at higher elevations in the Caribbean, Central and South America and on field flower crops grown in California, this species is now a major pest of ornamental crops grown in greenhouses in many parts of the world. The chrysanthemum

leafminer, *Chromatomyia syngenesiae* Hardy, is another leafminer that can cause damage to chrysanthemums grown under protected cultivation. This species is not considered as serious as the *Liriomyza* spp. leafminers, but in England it is often a major concern for chrysanthemum growers.

These three species of leafminers have been the targets of chemical and biological control efforts since they were discovered attacking ornamental and vegetable crops in greenhouses. In vegetables, biological control is a primary means of controlling this leafminer whereas on ornamentals, chemicals are preferred.

Leafminers & Insecticide Resistance
Development of pesticide resistance is a common refrain in the greenhouse

ecosystem and there is a scenario of use strategies that has become quite common. This scenario is as follows: the insect develops resistance to what are considered the 'best' pesticides; growers, in a desperate situation, turn to biological control and research is supported to develop biological control strategies for the pest; by the time the biological control strategies can be implemented on a large scale, the agrochemical industry has developed a new pesticide to which the pest is very sensitive; this new chemistry is effective, easy to use and inexpensive compared to biological control, so growers are quick to switch to this new pesticide. Such a pattern is evident with many of the major greenhouse pests (for ex

See Leafminer - Page 9

Kee Kitayama Research Foundation Endowment Dinner a Big Success

by Dr. Karen Robb, UCCE Advisor

Supporters of the Kee Kitayama Research Foundation gathered for the first Endowment Dinner at the San Francisco Flower Market Saturday, May 30. More than 215 people joined together to celebrate the heritage and the future of California Floriculture.

The Kee Kitayama Research Foundation was formed as a nonprofit corporation in 1992 to further the efforts of California floriculture research. It is named in honor of the late Kee Kitayama, who is considered to be a founding father of the California Cut Flower Commission.

In 1994, the Foundation joined with the California Ornamental Research Federation (CORF). CORF now serves as the educational arm of the

Foundation and extends research-based information to the industry through grower tours, workshops, and this newsletter.

The Foundation began its first funding for floriculture research projects in February of this year. As contributions to the Foundation increase, more research will be funded. This first Endowment Dinner not only raised money for the Foundation, but also raised awareness of its benefits. For more information regarding the Research Endowment, its activities and donation opportunities please contact the Kee Kitayama Research Endowment, PO Box 1356, Morgan Hill, CA 95038-1356, phone 408/724-1130.



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New Publications

Dr. Ann King, UC Cooperative Extension

University of California Publications (Available through the DANR Publications office at 800-994-8849 and through your local Cooperative Extension office.)

- **Grower's Weed Identification Handbook, Group 23** (Sheets 296-311). Publ. #4030; 16 sheets; \$6.00
- **Specialty and Minor Crops Handbook, 2nd ed.** Publ. #3346; 184 pages; \$35.00
- **Treating Wounds in Landscape Trees.** Publ. #21570; 4 pages; \$1.50
- **Drip Irrigation for Row Crops.** Revised 1997; Publ. #3376; 170 pages; \$25.00
- **Postharvest Chlorination.** Publ. #8003;

National Organic Directory. The 15th annual directory from the Community Alliance with Family Farmers contains listings of organic farmers and suppliers; organic marketing guidelines; marketing articles, and more. 372 pages; 1998 edition; \$55; (800) 852-3832.

Managing plant nutrition on the Internet

Dr. Heiner Lieth, Environmental Horticulture, UC Davis

In this issue of the newsletter I will briefly focus on nutrient management in the nursery. The best method for gathering information in this area is probably still the textbook since there tend to be lots of formulas and special circumstances that come into play (e.g. water quality, composition of rooting medium, etc.), there is, however, information available at the touch of a button on your keyboard.

Let's look at some examples for the sort of information that is available: At Cornell University, for example, we can find a web page on nutrient management in the nursery (<http://www.cals.cornell.edu/dept/flor/grown/container/>). The article contains a lot of tables and figures. It focuses specifically on container-grown crops and is quite detailed.

The NCSU Horticulture Department has a web site where you can find some

floriculture leaflets that you can print out <http://www2.ncsu.edu/unity/lockers/project/floriculture/www/HIL's/index.html> . Related to fertilization are leaflets on alkalinity and micronutrient management. You can also find a program (Excel worksheet) to assist you in making calculations at <http://www2.ncsu.edu/unity/lockers/project/floriculture/www/programs/alk.html>

Companies making and selling fertilizers are also represented on the web but many are little more than elaborate business cards with information on how to get catalogs and phone numbers to call. McCalif is an exception. They have a web page specific to some greenhouse crops designed so you can easily identify which of the fertilizers that they sell are useful for some specific greenhouse crops: http://www.mccalif.com/html/supplies/html/fert_ghsc.html

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CORF



Floriculture education from the Kee Kitayama Research Foundation

New CORF Logo Unveiled

During a joint meeting on May 30 the trustees of the Kee Kitayama Research Foundation and members of the CORF planning committee approved adopting a new CORF logo.

"In designing the new logo, we tried to communicate CORF's function as the education committee of KKRF, dedicated to identifying and meeting floriculture research and education needs" explained Mike A. Mellano, CORF Chair.

The logo incorporates the floral splash from the Kitayama logo and the descriptive line "Floral Education from the Kee Kitayama Research Foundation".

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Field Observations

New Pest & Diseases

Calla flower spot

Zantedeschia aethiopica and *Zantedeschia* hybrids have been stricken in the field with a flower spotting disease caused by the fungus probably *Alternaria alternata*. The disease starts with brownish pinpoint lesions, they expand to an extent, and many lesions may merge into large necrotic areas. *A. alternata* is often found as a secondary colonizer of plant tissues, though this fungus has been reported as a pathogen of several hosts. There appears to be cultivar resistance and this is now being investigated in greenhouse testing.

Eucalyptus Branch Dieback

A serious *Eucalyptus* disease has been found on a cultivar of *Eucalyptus polyanthemos* being grown for cut foliage. We believe that a fungal pathogen may be infecting pruning wounds and moving back into the living tissue.

Initially the side of the tree or branch associated with the infected pruning wound is affected. Early on, the infected branch has distinctly grayish leaves, unlike the greenish healthy leaves. The internal wood tissue is usually brown, at least near the pruning wound. Later the branch or tree may die. We are now trying to determine the pathogenicity of several fungi that have been isolated from infected wood. We would like to hear from others who are having similar problems on this or other species. So far, *Eucalyptus pulverulenta*, the common florist *Eucalyptus*, does not seem to be infected in the fields.

Regional Report

Santa Cruz & Monterey Counties

Effect of Soil Media on Production and Quality, *Fusarium* Wilt, and Water Usage in Cut Greenhouse Carnations



The use of container culture for carnation production has several distinct advantages over traditional culture in ground beds. For disease management, growing carnations in raised beds or "grow bags" containing a sanitized medium might help keep susceptible carnation roots isolated from the fungus that causes *Fusarium* wilt that is very difficult to eliminate from the ground.

So, what media could be used for carnations in raised beds or grow bags?

Five soil media, suitable for container-growing, were tested recently in a commercial Salinas greenhouse in raised redwood beds: 1) 100% Coconut coir (husk), 2) UC Mix (Peat+Redwood+Sand in equal portions), 3) UC Mix (with coconut coir instead of peat), 4) UC Mix with loam instead of sand and 5) Sunland carnation canning mix (a locally available commercial mix). A computerized tensiometer-based irrigation system was installed by Dr. Heiner Lieth and, doctoral student, Loren Oki. Each medium was irrigated automatically when the monitored plot reached soil tensions of 5 kPa and turned off when it reached 2 kPa.

Unwanted *Fusarium* wilt not controlled with fungicide

Only two months after the treatments began, the experiment seemed in jeopardy because of unwanted wilt disease started to occur in the test beds.

At this time, another component was added to the experiment to investigate the possibility of reducing disease with the fungicide, thiophanate methyl (Cleary's 3336). Half the area of all field plots began to receive the fungicide at maximum labeled rates every 3 weeks. After 5 months, there was no effect on disease mortality or other production and quality parameters so the fungicide application was discontinued.

Soil type, maybe pH, influences *Fusarium* wilt incidence

Disease mortality was significantly influenced by soil medium. Soil mix #3 and #5 had significantly less disease and consistently the highest pH (ranging from 6.5 to 7.3) than that of soil mixes #1, #2, and #4 (ranging from 5.6 to 6.5). These findings would be consistent with the world's literature on *Fusarium* wilt diseases, in that, generally higher soil pH reduces disease incidence.

Good Carnation Production and Quality in all Soil Mixes

Flower production and stem length, on a per plant basis, were statistically equal during the evaluation period in all soil media. Flower fresh weight, however, was lower in soil mix #3 and #5 where there was less disease mortality. Possibly individual plants in these media had more competition for available water and therefore gained less water-weight. In practical terms, you could not tell the difference visibly between carnations grown on the various soil treatments. They all would make excellent media to grow carnations.

39% Water Savings with Soil-tension based Irrigation.

Irrigation water use was monitored for all media as well as 3 similar adjacent grower beds using Sunland canning mix (medium #5). The computerized irrigation system helped reduce water use over the grower controlled plots by 39% in 6 months of monitoring. Soil medium #1 (100% coconut) used substantially less water than most other media probably because it had the highest water holding capacity and required less frequent irrigations.

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Regional Report

San Diego County

Management Options for Non-point Source Pollution & Recycling Manuals Available



Water quality management involves a combination of interrelated practices needed to protect, improve, restore,

or maintain water quality. Until recently, most of the effort directed toward control of water pollution involved easily identified sources of pollutants, such as sewage treatment plants or industrial facilities. This type of pollution is referred to as point source pollution. However, with the passage of the federal Coastal Zone Act Reauthorization Amendments or CZARA, another more elusive type of pollution that has no easily identified source has been targeted. This is referred to as non-point source pollution (NPS).

Agriculture is one of several industries that have been identified as contributing to non-point source pollution. While it is impossible to locate the source of the pollutants, it is known that certain growing practices will contribute more to non-point source pollution, while other practices can minimize water quality problems.

Current federal regulations have provided for a three-tiered approach for minimization of non-point source pollution. This begins with voluntary measures and moves towards stringent and strictly regulated criteria. Strict and inflexible mandatory regulations may be avoided by early voluntary compliance with initiatives to reduce non-point source pollution. The 'Management Options for Non-point Source Pollution Manual' was designed to provide the best available management options for the greenhouse and container crop industries. The intent is to allow the grower to comply with regulatory requirements at the voluntary level, and to avoid future, more stringent regulatory actions. Not all the management options described are appropriate for every operation, and costs and complexity vary.

Many California floriculture and nursery operations are in close proximity to residential areas or are limited by the constraints of the municipalities in which they lie. The continued support and goodwill of local non-agricultural businesses and residents is essential to the continued viability of these farming enterprises. Therefore, it is imperative that growers make every effort to be "good neighbors" and be perceived as responsible for the well-being of the community.

Growers have expressed their interest in recycling many of the materials used in their growing operations. A major concern among the growers, however, is the time required to compile the information necessary to make informed decisions regarding recycling.

'Agricultural Recycling Manuals' have been developed for the San Diego, Santa Cruz, Ventura and Bay Areas. These manuals were developed for use as a guide for growers to determine appropriate methods of handling recyclable products. They include individual sections on water, green waste, plastics, agricultural containers, wood, paper, metal, tires and automotive products. A listing of recycling companies has been included to facilitate locating local services.

The 'Management Options for Nonpoint Source Pollution Manual' and the 'Agricultural Recycling Manuals' are available from the California Cut Flower Commission. To obtain a copy, please contact CCFC at (916) 852-5166 or write to them at 11344 Coloma Road, Suite 450, Gold River, CA 95670-4461.

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Field Observations

New Pest & Diseases

Diseases

No new finds of chrysanthemum white rust have been found since April 1. Since the weather remains conducive to white rust, everyone who has had white rust will be re-inspected in a few weeks. All chrysanthemum growers will be re-inspected in the fall. In the meantime, it is a good idea for mum growers to practice preventative methods as long as the weather remains conducive to white rust. Call me for more information on these measures.

Weeds

A new weed has been found in this county, *Rorippa silvestris*, also known as creeping yellow field cress or keek. The plant has a creeping, prostrate growth habit with lobed or toothed leaves, longer than wide. It was likely imported with bulbs from the Netherlands by getting caught in the bulb's scales. This weed has the potential to become a serious pest in ornamental plant production. It is a perennial, which spreads vegetatively very effectively. *Rorippa silvestris* will spread rapidly from plantlets arising from buds on the rhizome or the stolons. It has an extensive root system; Clyde Elmore from UC Davis followed one plant's roots for more than 3 feet into the soil. Currently, the strain found in San Diego only spreads vegetatively, but if another non-genetically similar plant is introduced, there is the possibility that viable seeds will be produced, too.

Field Observations

New Pest & Diseases

Pythium Root Rot

Following El Nino, we have the summer of "El *Pythium*". Flower growers, vegetable growers, landscapers, and homeowners are all facing serious plant loss due to the pathogen *Pythium* spp. Particularly hard hit are woody plants and perennial flowering plants which endure winter months of heavy, wet soils.

According to "Diseases of Field-Grown Flowers" (by McCain and Paulus), *Pythium* is present in most cultivated soils and attacks plants in wet conditions. Soil from a given field may contain several pathogenic *Pythium* species. *Pythium* attacks young tissues such as the root tip, and it may cause rot of the entire root and even move up into stem tissue. Plants may wilt, stop growing, or even collapse and die.

If you suspect *Pythium* damage, try to dig up some plants with their roots still attached. *Pythium*-damaged roots are often dark brown or black, have a rotting appearance, and the outer layer of the root often can be slid off of the inner root core. This is not true in every situation, but is typical in many ornamental plants. For a true diagnosis, have it tested by a commercial lab, or use the commercial self-testing kits.

If *Pythium* damage is not too severe, the plant may recover as the soil dries and new roots are formed.

There are fungicides that can be used to help with *Pythium*, as long as the plants are not already too badly damaged. The best strategy is to try to prevent *Pythium* damage by improving the drainage of the soil (plant on raised beds, or use drainage tiles). Fungicides can then be used with mild or moderate *Pythium* damage.

Regional Report

San Mateo & San Francisco Counties



El Nino Cleanup

The worst of the 1997/98 El Nino is over, and growers in San Mateo County are cleaning up the silt that was washed into fields and greenhouses, repairing erosion and fallen tree damage along stream banks, and assessing their crop and financial losses.

U.C. Cooperative Extension and the San Mateo County Resource Conservation District will be offering workshops during the next year which relate to erosion control, storm preparation, cover crop planting, and other topics. Watch for local announcements about these workshops.

Keep Pesticides Safe During Flooding

Now that growers are aware of the damage that can be caused by flooding, they should think about safe pesticide storage to avoid devastating spills in future floods. Pesticide containers which break into flood water can cause severe damage to people, animals (pets and livestock), crops, fish, and the surrounding habitat.

In addition to growers, pesticide distributors and even homeowners should be aware of safe pesticide storage in a potential flood situation.

The California Department of Pesticide Regulation offers this advice:

- Protect the pesticides you keep in storage. Sound containers are your first defense against a spill or leak.
- Store pesticide containers high above the floor or ground level, where possible, in the storage enclosure.
- Evaluate the design of your pesticide storage area. It should have a solid floor and a curb to contain liquid pesticides and simplify cleanup if there is a spill.

- Put your pesticide storage structure downslope and away from a wellhead or any surface water area.
- Ensure that pesticide containers are properly identified. This will help emergency responders identify the container's contents in a flood situation.
- Keep your inventory list current.
- Get rid of old or unused pesticides and empty containers. Do this legally, of course. Check with your Agricultural Commissioner's office for proper procedures.

Insect Diagnostic Workshop - Bilingual

CORF and U.C. Cooperative Extension are offering a series of Insect Diagnostic Workshops in English and Spanish. Insect identification, damage, and control strategies will be emphasized in these half-day workshops, along with demonstrations and printed field reference materials (also available in Spanish). The workshop in Half Moon Bay, on July 23rd will be taught by Dr. Karen Robb, Dr. Ann King, and Mr. Martin Guarena. Other workshops will be held July 7th in San Diego, July 9th in Ventura County, and July 22nd in Watsonville. Call the CORF office (760-723-0807) for more information.

Cover Crop Workshop

U.C. Cooperative Extension and the Resource Conservation District of San Mateo County will offer growers a Cover Crop Workshop September 10th in Half Moon Bay. Field flower growers, Christmas tree growers, and vegetable growers will all be the focus of this workshop. Call the UCCE office for more information (650-726-9059).

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Regional Report

Ventura & Santa Barbara Counties

Bilingual Spray Application Workshops



Growers often blame the ineffectiveness of a pesticide application on pesticide resistance, but frequently the problem is ineffective spray coverage or inaccurate timing of the application to susceptible pest stages.

Crop canopies may be difficult to penetrate and good coverage, particularly on lower leaf surfaces where many pests reside, is often not achieved. There is also a tremendous variability in the gal/A of pesticide applied to floriculture crops. One grower may use 600 gal/A, and another may use 1200 gal/A for the same crop.

Many tools are readily available that can be used to improve pesticide efficiency and minimize pesticide use. For example, paper strips that change color upon exposure to moisture can be attached to leaves in a 3-D grid pattern representing a cross-section of a flower bed or bench. These moisture sensitive strips can be used to help visualize horizontal and vertical pesticide spray patterns within the crop canopy. The use of digital volumetric flow meters and pressure gauges can be used to improve application uniformity. In addition, proper technique, including uniform walking speed and appropriate spray wand movement, is important for achieving effective spray coverage.

A series of workshops designed to help applicators and their supervisors improve the effectiveness of pesticide applications was developed in major flower production areas in San Diego, Santa Barbara, Santa Cruz, and San Mateo Counties. These workshops were co-sponsored by CORF/Kee Kitayama Research Foundation, Novartis Crop Protection, and UC Cooperative Extension.

The format for the workshop was originally developed by Farm Advisor Steve

Tjosvold and Tim Krueger, Novartis last year. Since then, two of these workshops were recently presented in Spanish (March 1998 in Encinitas and May 1998 in Carpinteria). Two additional meetings will be held this November in Watsonville (see newsletter calendar). The size of each workshop has been limited to 25-30 participants to maximize opportunities for discussion and hands-on learning. Greenhouse training has demonstrated the use of moisture sensitive paper and digital volumetric flow meters for evaluating and improving spray coverage. These evaluations were conducted with conventional hydraulic nozzles and spray methods. Demonstrations include different techniques used for controlling hypothetical target pests and diseases, and evaluating spray applications on several crops, including arched and conventional roses, gerberas, and carnations.

Questionnaires have been distributed at each meeting site to evaluate the effectiveness of the workshops. Participant review has been highly favorable. We plan to send additional questionnaires to employers who sent workers to these workshops to determine the impact of the training on pestmanagement techniques used in their nurseries and the implementation of reduced-risk pesticide programs within their production.

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Field Observations

New Pest & Diseases

Eucalyptus Tortoise Beetle

If your nursery produces eucalyptus cut foliage, you should be aware of a potential new threat in southern California. Dr. Timothy Paine, Dept. of Entomology, UC Riverside, reports that a *Eucalyptus* tortoise beetle, *Trachymela sloani*, was discovered infesting trees in Riverside in March 1998 and recently was also reported in Orange County. The extent of the distribution is not yet known. The adult beetle is a mottled brown color and about the size of a ladybird beetle. It is native to Australia where it is not a pest species. However, this beetle has been accidentally introduced into New Zealand and South Africa where it has caused significant feeding damage, characterized by notching of the leaf margins and removal of terminal shoots. It is not yet known how many California *Eucalyptus* species will be hosts. However, closely related beetles feed on a broad range of *Eucalyptus* species. Though these beetle relatives became significant pests in areas where they were accidentally introduced, fortunately they have been brought under excellent biological control by specific parasitic wasps.

Investigations are underway to establish a natural enemy introduction program for *Eucalyptus* tortoise beetle in California. The permitting process has been initiated, and there is hope that suitable parasitoids will soon be identified. Meanwhile, growers should be on the lookout for these beetles, and report any potential findings to their County Agricultural Commissioner or to Cooperative Extension.

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Leafminer

Continued from page 1

ample whiteflies and spider mites) and is now repeating itself with *Liriomyza* leafminers. In the late 1970s early 1980s, *L. trifolii* was almost impossible to control with registered insecticides. Because of this, considerable research was conducted on new chemical and biological control possibilities. The result was the registration of some very effective pesticides and the discovery of many promising natural enemies. Given the problems and unknowns regarding the effective use of biological control, most growers chose to use the pesticides. Today it is clear that both abamectin and cyromazine are not providing the same level of control that they did when they were first registered and ornamental growers are once again interested in new chemistry and in biological control options. Fortunately, there is a good body of literature on the natural enemies of leafminers attacking ornamental crops and how to use them effectively in greenhouse pest manage-

ment programs. In addition, some promising new pesticides may be on the way.

Natural Enemies

Considerable research has been done on the natural enemies of leafminers with most of the work concentrating on larval and larval-pupal parasitoids. Most of the research on application of parasitoids for biological control has been with species in the genera *Opius* and *Dacnusa* (Hymenoptera: Braconidae) and *Diglyphus* (Hymenoptera: Eulophidae). This work has led to the commercialization of several species, but two dominate: *Dacnusa sibirica* Telenga and *Diglyphus isaea* (Walker).

General recommendations exist on how to use these effectively for biological control in greenhouses based

Sponsor Thanks

Many Thanks to these wonderful sponsors of the CORF Grower Education Programs whose support makes it possible to offer affordable horticultural education and training programs throughout the state.

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See Leafminer - Page 11

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UC News

First California Conference on Biological Control

Research in California on biological control has got a lot of momentum and practical applications are being implemented. Yet, still there is a lot we don't know. That is the feeling you got at the First California Conference on Biological Control, held June 10-11 at U. C. Berkeley.

Over 200 pest management professionals attended the Conference. Formal oral and poster presentations were made that addressed critical issues influencing the adoption of biological control strategies for insects, mites, nematodes, pathogens, vertebrates, and weeds. The conference succeeded to elevate the awareness of ongoing research and application of biological control and to foster the exchange of

ideas among the California biological control community.

The proceedings of all formal presentations and posters (61 submissions, 250 pages) is available for \$35. Send check, payable to UC Regents, to Christine Joshel, Center of Pest Management, UC Davis, CA., (530) 754-7665.

*Contributed by Steve Tjosvold
UC Cooperative Extension Advisor*

Internet

Continued from page 2

Obviously there is much more to be found. This can be done by selecting one of the Internet search facilities and using specific keywords related to the topic of interest. If you want to peruse some of the links mentioned above then you can find a copy of this article located at <http://envhort.ucdavis.edu/ce/corf/newsletr/intnet03.htm>

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Leafminer

Continued from page 9

trol' program is being touted. For example, in a preventative program (where natural enemies are released in anticipation of a leafminer problem) *Dacnusa* is recommended at the rate of 500/acre two times per week for 2-3 weeks and twice that rate for a similar duration if a control program is initiated. A preventative program for *Diglyphus* involves releasing 500 per acre every three weeks for 2-3 weeks and for a control program, 1000-2000 per acre are recommended weekly for 4-6 weeks.

In ornamental crops, such as chrysanthemums, the use of leafminer parasitoids is rare, due in part to the intolerance for any pests or their damage on the marketed product. Even in a crop such as gerbera, where the leaves are not harvested with the flower, the use of biological control is very limited. This is a concern because approximately 35% of all the world's greenhouse production is devoted to ornamental crops. Unless biological control can make inroads

into these commodities, the considerable expansion of biological control into greenhouse crops, enjoyed over the past 15 years may be hard to sustain as we move into the 21st century. Other factors which may limit biological control in ornamental crops include:

- 1) a multitude of other serious pests which require broad spectrum pesticide applications for control, and
- 2) the threat of migration into the greenhouse from nearby weeds/crops. For

biological control to be successful in ornamental crops, these additional limitations must be taken into consideration.

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Upcoming Grower Educational Events

JULY

- 2-6 AIFD National Symposium, Boston 410/752-3318
- 7 CORF Insect Diagnostic & IPM Workshop, San Diego (English & Spanish) 760/723-0807
- 9 CORF Insect Diagnostic & IPM Workshop, Ventura (English & Spanish) 760/723-0807
- 11-15 Ohio Short Course, Columbus, OH 614/487-1117
- 15-18 CAFG&S Fun 'N Sun Weekend, Santa Barbara 408/496-6187
- 22 CORF Insect Diagnostic & IPM Workshop, Watsonville (English & Spanish) 760/723-0807
- 23 CORF Insect Diagnostic & IPM Workshop, Half Moon Bay (English & Spanish) 760/723-0807

AUGUST

- 16-18 California State Floral Association Floriculture Retreat, Cal Poly, San Luis Obispo 916/448-5266
- 26 CORF Planning Committee 1998 VISION MEETING, San Diego 760/723-0807

SEPTEMBER

- 11 CORF News layout deadline, 760/723-0807
- 13-18 CCFC Tentative Trade Mission, Chicago 916/852-5166
- 23-26 SAF Annual Convention, Puerto Rico 800/336-4743
- 24 CORF Spray Applicator Workshop, Half Moon Bay (English Only) 760/723-0807

OCTOBER

- 1 Fresh Produce and Floral Council Exposition and Educational Sessions, Anaheim 714/739-0177
- 1-4 California State Floral Association Convention & Top 10 Competition, San Diego 916/448-5266
- 8 CAFG&S Golf Tournament, Hollister 408/496-6187x10
- 15 CORF Tour, San Diego 760/723-0807

NOVEMBER

- 8-13 CCFC Tentative Trade Mission, Denver 916/852-5166
- TBA CORF Spray Applicator Workshop, Watsonville (Spanish Only) 760/723-0807

DECEMBER

- 1-3 CCFC Board of Commissioners & Committee Meetings 916/852-5166
- 5 San Diego County Flower & Plant Association Holiday Party, Del Mar 760/431-2572
- 11 CORF News layout deadline, 760/723-0807



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