CORF News

California Ornamental Research Federation

Vol. 4, Issue 2 **Spring 2000**

Agri -Tourism Benefits Farmers in San Diego County

By R.E. Lobo, G. E. Goldman, D.A. Jolly, B.D. Wallace and S.A. Parker
(Adapted from an article published in California Agriculture, Vol.53, No.6, Nov-Dec, 1999)

Tourism and agriculture are big business in California. The diversity of the state agriculture combined with its popularity as a tourist destination and trends in the tourism industry offer exciting opportunities for farmers in or near metropolitan counties. The increased demand for experiential, hands-on tourism activities has increased the appeal for agricultural or farm based tourism attractions. Agricultural tourism (also known as agri-tourism and ag-tourism) is defined as any business conducted by a farmer for the enjoyment or education of the public, to promote the products of the farm and generate additional farm income. Agri-tourism covers a variety of activities that have become increasingly popular throughout California, including wineries, farm or nursery trails, farm stays, agricultural festivals, entertainment farms, demonstration farms, petting zoos, roadside stands, pick your own farms, agricultural museums and countless Certified Farmers' Markets that can be found all across the state.

A visitor study was conducted at The Flower Fields™ at Carlsbad in an effort to improve our understanding of agri-tourism and to assess the benefits this activity may have for farmers and the economic impact it may have on local communities. In addition, the study also helped gather information to develop a visitor profile and to assess the awareness of visitors about issues and challenges to local agriculture. A brief description of the study site and major findings of the study are presented below.

The Flower Fields at Carlsbad

The Flower Fields™ is a working farm where ranunculus and other flowers are grown for the production of bulbs. As a by-product to the bulb growing operation, the site results in a display of colors that decorates the hillsides of Carlsbad and attracts thousands of visitors. Visiting these fields has become a tradition in San Diego County and a popular springtime attraction for local and travelers to Southern California. The Flower Fields™ opened to the public as a tourist attraction in 1993 in an attempt to diversify revenue sources and capitalize on the growing popularity of the site. It has since become a major tourist attraction for visitors to San Diego County and for residents alike, attracting over two hundred thousand people per year during the ten-week blooming season. It has become the best example for agri-tourism in the San Diego County and contributed to the economic development of the area.

Visitor Characteristics and Visitor Group Expenditures

An estimated 200,000 people visited The Flower Fields™ during the spring of 1998, with approximately 150,000 paid admissions. Table 1 presents the demographic characteristics of visitors. The majority of visitors are white between the ages of 36 to 59 years of age, with female respondents

See Agri-Tourism - Page 2

Growers Comment on Ag Tourism in Their Businesses

By Julie Newman and Steve Tjosvold, UCCE

Some family farm and nursery operators that have been in business in California for many years have found a lucrative business in direct marketing and incorporation of agriculture tourism. Evelyn Weidner of Weidners' Gardens, Inc. offers a spectacular show of flowers that attract customers to her dig-your-own begonia and pansy nursery in Encinitas. Nita Gizdich in Watsonville has built a successful and popular stop for families and tour buses that encompasses U-Pick olallieberries, strawberries, boysenberries, raspberries and apples. Craig Underwood has a produce stand with a petting zoo in Somis, and a U-Pick farm near Moor Park with over 200 varieties of fruit and vegetables, including strawberries, blackberries, peaches, plums, apricots and pumpkins. In addition, he direct markets to 12 farmers' markets.

All three operations feature tours of their family-run businesses for tourists, school children and other growers seeking to learn about alternative marketing practices. Cotton-belt farmers come in by the busloads to hear how Nita has built up her business. Last year alone, Craig provided tours for 30,000 school children.

See Growers Comment - Page 10

In This Issue

Agri-Tourism

Continued from page 1

outnumbering male visitors by a ratio of 1.5 to one. California residents accounted for 75% of all visitors, with San Diego County residents making up 32% of the total and 43% of visitors from California. An estimated 75% of the total were repeat visitors and 70% of these have made between 2-5 visits. Visitors often traveled in groups with an average size of 3.77 persons per group, which results in approximately 53,628 visitor groups for the season. Table 2 summarizes the expenditures per visitor group and per expenditure category.

Economic Benefits and Impacts

Flower Fields™ visitor expenditure have a positive economic impact at the farm and at the community level. The 150,000 paid admissions resulted in $600,000 of additional revenue for the farm operation. Also, the number of visitors increased on-site marketing of ranunculus bulbs and other products grown by the farm. In addition, the visibility and name recognition that resulted led to the introduction of other value-added activities including the introduction of a new line of plant material and the sales of souvenirs bearing the trade name The Flower Fields™. Finally, the site has helped educate visitors about how agriculture may enhance the natural beauty and foster economic activity in local communities. Visitor expenditures also resulted in significant economic impact for the economy of Carlsbad and San Diego County, as reported in Table 3. These impacts are presented in the form of multipliers (column 4-7) and in the form of actual dollar amounts. Even though the model and multipliers were developed for San Diego County, most of the estimated impacts occur in Carlsbad.

Discussion

The study shows that agri-tourism can benefit farmers and host communities. Despite being a highly seasonal attraction, The Flower Fields™ realized significant gains from visitor expenditures. These expenditures had a sizable economic impact on the economy of Carlsbad and San Diego County. However, the diversity and year-round nature of local agriculture make it possible to develop agriculturally based attractions to target diverse interests and tourism objectives on a year-round basis, much like other non-agricultural tourism attractions in San Diego County.

The fact that participants in the study have engaged in at least one ag-tourism related activity proves there is demand for this type of activity. In addition, most visitors have purchased farm products directly from farmers with roadside stands and farmers' markets mentioned as the most common marketing methods used in the process. Visitors mentioned fruits, flowers, vegetables and potted plants/ shrubs as the most commonly purchased farm products. They also cited freshness, quality, local origin, taste and convenience as the most important factors that motivated their decision to purchase farm products. This shows willingness to buy locally grown products and local growers could benefit by increasing direct marketing activities and by promoting the uniqueness and local nature of their products. This may increase the demand for local products and increase grower's access to a local or regional customer base.

San Diego and other counties in the state already have an existing base of agri-tourism attractions. Nonetheless, it is clear that the potential for ag-tourism is far greater. However, as is the case with other economic development activities, external inputs are needed to stimulate the farm sector to perceive and capitalize on the opportunities. In addition, farmers must overcome their traditional views of farming and realize that activities like agri-tourism require the exchange of services in addition to the products they sell.

Agri-tourism requires a different set of skills and abilities than the production and sale of raw commodities or farm products. It requires an entrepreneurial approach driven by an understanding of consumer behavior, attitudes and preferences that can inform and shape product development. This may lead to the emergence of institutions and associations that can carry out the strategic planning, event management, promotion/advertising and information management needed to facilitate the coordination and growth of agri-tourism on a regional or sub-regional basis.

Support for agri-tourism activities may come from a variety of sources. Local county governments should investigate the merits of further diversifying its tourism destinations and attractions to focus on countywide attractions that include agri-tourism. This may help preserve agricultural land by enhancing the economic viability of farm operations; by spreading the economic benefits among local communities; and by stimulating and spreading employment opportunities to a wider geographic area. The end result may be a better quality of life for rural and urban residents in the ag-urban interface.

Conclusion

This study demonstrates that agri-tourism helped diversify revenue sources for The Flower Fields™ and that visitor expenditures to the site had a substantial economic impact on the economy of Carlsbad and San Diego County. The results should be encouraging for local growers because the spectrum of opportunities resulting from agri-tourism may generate the economic incentives growers need to keep their farms viable. In addition, the study also shows that agricultural tourists and consumers at large are willing to buy local products directly from the grower. This may improve growers' access to markets and increase direct marketing opportunities, which may result in higher profit margins. Finally, agricultural tourism showcases the diversity and uniqueness of local agriculture, thereby increasing the appeal for locally grown products. Furthermore, agri-tourism can be a powerful tool to raise awareness and to educate the public about the importance of agriculture for the county's economy and quality of life. This may result in county or regional marketing programs and public/private partnerships that will support and sustain local agriculture, thus maintaining the appeal and the economic and environmental diversity in the county.

See Agri-Tourism - Page 3

Continued from page 2

See Agri-Tourism - Page 5, additional tables

Table 1. Demographics of Visitors to The Flower Fields™

Parameter	Percent	Parameter	Percent
Age Distribution		**Origin**	
17 or younger	17.8	San Diego County	32
18 to 35	14.6	Calif. (Excluding San Diego)	42
36 to 59	36.7	Other States in the U.S.	22
60 or older	30.9	Foreign Visitors	4
Educational Level		**Ethnicity**	
Less than High School	2.8	White	78.7
High School	19.9	Hispanic	9.3
Associate (2-year degree)	23.6	American Indian	0.8
College (4-year degree)	28	African American	1.6
Graduate degree	19.9	Asian/Pacific Islander	6.7
Professional (MD, JD, etc.)	5.5	Other Ethnic Groups	2.6
Household Income (US $)		**Repeat Visitors**	69.5
Less than 15,000	5.5		
15,001 - 30,000	11		
30,001 - 40,000	16.1		
40,001 - 60,000	18.3		
60,000 - 80,000	15.4		
80,001 - 100,000	8.1		
Over 100,000	15.4		
No Answer	10.2		
Gender			
Male	40.2		
Female	59.8		

Continued from page 2

Table 2. Total Expenditures by Visitors to The Flower Fields™ at Carlsbad, by Category (1998).

Expenditure Type	% of Groups in the Sample	Estimated Total Groups	Av. Expenditure Per Group ($)	Estimated Total Expenditure ($)
Overnight Lodging	18.35	9,728	298.75	2,906,342
Food and Drinks	65.83	34,907	79.35	2,769,957
Groceries, Toiletries, etc.	11.15	5,913	51.35	303,672
Gasoline & Auto Related	36.15	19,170	34.36	658,655
Recreation Activities	64.03	33,953	27.06	918,646
Other Expenditures	5.58	2,957	68.35	202,084
Total Expenditures		39,875		7,759,356

Source: San Diego County Agricultural Tourism & Direct Marketing Survey, 1988.

NOTES:

1) Estimated Total Number of Visitors 200,000
2) Total Number of Paid Admissions 150,000
3) Group Size, based on all 556 groups 3.77
4) Estimated Number of Visiting Groups 53,028

Table 3. Impacts of Expenditures by Visitors to The Flower Fields™ at Carlsbad (1998).

Expenditure Type	Total Expenditure Dollars	Average Per Reporting Group ($)	MULTIPLIERS Output Type II	Income Total Coeff.	Value Added Total Coeff.	Employment Jobs/Mil.$ *
Overnight Lodging	2,906,342	298.75	1.8532	0.7392	1.1256	27.6336
Food and Drinks	2,769,957	79.35	1.6962	0.6479	0.9582	34.2185
Groceries, Toiletries, etc.	303,672	51.35	1.6156	0.7899	1.2546	29.6287
Gasoline & Auto Related	658,655	34.36	1.7123	0.6514	1.0446	20.4106
Recreation Activities	918,646	27.06	1.7578	0.7691	1.179	39.4531
Total	7,557,272	490.88				

	Impacts of Visitor Expenditures on Output Dollars	Income Dollars	Value Added Dollars	Employment No. of Jobs
Overnight Lodging	5,385,961	2,148,331	3,271,469	79
Food and Drinks	4,698,415	1,794,708	2,654,040	94
Groceries, Toiletries, etc.	490,613	233,856	380,985	9
Gasoline & Auto Related	1,127,839	429,024	688,060	13
Recreation Activities	1,614,771	706,533	1,083,120	36
Total	13,317,600	5,318,452	8,077,674	231

Notes:

* Adjusted for inflation to 1998

** There were 31 groups (5.58 % of the total) that reported average expenditures of $68.35 in "Other Expenditures." (This represents an estimated 2957 visitor groups with total expenditures of over $202,000 whose impact could not be determined for lack of detailed information about the type of expenditure or the items purchased).

Sources:

1) San Diego County Agricultural Tourism and Direct Marketing Survey
2) IMPLAN Database, 1995. Minnesota IMPLAN Group, Inc.
3) State and Area Employment, Hours, and Earnings. Bureau of Labor Statistics (Web Site Data).

❖

Field Observations

Look out for Glassy-winged sharpshooter

Agricultural Commissioners in Santa Cruz and Monterey Counties are taking an active role in insuring that the glassy-winged sharpshooter (a leafhopper) does not make its way into the Monterey Bay region. This insect is a serious new pest in California, and has the ability to spread *Xylella fastidiosa*, the bacterium that causes the potentially devastating Pierce's disease in grapevines.

The Monterey County Agricultural Commissioner, for example, has established a task force and they have determined that many large nurseries in the infested areas in southern California regularly ship nursery stock to Monterey County. Detection traps were placed in Monterey county retail nurseries in October 1999. Letters and information were sent to all the nurseries in November, 1999 with a follow-up visit by a task force representative to determine nursery stock suppliers and inspect the existing stock. As a result of this, the task force and Agricultural Commissioner can focus attention on exclusion and detection efforts.

Shipments of certain nursery stock shipped from Kern, Los Angeles, Orange, Riverside, San Bernardino, San Diego, Santa Barbara, and Ventura counties must be inspected when they reach Santa Cruz and Monterey Counties. These shipments are "Blue Tagged", to notify the receiver of the hold requirements and notifies the local Agricultural Commissioner of the shipment.

For more information on this insect, and the disease that it may carry, contact your local Cooperative Extension office, Agricultural Commissioners' office or http://danrcs.ucdavis.edu/Special/gwss/default.shtml.

Regional Report

Santa Cruz & Monterey Counties

Evaluation of Reduced Risk and Other Biorational Pesticides on the Control of Spider Mites (*Tetranychus urticae)*

Two greenhouse experiments in 1999 evaluated the effectiveness of "reduced-risk" and other pesticides that have minimum re-entry intervals for control of two-spotted spider mites, *Tetranychus urticae*. Spider mites were selected from a commercial rose greenhouse that were suspected of being resistant to avermectin (Avid), raised on bean leaves and subjected to spray treatments.

As expected, the commercial rate (4 fl.oz. / 100 gal.) of **Avid** (Novartis) performed poorly on the resistant mites. Very high rates (40 fl.oz. / 100 gal.) performed well indicating that concentrations ten times more than the labeled rate can overcome resistance. **Pylon** (Olympic) was not as effective as expected. In retrospect, it was determined that both batches of Pylon (in experiment 1 and 2) were beyond the period that the company considered the chemical to be commercially active. The general wisdom of the chemical industry is that most chemical pesticides "last for years". In this case, with Pylon, 3 years or longer was too long. **Mpede** (Mycogen) and **Cinnamite** (Mycotech) only minimally controlled spider mites, early on, and failed to hold the developing mites. These compounds have little or no residual control. **Triact** (Olympic), also considered a "contact" miticide, however, had outstanding initial control. It, too, had little or no residual activity. **Triact** appears to be an underutilized contact miticide that can provide excellent "knock down". Its usefulness can be fully realized if good spray coverage, to contact the mites, is achieved. The potential for phytotoxicity with this product must be considered however. For example, repeated applications within a month may be too frequent for cut rose crops. **Hexygon** (Gowan) treatments lowered the population slowly, but from 14 days or after the treatment was made, the control was outstanding. **GWN-1725 (milbamectin)** (Gowan) was a highly effective treatment indicating that this close chemical-relative to avermectin, at least initially, does not demonstrate cross-resistance. **Acari** (Sepro) treatments provided good mite control. A strong trend indicated that the higher rate (24 fl. oz. versus 12 fl. oz. per 100 gal.) treatment could be more effective. **Conserve** (Dow AgroScience) only minimally controlled mites. The higher rate (22 fl. oz. versus 11 fl. oz.) showed the best efficacy at 14 days after the treatment in experiment 1. **Floramite** (UniRoyal Chem.) provided good to very good control. The 4 oz. per 100 gal. rate demonstrated significantly better control than the 2 oz. rate. **TetraSan** (Valent) lowered the mite population relatively slowly but generally provided very good control. **Biomite** (Nichemen) lowered the population relatively slowly but generally provided very good mite control. However, there was some phytotoxicity to bean leaves as a result of applications of this product. This effect, although not severe, could have adversely affected the viability of spider mites and therefore the true efficacy of the treatment. **Acaritouch** (Nichemen) only minimally controlled spider mites and only at the highest of the four tested rates. This product, too, caused some phytotoxicity to bean leaves and therefore could have adversely affected the viability of spider mites and therefore the true efficacy of the products.

Contact Steve Tjosvold to receive a complete research report that includes experimental methods, results and discussion.

Steve Tjosvold
University of California Cooperative Extension
1432 Freedom Blvd.
Watsonville, CA 95076-2796
Phone: (831) 763-8040
Fax: (831) 763-8006
e-mail: satjosvold@ucdavis.edu

Regional Report

San Diego County

CORF Waxflower Grower's School Attracts 100 Participants

Seasoned and novice waxflower growers, as well as people considering growing waxflowers, reported learning useful information at the CORF Waxflower Growers' School in Escondido on March 15, 2000.

Digby Growns, Development Officer for Floriculture with Agriculture, Western Australia, reported on his research in breeding and development of new waxflower selections. Joe Walker, from Obra Verde Growers, gave detailed information on planting, growing and handling waxflowers. Thom Meyer, of New World Plants, discussed locally available patented varieties, as well as selections currently under development.

In addition to the discussions and networking opportunities at the Growers' School, each participant received a notebook including valuable handout information. Additional notebooks can be obtained from the CORF office in May, 2000. Please contact Mary Golden at 707-462-2425 for more information.

Plant Tour Days Connects 350 Buyers

Southern California's inaugural Plant Tour Days attracted over 350 buyers from across the U.S. and Canada. Retail and wholesale buyers spent 3 days touring 22 of southern California's plant nurseries. Sponsored by regional greenhouses, this event was designed to connect buyers with wholesale plant nurseries.

Buyers felt the self-guided format allowed this event to be a very productive use of time. Each greenhouse stop showcased new products. Growers talked about transportation issues and walked greenhouse ranges. "We had interest from new customers and from current customers who are looking for new ideas. This was a great way to work together – I was able to walk right out into the greenhouse to show what we have to offer" according to Michael Kent of Kent's Bromeliad Nursery.

Freight and distribution issues were also discussed with pool shipment and weekly drops allowing cost-effective freight to most parts of the U.S. "We spent as much time talking to the buyers about freight solutions as we did about our plants – pool trucking is allowing us to bring high quality California-grown plants to more of the U.S.," says Chuck Ades of Ades and Gish Greenhouses.

Plant Tour Days was sponsored by a committee of southern California greenhouses and chaired by Janet Kister of Sunlet Nursery in Fallbrook, CA. Jantet comments,"We are very pleased with the response from our visitors. On average, each buyer visited 14 nurseries and reported back how productive they felt their trip was. After having 95% of the visitors tell us they would like to do this every year, we are now planning Plant Tour Days 2001."

For more information about this past Plant Tour Days or the Plant Tour Days during the third week of February 2001, contact Alissa Adams at the San Diego County Flower and Plant Association, 760-431-2572.

Dr. Karen L. Robb
University of California Cooperative Extension
5555 Overland Avenue, Bldg. 4
San Diego, CA 92123
Phone: (858) 694-2857
Fax: (858) 694-2849
e-mail: klrobb@ucdavis.edu

Field Observations

Cooler weather has contributed to generally lower levels of insect pressure so far this year. However, we are moving into the period when pests such as aphids and thrips can be expected to increase dramatically.

Redgum Lerp Psyllid Parasite Releases Expected This Spring

The final safety checks required before releases of the parasite for redgum lerp psyllid can begin are expected to be satisfactorily completed soon after this issue goes to press. We expect to start making releases of this parasite after these checks are completed in April.

In earlier issues I mentioned that we were expecting to release two species of parasites. However, it turns out that there is only one species to be released. Taxonomists had identified the males as one species and the females as another species!

On a personal note….

I am currently on maternity leave until July 3, 2000. During my absence, the front desk in my office has been given a list of people who have agreed to answer questions related to their specialty. If you have any questions during this time, you can reach the front desk by dialing 858-694-2845, 8 am – 5 pm Monday – Friday.

While I am on leave, my assistants will continue my research program in the following areas:

· The effects of UV absorbing poly on insect migration with Dr. Heather Costa and Julie Newman

· Tospovirus monitoring systems with Dr. Diane Ullman and Julie Newman

· Rose Pest Management Alliance with statewide researchers, headed by Dr. Michael Parrella

·Reflective mulch and sticky tape trapping as IPM strategies with Julie Newman and Steve Tjosvold

· Biological Control of Redgum Lerp Psyllid with statewide researchers, headed by Dr. Don Dahlsten

· Best Management Practices for nursery runoff with Dr. Valerie Mellano

· Giant Whitefly Biological Control, with regional researchers, headed by Dr. Tom Bellows

Field Observations

Fungus Gnats Still a Problem

With the warmer weather and the abundance of soft bedding plants being produced, there is a proliferation of fungus gnats on potted plants in greenhouses and shade houses. Some growers feel that they have not been successful in the past using biological control on fungus gnats, but perhaps it is time to try again.

Parasitic nematodes may be just the answer to controlling fungus gnat larvae in potted plants. Many years ago, *Steinernema carpocapsae* was the only species of parasitic nematode that was available to control fungus gnat larvae, but it did not do a good job. Many insectaries now have a much better species of parasitic nematodes — *Steinernema feltiae* — and it seems to be doing a good job at controlling fungus gnats.

Growers interested in trying *Steinernema feltiae* to control fungus gnats should take several steps:

1) Reduce existing populations of fungus gnats as much as possible before drench-applying the parasitic nematodes.

2) Clean up breeding areas for fungus gnats— wet and algae-covered areas on the benches and greenhouse floor.

3) Use good cultural control practices in growing plants — do not keep the potting mix too wet, and do not let the potting mix sit in open piles outdoors, where fungus gnat populations may increase before the mix is even brought into the greenhouse.

4) If possible, try to figure out *where* in the greenhouse and *when* during production you are having the most problems with fungus gnats — this will help you decide when to make *S. feltiae* drenches. Also, make sure that your problem is fungus gnats and not shore flies (*this was described in CORF News, Vol 3, no. 3*).

5) If you have not used biological control before, work with your insectary, your product rep., or your local Farm Advisor to tailor a program for your operation.

Regional Report

San Mateo & San Francisco Counties

Agri - Tourism in San Mateo County

The idea of using agriculture to draw visitors (and their money!) to an area is not new. While the University of California has recently established an ***Agri-Tourism Workgroup*** to develop methods for agricultural communities to promote agri-tourism, many communities are already offering agri-tourism in various forms.

Half Moon Bay has an annual **Pumpkin Festival** that draws over 200,000 people each year from the urban areas "over the hill" (the many cities of the Bay Area). Visitors to the Pumpkin Festival can purchase local agricultural products, and can visit many of the farms that have family-friendly farm displays. For many in the Bay Area, this is one of their only opportunities for exposure to agriculture in their local area.

About ten years ago, community leaders in Half Moon Bay established an open-air **Flower Market**, which is held one Saturday per month. Similar to a farmers' market, but only selling floral products, the Flower Market has been very successful at bringing people (and their money, again) to the coastside. In addition to flower sales, visitors to the market can hear talks on everything from flower care, to gardening, to flower arranging, and they can listen to local musicians who perform at the market.

Based on the success of the monthly Flower Market, an annual open house day has been developed, where the public can visit several participating wholesale production greenhouses and nurseries. Each year the list of nurseries changes, so that the public can visit a range of operations over the years. While the Flower Market encourages sales and promotion of local agriculture, this annual open house allows growers to give the public hands-on education in what the greenhouse industry is all about. The public is fascinated to learn about all of the challenges in growing crops in an economically and environmentally sound manner.

Other forms of agri-tourism in San Mateo County include pick-your-own farms, farms with petting zoos, farms with roadside sales, and farms with seasonal retail exhibits for the family.

Lastly, the University of California runs **Elkus Ranch** in Half Moon Bay, which is a working, educational ranch. School groups and teachers from throughout the Bay Area can participate in day-long to week-long programs which teach them about agriculture and the environment. Summer camp programs are also offered on specific agricultural or environmental topics.

As growers in California continue to look at alternatives for developing income, this idea of "agri-tourism" will only increase. Through the University of California, we hope to be able to provide growers with the information that they need to make it work for everyone.

Sabbatic Leave

I am currently taking a sabbatic leave from my normal Farm Advisor duties. I am working on several postharvest and pest management research projects with local growers in San Mateo County, and in the Environmental Horticulture Department at UC Davis. These projects should develop the type of information that growers need to improve the postharvest life of their flower crops (both potted and cut flowers), and to produce potted plants with fewer fungus gnat problems.

Dr. Ann I. King
University of California Cooperative Extension
625 Miramontes, Suite 200
Half Moon Bay, CA 94019
Phone: (650) 726-9059
Fax: (650) 726-9267
e-mail: aiking@ucdavis.edu

Regional Report

Ventura & Santa Barbara Counties

Nonpoint Source Pollution Meeting

Over 60 people attended this meeting cosponsored by CORF and the Santa Barbara Flower Growers Association on March 21. Dr. Valerie Mellano, Environmental Issues Advisor, reported on the status of San Diego County lawsuits against municipalities and other entities filed by the Baykeepers for violations of storm water regulations of the Clean Water Act (see the last issue of CORF News). As a result of the three-year consent decrees that most of these entities have entered into, all sources of runoff are being carefully scrutinized. Agriculture is not being singled out, but is often the first to be contacted, and the most closely watched. All data collected from runoff sites is provided to Baykeepers, with no anonymity. These sites are being tested for nitrate and pesticides.

Dr. Mellano explained that the Clean Water Act also requires that state governors annually list impaired water bodies. The total maximum daily load (TMDL) defines how much pollutant water bodies can absorb and still comply with water quality standards. Because of lawsuits, California's TMDLs are court-ordered with a tight schedule. With only two years to develop and implement TMDLs, there is not enough time to collect meaningful data, especially if there is a dry year followed by a wet year. Regional Water Quality Control Boards regulate the TMDL process, but they have received little or no funding for these programs. Terms of the lawsuits in San Diego County require the Regional Board to produce two TMDLs. One of the TMDL areas selected was Rainbow Creek, a small community with several large nursery operations. It is uncertain why this stream was selected, as there are other water bodies in San Diego that are more polluted, and the nursery industry in this area has already significantly reduced runoff. Grower representation from the Rainbow Creek community affected its TMDL program, making the process more research orientated, rather than taking a venue influenced by emotion and politics. This is also the case at Newport Bay, where Orange County grower representation is shaping the process.

Valerie Mellano spoke about the UCCE non-point source pollution program in San Diego County (see the last issue of CORF News). UCCE staff will manage the collection of baseline measurements of runoff and contaminants at nurseries, and monitor facility improvements, while maintaining grower anonymity. In addition, they will serve as a non-regulatory liaison between growers and agencies, identifying solutions and funding to implement new technologies, in addition to developing grower education programs. At the conclusion of this pilot project, a media event will highlight the proactive approach of the floriculture industry.

Mike A. Mellano, (Mellano & Company) also spoke at the meeting, reporting that flower growers began receiving citations when greenhouse whitewash was found going into the storm drains. The City of Oceanside has not yet approached nurseries in its jurisdiction, but growers are preparing by making improvements and documenting use of drip systems, tensiometers, and catch basins. Mike Mellano pointed out political concerns that need to be addressed when growers capture their water. If wetlands are created, then there is another problem source, so he urged the California Cut Flower Commission to seek legislative change. He also expressed concern about the disease potential for large nurseries unless captured water is chlorinated, suggesting that perhaps growers could band together to process reclaimed water.

Julie P. Newman
University of California Cooperative Extension
669 County Square Drive, Suite 100
Ventura, California 93003-5401
Phone: (805) 645-1459
Fax: (805) 645-1474
email: jpnewman@ucdavis.edu

Field Observations

Disease Outbreaks Hit Lisianthus Growers

Lisianthus growers in Ventura and Santa Barbara Counties are fighting a "mixed bag" of disease problems. Tospovirus, primarily impatiens necrotic spot virus, is a serious problem for some, whereas others have diseases caused by *Fusarium spp,* although *Pythium* and *Botrytis* are also implicated. One nursery has both virus and fungal problems. Approximately 60 growers and industry representatives participated at a meeting sponsored by Ball Tagawa in Nipomo in April to discuss control strategies. Diane Ullman, Dept. of Entomology, UC Davis, addressed tospoviruses and the use of petunia indicator plants for monitoring infective thrips. Bob McGovern, University of Florida Gulf Coast Research Center, discussed Fusarium diseases, and Ann Chase, Chase Research Gardens Inc., provided chemical control options. Dr. McGovern collected research data in California in 1997 when there was an outbreak in California and Florida of *Fusarium avenaceum*. This crown/stem rot disease was a new problem in California at that time, with one Oxnard grower sustaining up to 70% plant mortality. Dr. McGovern reports that he now sees very little *F. avenecium* at nurseries in Ventura and Santa Barbara Counties. Currently, the culprits are primarily *F.oxysporum* and *F.solani*. IPM strategies for Fusarium include use of pathogen-free propagation material/ media, pre-plant soil sterilization, sanitation, crop rotation, controlling fungus gnats and other pests that spread the disease, avoiding acid soils and fertilizers, and use of fungicides such as Heritage. In the decade since California first began producing lisianthus, there has been a dramatic increase in diseases. Breeding for resistance is the long-term solution. (See CORF News (2) pp5,7 for details on tospoviruses and *F. avenaceum).*

Grower Comments

Continued from page 1

Nita Gizdich remembers the dark days; "The olallieberry market hit rock bottom in 1965, and we were forced to look for another way to make money with our berry crop." Craig observes, "Our family has been selling wholesale for years, but it was becoming clear that to survive in today's market, we either greatly expanded or remained relatively small but added alternative markets."

Evelyn and her husband entered the retail sales business for a different reason. "We had a large successful wholesale nursery that we sold when we planned to retire. We decided if we went back into business we wanted to do something fun and enjoyable, and have our customers share in the work."

Marketing to agriculture tourists is a big part of these entrepreneurs' businesses today. "People don't want to pay much for food, but they perceive added value if the food is provided as part of a complete agriculture experience, " Craig notes. His farm includes wagon rides drawn by Clydesdale horses, farm walks, and armloads of printed material to take back home. Nita sells slices of her famous apple and berry pies. A cup of coffee or fresh-pressed apple juice is available to wash it all down. She whips up box lunches for the tour buses, and there's a gift shop for the souvenir collector.

A down-home, friendly atmosphere is a vital ingredient that attracts Evelyn's customers, many who are from Orange County, 75 miles away. "Even our New York customers are treated like part of the family. We make a point of learning our customer's names and catering to their interests. Our nursery is low-tech and our newsletter is folksy not fancy, and that's what they like." Evelyn says another draw is "good quality products and lots of friendly advice. And when our flowers are in full bloom they are like miniature flower fields, so many come just for the beautiful flower show."

Marketing Nita's U-Pick operation began, in the early days, with just a couple of signs to catch passing motorists as they drove through the Watsonville area on their weekend outings. Later she garnered the attention of the tourist bus business. The world famous Monterey Peninsula is a popular destination. "Just look at all those tour buses on our local roads on their way down to the Peninsula. We need to get those buses to make a stop in Watsonville" says Nita. Now she has a web site (http://www.gizdichranch.com/) and she is attracting those tour buses and tourists planning on visiting the area.

Craig maintains his traditional wholesale markets, but finds that his farms are well known in Ventura County because of all his direct marketing efforts. "It's been good for our business, but it is also good for how the public perceives the value of local agriculture, which in the long run benefits everyone." Evelyn says ag tourists have expanded her business by at least one-third. Not so much in volume sales, because since many come in buses that usually limits purchases to items from the gift shop instead of plants from the nursery. "But they have greatly helped to spread the word about the nursery to others."

Nita thinks there is a tremendous opportunity for the local flower industry. She points to successes of Rod McLellan orchids in South San Francisco, Sierra Azul, and Roses of Yesterday and Today in Watsonville as examples of ornamental producers that really have attracted a lot of attention and tourism.

Craig says that the cookie cutter approach can't be used to create a tourist attraction out of your operation, "Everyone has a different business and style of growing, so what works for one grower may not work for another." Nita gives the following advice for those contemplating agriculture tourism: "This type of business is not going to be successful in the first year. Keep listening to your customers. Ask them what they want."

Evelyn agrees. "You have to put yourself in the tourist's shoes and ask yourself why would you take the time to stop there as opposed to another produce stand, nursery or farm?" The key to it all is to look at your product and find out what is romantic and unique about it. "Make it interesting, and fun. Add some pizzazz!"

How about a slice of that apple pie, Nita! ❖

Campus News & Updates *Submitted by Julie Newman, Farm Advisor UCCE*

News

UC DAVIS

Dr. Richard Evans, Horticulture Specialist in the Department of Environmental Horticulture at UC Davis, is currently working on several projects pertaining to the flower and nursery industry, including water, energy, and nutrient conservation. In one project on greenhouse roses, where shallow root systems limit uptake of nitrogen and result in leaching of nitrogen below the root zone, he has determined the effect of season and harvesting on crop nitrogen and water requirements. Coupled with other studies he has conducted on effects of soil aeration on root distribution, this information could be used to improve nitrogen use efficiency in greenhouse roses.

Another project involves increasing the surface area for absorption of nutrients by inoculating container soils with mychorrhizal fungi (microbes that form a symbiotic relationship with certain plant roots). In this way, the surface area of the root system of container-grown plants can effectively be increased, enabling them to extract more water and nutrients from the soil. Mychorrhizae are especially good at taking up phosphorus, thereby reducing the amount of this nutrient that is lost through leaching. Dr. Evan's research may result in helping nursery growers to minimize phosphorus runoff, reducing the surface contamination of groundwater that results in algal bloom and other harmful environmental effects.

Efficiency in commercial production operations requires energy conservation. As project manager for a greenhouse energy conservation project funded by the Agricultural Energy Assistance Program, Dr. Evans hopes to assist growers make their operations more energy-efficient. Under this California Energy Commission program, greenhouse operators can obtain loans to install energy-efficient technologies such as heat retention and shading curtain systems, polycarbonate or double-polycarbonate roofs, and root zone heating systems. Working with farm advisors and greenhouse operators, he is gathering information to determine how much of the total energy used in the state is used in greenhouses, the annual cost to heat greenhouses, the most energy-efficient methods for heating greenhouses, and future trends of greenhouse heating and cooling technologies, energy use, and cost in California. For more information, contact him at (530) 752-6617, or ryevans@ucdavis.edu.

CAL POLY, SLO

Drs. Robert Rice and Virginia Walter are recipients of this year's California State University/Agriculture Research Initiative grants. Dr. Walter's research project will evaluate the speed and effectiveness of weed control in cut flowers grown in a retractable roof growing structure with the roof closed vs. open, using standard solarization techniques. Dr. Rice's project will evaluate controlling greenhouse and silverleaf whiteflies in poinsettias utilizing reflective mulches and sticky tape. Results will be submitted to CORF News upon completion.

The ***4th Annual Environmental Horticulture Integrated Pest Management Conference*** will be hosted on the campus June 12 and 13, 2000. Details concerning the program are described in the last issue of CORF News. Information and an enrollment form can be accessed by clicking on the IPM Conference link at the EHS Department home page (www.calpoly.edu/~envhort) or by contacting ***Dr. Bob Rice*** at rrice@calpoly.edu, phone: 805 756 2830, FAX: 805 756 2869.

Research Updates

Evaluation of control methods for yellow nutsedge.

Cheryl Wilen, Area IPM Advisor, Ramiro Lobo, Small Farms Advisor, and Wayne Schrader, Farm Advisor
UCCE, San Diego County
Phone: (Cheryl Wilen) 858-694-2846
Fax: (Dr. Ole Becker) 858-694-2849
email: cawilen@ucdavis.edu

Yellow nutsedge (*Cyperus esculentus* L) is considered to be one of the most troublesome weeds in areas where it has established because it predominates when other weeds are controlled and spreads mainly by tubers. Eradication of yellow nutsedge is nearly impossible because of the resiliency and long-term (up to 2 years) viability of the tubers.

Field trials were established in 1998 and 1999 in San Diego to evaluate the effects of several measures to control or suppress yellow nutsedge over a two-year period. Chemical control options evaluated were Manage (halosulfuron) and Basamid (diazomet), cultural control methods were high nitrogen and green IRT plastic mulch (1999 only), and mechanical control methods were cultivation and hand weeding. A biological control agent (*Puccinia canaliculata*, a rust specific to yellow nutsedge) was also evaluated in1998.

The most effective treatments in 1998, 108 days from the start of the study, were weekly handweeding (0.01), Manage (0.9 plants/ft^2), tilling (1.5), and diazomet (6.8) as compared to the untreated control (18.2 plants/ ft^2). In 1999, the best treatments, 56 days from the start of the study, were plastic mulch (0 plants/ft^2), Manage (1.8), handweeding (5.2), and tillage (5.9), as compared to the untreated control (45.2 plants/ ft^2). Rust treatments did not appear to be effective in controlling yellow nutsedge. There was no significant reduction in tuber number due to high N fertility.

The numbers of tubers produced were also affected by the treatments. There were 63.5 tubers/ft^2 in the untreated control and 0, 0, .5, and 13 in the Manage, handweeded, tilled and Basamid plots, respectively, 101 days from the initiation of the 1998 study. This resulted in fewer new plants early in the next season since there were fewer tubers.

Evaluation of Nematode-suppressive soil.

J.O. Becker
Department of Nematology
UC Riverside, CA 92521
Phone: 909-787-2185
Fax: 909-787-3719
email: ole.becker@ucr.edu

Under suitable conditions and host plants, a population of plant parasitic nematodes can build up to high numbers and often cause considerable crop losses. However, they are subject to numerous direct and indirect interactions with other soil- and rhizosphere-inhabiting organisms. In some soils, the nematode populations do not increase despite the presence of susceptible host plants, favorable soil and environmental conditions. These so-called

See Campus News & Updates - Page 15

Continued from page 14

nematode suppressive soils are therefore unique sites to study the nature of such interactions and to isolate potential biological control organisms. In my lab, we are investigating biological suppression the beet cyst nematode, *Heterodera schachtii*, which occurs in a field site at the UC Riverside Agricultural Operations. During repetitive cropping of various host plants, the initially high population of *H. schachtii* has declined over time and has remained fairly constant at a low level during the past decade. We demonstrated in greenhouse and field trials that biocidal treatments eliminated the soil suppressiveness, thus indicating the biological nature of this phenomenon. The suppressiveness can be transferred with small amounts of this soil to fumigated, conducive sites. Preliminary studies suggested that certain fungi which parasitize nematode eggs play a major role in suppression.

Incorporation of marigold plant waste does not control root-knot nematode.

Dr. Antoon Ploeg
Department of Nematology
UC Riverside, CA 92521-0415
Phone: 909-787-3192
Fax: 909-787-3719
e-mail: antoon.ploeg@ucr.edu In earlier studies it was shown that root-knot nematodes could be controlled by a 2-3 month cultivation period of selected marigold varieties. These results from greenhouse experiments were later confirmed in field trials, where marigolds resulted in yield increases and nematode reduction similar to those obtained using soil fumigation.

One of the main disadvantages of "the marigold approach" is that valuable land often needs to be set aside for marigold cultivation. An approach based on incorporation of marigold plant waste, which could be purchased or grown on less valuable land, would allow for a much greater flexibility. In greenhouse experiments the effect of amending root-knot nematode (*M. incognita*) infested soil with marigold tops or roots was compared with amending with tomato tops or roots (tomato being an excellent host for this root-knot nematode). The results showed that amending soil with plant material resulted in non-specific and low levels of nematode control. Thus, there was no difference between amending with marigold or tomato plant parts or between amending with roots or tops. Reductions in nematode infestation levels achieved by soil amendments were much smaller than reductions (almost 100%) after cultivation of marigolds. It is concluded that amending soil with marigolds is not likely to give nematode control and that, in order to obtain high levels of control, cultivation of marigolds on the "target-field" is necessary. It is believed that nematode control by marigolds occurs inside the roots after invasion of the marigold roots by the nematodes. This hypothesis would explain why root-penetrating nematodes are most successfully controlled by marigolds, and agrees with our results. ❖

Campus News & Updates submissions can be directed to:

Julie Newman
UC Cooperative Extension
669 County Square Drive, Suite 100
Ventura, California 93003-5401
Phone (805) 645-1459
Fax (805) 645-1474
Email jpnewman@ucdavis.edu

Special Thanks to these Sustaining Sponsors of the 2000 CORF Grower Education Programs...

CALIFORNIA ASSOCIATION OF FLOWER GROWERS • SHIPPERS

CALIFORNIA CUT FLOWER COMMISSION

THE UNIVERSITY OF CALIFORNIA 1868

CORF
Floriculture education from the Kee Kitayama Research Foundation

CORF News is the quarterly publication of CORF, the California Ornamental Research Federation, a statewide partnership of growers, floriculture associations, allied industry and research/educators whose mission is to identify and meet the research and educational needs of the California floriculture industry.

Managing Editor:
Steve Tjosvold
UCCE Monterey & Santa Cruz Counties

Editorial Committee:
Dr. Ann King
UCCE San Mateo & San Francisco Counties
Dr. Michael A. Mellano
Mellano and Co.
Julie Newman
UCCE Ventura County
Dr. Karen Robb
UCCE San Diego County
Steve Siri
Gladaway Gardens

Design & Layout:
Susan Bearden Thomas
News submissions:
Fax: 707/467-0815
email: sbeardenthomas@pacific.net

Advertising Sales:
Melissa Keiper
858/509-9518

Ad Size	Four Issues	Per Issue
Full Page	$2625	$750
2/3 Page	$1925	$550
1/2 Page	$1575	$450
1/6 Page	$613	$175

California Ornamental Research Federation
493 S. Highland Ave.
Ukiah, CA 95482
Ph: 707/462-2425
Fax: 707/463-6699
www.ccfc.org\corf
Address service requested

A Word of Gratitude to these Sponsors of CORF Grower Education Programs

Sustaining Sponsors
California Cut Flower Commission
CA Assoc. of Flower Growers & Shippers
UC Cooperative Extension
Major Sponsors
CA State Floral Association
Dow AgroSciences
Mycotech Corporation
Novartis Crop Protection
Olympic Horticulture Products
Uniroyal Chemical Company
United Horticultural Supply
Western Farm Service
Regional Sponsors
AgroDynamics
BioWorks Inc.
Aventis
San Diego Co. Chapter CAPCA
Mini-Sponsors
Ag Rx

Calendar of Industry Events

May
17-20...CORF Grower Tour, Israel, 707/462-2425
21-25...International Rose Symposium, Israel, International Society of Horticultural Science, contact Steve Tjosvold, 831/763-8040

June
22.....CORF Grower Tour & Research Demonstrations, Ventura/Oxnard, 707/462-2425

July
1-5.....AIFD National Symposium, Orlando, FL, 410/752-3318
5-8.....CAFG&S Fun'n Sun Weekend, San Diego, 408/496-6187
8-12.....OFA Short Course, TBA, 614/487-1117
14-16.....Texas State Florists Assn Convention, Houston, 512/834-0361

August
11-13....CSFA Floriculture Retreat, San Luis Obispo, 916/448-5266

September
10-15....CCFC, Trade Mission, TBD, 831/728-7333
20-23....SAF Annual Convention, 703/836-8700
26.....CORF Frost Control Seminar, Watsonville, 707/462-2425
26.....CORF Grower School: Asters & Lisianthus, Salinas, 707/462-2425

October
3.....CORF Bugs 2000 Workshop, Ventura, 707/462-2425
18.....CORF Frost Control Seminar, San Diego, 707/462-2425
26.....CORF Soil Steaming Workshop, Salinas, 707/462-2425