



# U.C. Cooperative Extension San Diego County



*Highlights from 2010*



**University of California**  
Agriculture and Natural Resources

HEALTHY FOOD SYSTEMS - HEALTHY ENVIRONMENTS - HEALTHY COMMUNITIES - HEALTHY CALFORNIANS

*Making a Difference  
for California*



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***On the Web:***

[www.cesandiego.ucdavis.edu/](http://www.cesandiego.ucdavis.edu/)

Here you will find detailed information on the programs that we offer and upcoming events, as well as technical resources, on-line educational activities, and contact information.

In addition, you can sign up to receive emails or mailings about upcoming events.

# *Farm and Home Advisors*

## *University of California Cooperative Extension*

### *San Diego County*

The following pages contain significant highlights of the Farm and Home Advisors' 96th year of our cooperative partnership between the County of San Diego, the University of California, and the United States Department of Agriculture. Two of these partners, the County and the University, formally renewed this partnership with a new Memorandum of Understanding in 2009.

As you peruse this report, we believe you will appreciate the diversity of our efforts and the strength of our science-based programs. The programs highlighted here support the County of San Diego's three strategic initiatives—safe and livable communities, kids, and the environment. We also are providing programs in seven of the nine strategic initiatives set forth by the UC Division of Agriculture and Natural Resources (UCANR) in 2009.

Financial support (*see table below*) for the Farm and Home Advisor's efforts in San Diego County totals over \$7.7 million and comes from four major sources.

I sincerely thank our 45 staff members, volunteers, collaborators, and supporters for their immeasurable contributions to the success of UCCE San Diego County.

On behalf of my colleagues in San Diego, I hope you will find this report interesting and informative. However, these are only highlights from 2010. Please contact us or visit our website (*see sidebar*) for more in-depth information.

Financial support for U.C. Cooperative Extension in San Diego County

<b><i>Funding Source</i></b>	<b><i>Dollars</i></b>
<b>County of San Diego</b>	<b>\$934,082</b>
<b>University of California</b>	<b>\$2,950,948</b>
<b>USDA</b>	<b>\$677,997</b>
<b>Grants and Gifts</b>	<b>\$3,222,810</b>

## *Nutrition education reduces the risk and prevalence of obesity*

The Expanded Food and Nutrition Education Program (EFNEP) teaches low-income families and youth how to reduce the risk of obesity and other chronic diseases by choosing



healthful foods and being more physically active. In San Diego County in 2010, the Adult EFNEP program graduated 584 low-income families with a total of 2,971 family members. Participants reported positive behavior changes that included eating a greater variety of vegetables, increasing their physical activity level, and consuming more low-fat foods. EFNEP Youth educators trained 119 teachers and youth leaders in school districts across the County who then delivered nutrition education to over 6,000 children and youth from low-income families.

In a unique outreach conducted with Vista Unified School District, the EFNEP Youth educator trained 11 high school students to teach nutrition education. The students then taught children in five second-grade classrooms the importance of developing positive attitudes about food, good health, and nutrition habits. This was a great success and teachers were very pleased.

### **“Financial Caregiving” for adult children of aging parents**

As the population ages, many family members find themselves taking on the role of “financial caregiver” to aging parents or other elderly relatives. In 2010, the Nutrition, Family and Consumer Science Advisor, Dr. Patti Wooten Swanson, published new educational materials to help families with these important responsibilities. The ***Financial Caregiver Series*** consists of seven publications. Topics include communicating with parents about finances, organizing bill-paying and record-keeping, understanding long-term care and how families pay for care (if needed), estate planning, and protecting loved ones from financial fraud or abuse. Each guide includes practical insights, strategies, and tools, as well as step-by-step implementation plans, consumer checklists, worksheets, and where to find additional information. The guides are available free on our website.



### **San Diego Saves Week 2010**

The Nutrition, Family, and Consumer Science Advisor coordinated **San Diego Saves Week 2010**, a local social marketing campaign that is part of the national **America Saves** campaign sponsored by the Consumer Federation of America. The goal of the week was to highlight the importance of personal savings and debt reduction for family financial security. The tag line “Start Small, Think Big” encouraged all San Diegans to start or increase savings by as little as \$10 a month or by paying an extra \$10 a month toward high cost credit debt.

### *On the Web:*

Consumers can download **Financial Caregiving Guides** at no cost from

[www.ucanr.org/fincaregive](http://www.ucanr.org/fincaregive)

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The focus of all 4-H programs is to promote positive youth development through university research-based activities in science literacy, healthy living, and citizenship.



### Workshops for Agencies

4-H academic staff provided 15 different workshops to staff of other youth serving agencies and to educators in the area of positive youth development and science literacy.

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## Helping youth to thrive!

The 4-H Youth Development Program in San Diego County serves youth between 5 and 19 years of age from urban, suburban, and rural communities. Research has indicated that the 4-H Youth Development Program provides youth with the capacity to thrive when presented with resources for healthy development regardless of their background, socioeconomic status, race, or gender.

The San Diego 4-H Youth Development Program provides a variety of enrichment activities through youth-governed clubs in communities and on military housing sites. The clubs and enrollment are under the guidance of UC certified volunteers in Community Clubs and Military staff in Military Clubs. In 2010, over 400 adult and 200 teen volunteers worked with over 1200 youth in 28 community based 4-H Clubs.

In the 4-H Clubs, youth design, implement, and participate in their own programs and activities. This learn-by-doing model teaches essential skills that youth will use throughout their lives, such as identifying sparks of interest, desiring knowledge, setting goals, self-reflection, adapting to new situations, communicating, and responding to the needs of others. The club program provides success through an adult-youth partnership model of leadership.

The emphasis for the 2010 Program Year was on Science, Engineering, and Technology Literacy.



Thirty science competency skills have been identified that were practiced and developed by youth through this 4-H project work. Over \$45,000 in grants and gifts were secured in 2010 to provide science and leadership learning opportunities for youth in these community based 4-H Clubs. This does not include the value of the volunteer 4-H leaders' time nor the over \$150,000 raised by the youth to run their local community based 4-H Clubs.

A new 4-H Club established in Borrego Springs provided afterschool science literacy and gardening experiences to youth. In this program, 4-H staff trained teens from the local high school who then taught the science activities to the elementary school students.

Eight additional 4-H Club Programs were conducted on Military Housing sites in partnership with the US Navy throughout the City of San Diego in 2010. These clubs also promoted science literacy and leadership development activities to over 500 youth of military personnel.

The San Diego County 4-H Volunteer Leaders' Council provided 22 leadership development events in 2010 to train and build adults' and youths' capacity and competency to lead 4-H Clubs in their communities.



## Empowering parents as their child's first teacher

The Off to a Good Start (OTAGS) program and curricula were created in response to recent brain research showing the importance of early learning on children less than five years of age. The objectives of the program are to assist parents in understanding their vital role in being their child's first and most important teacher and to help them interact and guide their children in ways that promote cognitive, social, physical, intellectual, and early literacy development. The program empowers parents to act on behalf of their children through very interactive, hands-on workshops provided in either English, Spanish, or bilingually.

Workshop topics included Kindergarten Expectations, Language and Learning, Getting Ready to Read, Social and Emotional Preparation, Problem Solving & Inquiry, Health and Well-Being, and Home to School Connection. There is at least one and up to a series of nine workshops offered to adequately cover each topic. The two curricula the program utilizes are Let's Read Together/Leamos Juntos and Off to a Good Start, Kindergarten Readiness.

In 2010, 160 parent education workshops were provided in locations throughout San Diego County. A total of 648 parents attended at least one workshop and 65% attended three or more workshops. The program reached 1,235 children, ages 0-5 years.

Participants are surveyed three to six months after finishing a workshop series to assess behavior changes. Survey results (*See below*) show the impact of the OTAGS Program in 2010.

The OTAGS program is a First 5 of San Diego funded project and has been under the direction of the 4-H Youth and Family Development program since 2003. In 2010, \$360,000 was awarded under the San Diego County Office of Education Preschool for All Project, which is directly funded by First 5 San Diego. This will enlarge the scope of the program to include mentoring preschool site supervisors and teachers, assisting with outreach efforts and parent engagement, and connecting to other First 5 funded programs.



"I like this program very much because even though we know that we are the first teachers of our own children, sometimes we don't know how to do it and with this program we learn."

(Translated from Spanish)



Percent of the survey respondents' daily activities and parental perceptions before and after participating in OTAGS workshops.

Daily Activities	Before	After
Shared stories, songs, nursery rhymes to improve their child's language development	30%	69%
Used reading as a fun, recreational activity	11%	41%
Provided opportunities for healthy play and exploration	24%	82%
Set clear, enforceable rules for their child	19%	55%
Enforced a reasonable bedtime	26%	89%
Held and cuddled their child	58%	100%
Parental Perceptions	Before	After
Felt confident in their ability to help their child learn	22%	60%
Felt knowledgeable as a first and most important teacher	27%	86%
Felt they knew what was right for their child	6%	79%

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FHA Home Horticulture

Hotline

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## *Master Gardener volunteer program addresses safe and livable communities strategic initiative*

The Farm and Home Advisor (FHA) Department trains, certifies, and supervises UC Master Gardeners (MGs). These volunteers conduct educational activities and provide research-based information in the areas of home gardening, non-commercial horticulture, and pest management to residents of San Diego County. Our County Master Gardener Program was initiated in 1983 and currently has 250 volunteers. A class of new Master Gardeners is trained every other year. In 2010, a class of 45 new volunteers completed an 18 session course with 61 hours of instruction on basic horticulture and pest management taught by UC Farm Advisors.

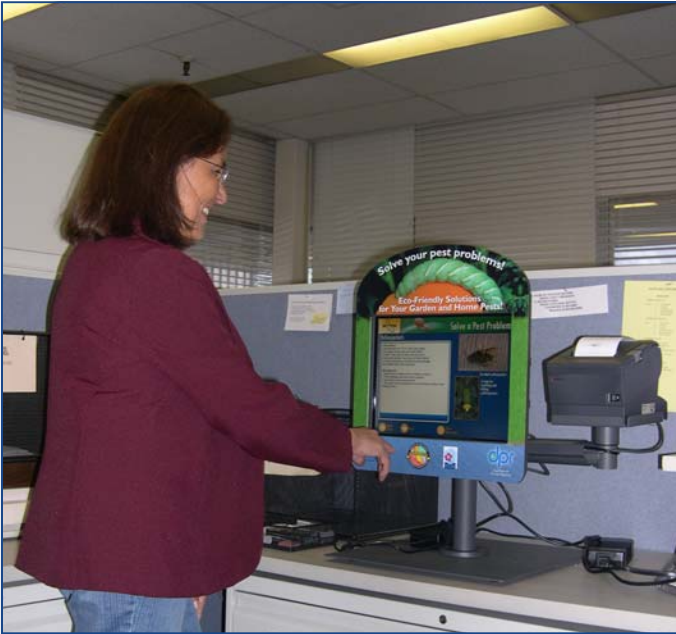
During the 2010 calendar year, the Master Gardeners contributed over 23,000 hours of volunteer service to the FHA Urban Horticulture Program. The Master Gardeners participated in a variety of educational activities:

- Staffed the FHA Home Horticulture hotline on weekdays from 9a.m.-3p.m. MGs worked 3,000 hours and reported over 4,000 consultations.



- Staffed 50 educational exhibits throughout the County including the 22-day County Fair and recorded over 14,000 contacts.
- Created two new educational exhibits - Landscaping with Native Plants and Water Smart Landscapes.
- Conducted two Home Gardening Seminars on March 24 (27 classes and 700 participants) and on October 2 (9 classes and 218 participants).
- Conducted a School Gardens and Nutrition Conference at the Del Mar Fairgrounds on April 24 for 92 teachers.
- Supported garden-based learning by consulting with teachers throughout the County – 83 MG consultants worked with 263 schools.
- Provided information to support community gardens throughout San Diego County and promoted the establishment of new gardens.

## *Healthy gardening program brings integrated pest management to San Diego County residents*



Healthy Garden – Healthy Home is a local program that encourages home gardeners to use Integrated Pest Management (IPM) and less-toxic alternatives to manage pests. Through this program, San Diego residents can attend a workshop, visit our gardening kiosk, or obtain tip cards to learn more about implementing these pest management techniques at home. As part of this effort, a team of 25 UC-CE San Diego County Master

Gardeners has undergone extensive in-depth IPM training and they now provide outreach to the San Diego Community.

In 2010, six community workshops were held in unincorporated areas of San Diego County to teach beginning home gardeners about IPM principles useful for a successful garden. Two of the workshops focused on managing pests specific to citrus and tomatoes, two popular home garden crops. More than 99% of the workshop attendees reported that they learned two or more least-toxic pest management methods, techniques, or ideas that they would use in the future.

Four self-help computer touch screen kiosks were deployed at community events, retail garden centers, and various public facilities. More than 12,000 residents took advantage of this outreach method during the year.



To learn more about the Healthy Garden – Healthy Home program, please go to [www.projectcleanwater.org/html/ipm.html](http://www.projectcleanwater.org/html/ipm.html)

Too much pesticide and fertilizer used outdoors will end up in our lakes, beaches, and bays when it rains or when landscapes are overwatered. Accidental contact with pesticides can also harm our children and pets.

IPM techniques are easy to follow and are safer for family, pets, and the watersheds.



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## On the Web:

[www.wildfirezone.org](http://www.wildfirezone.org)

[www.GSOB.org](http://www.GSOB.org)

[www.extension.org/surviving\\_wildfire](http://www.extension.org/surviving_wildfire)

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## Outreach efforts focus on wildfire, Goldspotted Oak Borer, and rodent control

### Wildfire Zone

Wildfires occur frequently in San Diego County. The potential for losses has grown over the last few decades due to an increasing wildland-urban interface – areas where residents live in the vicinity or in the midst of wildland vegetation.

Following the devastating 2003 firestorms, UCCE San Diego developed Wildfire Zone, an education and outreach program to help residents learn more about wildfire safety, preparedness, and recovery. The program utilizes an interactive website, print materials, videos, touch

screen kiosks, presentations, workshops, and demonstrations. Although targeted to County residents, this program also serves local fire authorities, building industry professionals, and community organizations. The website receives over one million hits annually. Wildfire Zone content has been adopted by other County department training and community outreach programs and local fire departments. Program staff also provide leadership with the Fire Safe Council of San Diego County and the Forest Area Safety Taskforce and collaborate with community Fire Safe Councils and agency partners at wildfire awareness events. Program highlights in 2010 include development of a joint project with CAL FIRE for digital mapping and database development of fire access roads, organizing and facilitating a focus group discussion on developing a regional fire road database, a workshop on mapping tools and home assessment for wildfire safety, and new resources in Spanish language.

### Goldspotted Oak Borer

#### Education and Outreach Program

The Goldspotted Oak Borer (GSOB) is a pest that has been associated with high levels of oak tree mortality in areas of San Diego County. As an integral part of California's natural resource and urban environment, dead and dying oaks have ecological, financial, cultural, and safety impacts for residents, wildlife, parks and recreation facilities, and tribal reservations. In the Spring of 2009, UCCE San Diego was invited to participate in joint agency discussions on the research, education, and



Oak trees affected by the GSOB

outreach needs relating to GSOB and oak woodlands. To help collect and disseminate current knowledge on identification, management and restoration methods, we implemented a website providing information, resources, and systems for the public to report suspected infestations. In June 2010, we were funded to continue education and outreach program development. With federal and state



Two GSOB Adults

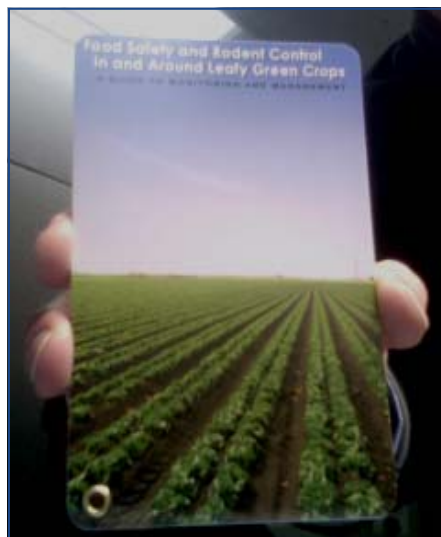


agency partners, we are providing monthly workshops for managers of oak woodlands, city and county parks staff, tribal representatives, landscape and natural resource professionals, and residents. We are now developing print, webinar, and video resources to raise public awareness about the vital role of oak woodlands, the threat of the GSOB and management of infested wood, and oak restoration methods.

**Interactive Kiosk Helps the Public Deal with Ground Squirrels**

California ground squirrels are found in most areas of the state. They become pests in agriculture when they feed on crops and damage vines and trees. In home gardens and other landscape areas, their feeding and burrowing can be very destructive. Ground squirrels have been implicated in levee failures and they damage conventional irrigation systems. In rangeland areas, they can be carriers of plague, a deadly disease transmitted from squirrels to humans by flea bites. Dealing with this pest can be very challenging and many of the methods used can have unintended harmful consequences to pets, other wildlife, and the environment. Science-based information about controlling ground squirrel damage is essential, but unfortunately not always available to people who need it.

Researchers at UC Cooperative Extension in San Diego County developed the Ground Squirrel Control Interactive Kiosk. This touch-screen stand-alone system incorporates images, videos, and text to provide growers, homeowners, and others comprehensive information on ground squirrels and their control. The kiosk allows users to determine the most appropriate squirrel control efforts for their individual location and specific



needs. The user can test their knowledge about dealing with ground squirrel pests and access information on potential environmental impacts and risks associated with control methods. The new learning system leads to safe, effective, and environmentally sound ground squirrel pest control in California agriculture, landscaped areas, and home gardens.

The kiosk has been tested in four California counties and response has been universally positive. Currently, four more vertebrate pest species (rats, pocket gophers, rabbits, and meadow voles) are being added to the Vertebrate Pest Control Kiosk.

**Food Safety and Rodent Control In and Around Leafy Green Crops**

The safety of the food supply is a major concern of farmers, food processors, and retail stores. Recent food safety outbreaks have attracted more attention to farm production activities.

Since 1995 there have been over 20 outbreaks of food borne illness in the United States from *Escherichia coli* (*E. coli*) O157:H7 on leafy green crops such as spinach. In 2006, a major outbreak of food borne illness caused by *E. coli* contaminated bagged spinach from Central California resulted in 3 deaths and over 200 illnesses.

As a result of field research, a systematic approach for monitoring and controlling rodents in and around leafy green crops was developed by researchers at UC Cooperative Extension in San Diego County and UC Davis. The strategy is described in a new 15 page field guide containing relevant rodent control and monitoring information. The project has resulted in a better understanding of the relationship between rodents and leafy green crops in California.



Successful education of private users, growers, and the public will reduce the potential for misuse of rodenticides that could have harmful consequences to the environment.

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Native bunch grass dominates after removal of non-native grasses.

Public safety from wildfire and natural habitat recovery will both be enhanced by removing easily ignited fuels from an ecosystem, breaking the non-native grass fire cycle.



Native Evening Primrose

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## *Invasive plant management: Key to native habitat restoration and reduction of wildfire threat*

Native habitat in Southern California is in very limited supply because of urban development. Over the past two decades, mostly through funding available from state bond programs, thousands of acres of open space have been acquired and dedicated to preservation. Public agencies and private conservancies face the challenge of restoring land to functioning natural habitat. The single biggest problem impeding restoration is invasive plants, mostly non-native grasses and forbs that started to arrive in California with the earliest Spanish colonists and were exacerbated by American immigrants arriving after statehood in 1850. The next biggest problem is the increasing frequency of human-caused wildfires. The interaction of these two problems leads to intense wildfires and conversion of shrub lands to non-native grasses which ignite easily, shortening the fire frequency. In 2007, wildfires in San Diego re-burned about 60,000 acres that had burned in 2003 because the land had “recovered” to non-native grasses instead of shrubs or perennial native grass. Over the past six years, Carl Bell has developed novel field research on control of the invasive plants.

Starting in 2006, field trials in conserved lands in San Diego were established in collaboration with Dr. Edith Allen, Restoration Ecologist at UC Riverside. The approach is very simple: kill the invasive plants with herbicides in early spring in order to create space for the native plants. In one research site at County of San Diego Barnett Ranch Open Space Park near Ramona, invasive plants are greatly reduced and some species eradicated after five years of an annual application of glyphosate herbicide. Im-

portantly, native plants have re-emerged from the soil seed bank and now constitute 50% of the cover of treated plots.

Another research project involves purple needlegrass (*Nasella pulchra*), the official state grass and the once dominant species on 9 million acres of grassland in California. Today, purple needlegrass exists at low levels throughout the state, but can be obscured by non-native annual grasses such as ripgut brome and wild oats. Working with CA Department of Fish and Game and US National Park Service colleagues, the tolerance of existing needlegrass populations to a variety of herbicides was evaluated in order to facilitate weed control with minimal injury to the native grass. The results are extraordinary: needlegrass cover ranges from 10-60% in treated plots compared to <2% in untreated plots.

This approach is being enthusiastically embraced by numerous individuals and organizations because of its effectiveness and relatively low cost of about \$200/acre. The success of these pilot projects should lead to adoption of the approach throughout southern California.

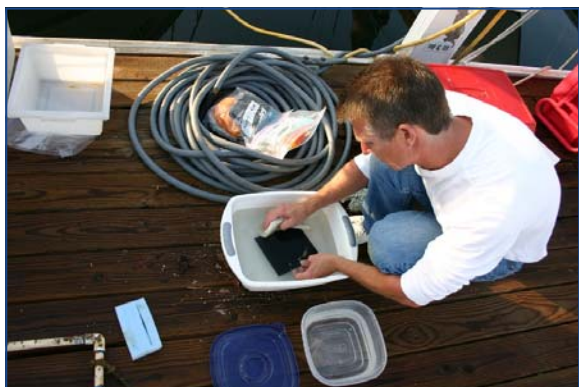


Native plants dominate a treated plot and contrast the flammable invasive plants.

## Competing environmental challenges: Balancing invasive species and toxic hull coatings

Coastal Resources Advisor Leigh Johnson is helping San Diego County boat owners and boating businesses face competing environmental challenges. Fouling growth on boat hulls needs to be controlled because it slows sailboats, causes powerboats to use more fuel, and includes some invasive species. Copper antifouling paints are widely used to control hull fouling, yet the copper they emit has reached toxic levels in some marinas. Regulation is increasing and alternatives are needed.

During 2010, Johnson conducted 12 seminars, workshops, and tours for 314 marina, harbor, yacht club, boatyard, hull cleaning business, boating association, and agency representatives. At these events, economic and field research information was provided for co-managing aquatic invasive species and coastal water quality.



Testing effectiveness of hull cleaning BMPs on copper and alternative coatings.

Supply-side economic research found that California's boat maintenance businesses have widespread capacity to apply and maintain copper antifouling paints. However, capacity for nontoxic and less toxic hull coatings is rare, except at San Diego Bay.

This study also found that marina, boat repair and hull cleaning companies believed that the number of customers who were aware of nontoxic hull coatings had as much as doubled in the past 2 years.



Installing experimental frame and hull coating panels at a San Diego Bay marina

Statistical analysis found that awareness of nontoxic coatings, but not cost, was a significant influence on customers in choosing nontoxic hull coatings. These results suggest that education can enhance adoption of nontoxic hull coatings.

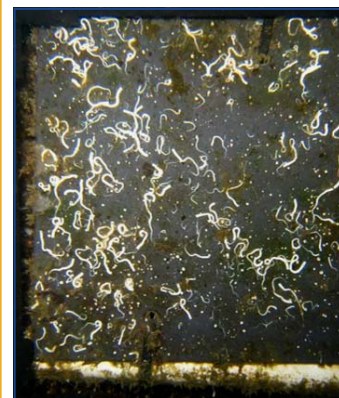
Field studies also investigated how invasive and other fouling species respond to copper and nontoxic hull coatings, hull cleaning practices, and environmental factors.

The economic and field research programs were supported in part by over \$400,000 in grants from California Department of Boating and Waterways, California Department of Pesticide Regulation, and California Sea Grant College.

In addition to her work on hull coatings, Johnson collaborated to organize California's first Eurasian Mussel Summit that drew over 100 water district, agency, environmental, and academic representatives. The Summit provided research results and shared strategies for preventing the spread of invasive quagga mussels that have infested two dozen reservoirs in Southern California.



Invasive tube worms (*Hydroïdes* spp.) foul San Diego Bay boat hulls quickly, slow boat speeds, and damage hull coatings. Tube worms build calcium carbonate shells – shown below on experimental panels exposed in a San Diego Bay marina.



### On the Web:

[www.ucanr.org/coast/](http://www.ucanr.org/coast/)

The new UCCE Coastal Resources Program website offers over 40 publications and the new, "Boating Environmental Forum" blog.

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## *Plant materials, water management, and invasive pests in the landscape*



Damage to Myoporum caused by the Myoporum thrips.

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Landscape managers and county residents are in search of simple and economic changes that can be made to their landscapes that will result in water savings. The options involve both water management and the use of plant materials with low water needs. In addition, landscape managers have been plagued with damage caused by invasive insect species. One of the most damaging and wide spread of these pests is the thrips which attack Myoporum trees and groundcover. Research efforts were undertaken to address these issues.

### Turfgrass Water Conservation

Research in the area of water conservation in the landscape focused on two trials on the establishment of warm season grasses in tall fescue. Warm season grasses can perform well with about 25% less water than tall fescue. In these trials, seed or plugs of warm season grasses were placed in established tall fescue to facilitate a conversion that would not be noticeable during the year. Results showed that competition

from the tall fescue inhibited the establishment of the warm season grasses. The best converted plots were those where the tall fescue was eliminated with herbicide, reducing competition and allowing the warm season turf to become established.

### Myoporum Thrips Control

Currently, Farm Advisors David Shaw and Jim Bethke are working to provide options for effective control of the Myoporum thrips (*Klambothrips myopori*) to landscape and nursery managers. Extensive trials were completed working with landscape managers at 4S Ranch in Rancho Bernardo and at the Del Mar Fairgrounds. The use of more “friendly” pesticides (oils, botanicals) as well as new materials (neonicotinoids) was investigated for control of the thrips on both tree and groundcover forms of Myoporum. Research results were presented at this year’s IPM seminar and at the Entomological Society of America meetings held in San Diego. This research has been well received by clientele and they are changing to the newer neonicotinoids for control of the thrips. However, some clientele are removing/replacing the plant material rather than spraying. The invasive thrips has greatly impacted the use of this drought and salinity tolerant plant material.



## *Commercial landscapers learn about sustainability, arboriculture, and integrated pest management*

Working closely with the commercial landscape industry, local community colleges, and the Port of San Diego, Farm Advisor David Shaw and Area IPM Advisor Cheryl Wilen produced three well attended conferences in 2010 to provide information in the areas of sustainable landscapes, arboriculture, and IPM.



The second annual Sustainable Urban Landscapes conference held at Cuyamaca College on March 11 and 12, 2010 was attended by 200 individuals, including landscape architects, landscape designers, commercial contractors, agency personnel, and students. Topics included conservation of water, fertilizer, and other inputs to obtain a sustainable landscape environment from the planning to the maintenance stages.



In May 2010, an intensive one-day seminar was held to train commercial landscapers, pest control advisers, and pesticide applicators in integrated pest management (IPM). Training was focused on detecting new pests, irrigation management, soil pests, general IPM, and gopher control. This training seminar provided information on the effects of pesticides, which chemicals will have the least detrimental impact on human health and the environment, and non-chemical alternatives.

“It’s a Risky Business” was the theme of the 2010 Professional Tree Care Association’s annual Seminar and Field Day held on August 20 and 21. The event, co-sponsored by UCCE, addressed tree evaluations and hazards, disease and insect pest management, and identification of decay organisms using DNA technology. The Field Day (held the day after the Seminar) reinforced the Seminar topics with hands-on demonstrations in Balboa Park. Highlights of the Field Day included tree inventories, risk assessment, and a full day training for tree workers in Spanish. Over 350 people attended.



Improving water quality is very important to San Diego County. Pesticides have been detected in waterways in the county and contribute to pollution of the bay and other water bodies.

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## *Water quality program makes impacts in San Diego County*



Nursery Crops



Media and Fertilizer



Runoff

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The Agricultural Water Quality Research and Education Program helps growers and managers who use agricultural materials meet increased water quality regulations. During 2010, Dr. Valerie Mellano provided water quality presentations at numerous educational meetings. Groups receiving information included avocado growers, macadamia nut growers, nursery producers, golf course personnel and production animal agriculture, including horse breeders and boarders, goat breeders, and poultry producers. Presentations included information on current water quality requirements, management practices to improve and protect water quality, and research updates on current field projects.

Dr. Mellano has developed several effective venues for dissemination of water quality information:

- Touch-screen water quality kiosks that provide information for both homeowners and agricultural landowners.
- Online courses related to water quality and a blog that will answer questions and provide information on water quality topics.
- A water quality field guide in both English and Spanish designed to assist field personnel in minimizing impacts to water bodies in the area of their farming operations.

Dr. Mellano and her staff also completed the first phase of a research program using a “portable wetland” system designed cooperatively with the Civil Engineering faculty at San Diego State University, and is continuing this work with the Summit Erosion and Filtrex companies. The goal of this research is to provide a method of removing nutrients from runoff water through the use of biological filtration that is not permanently established in streambeds. The initial trials were part of the Rainbow Creek program in north San Diego County, and new trials have been started in Oceanside and Carlsbad.



A “portable wetland”



## *Entomologist assists nursery and flower growers and solves eye gnat nuisance problem*

A major goal of the Nursery and Floriculture Farm Advisor, James A. Bethke, is to improve the viability of the industry and develop methods that maintain product quality while improving worker safety and environmental health. Based on Bethke's new and innovative integrated pest management (IPM) techniques, growers and pest control advisors can make better pest management decisions, and regulators can better formulate protocols for invasive pests.



A major accomplishment during 2010 was the submittal of a special local need registration to use ethylene for flower induction of bromeliads. Ethylene was not registered for use on bromeliads and growers were using it unknowingly. With the support of the county agricultural commissioner, growers, and a cooperating specialty gas company, Bethke compiled a registration packet that was accepted in 2010. Two of the largest growers in the US are in San Diego County and it was estimated that they would have lost about \$12 million to lost markets if they were not able to use ethylene.



### **Eye Gnat Research**

As an entomologist, Bethke has been the principle investigator of the San Diego County Eye Gnat Research and Education Project. This project is a cooperative effort between UCCE, the County Department of Environmental Health Vector Control, and County Supervisor Dianne Jacob and her staff to investigate the serious eye gnat problem in the community of Jacumba. Eye gnats fly around the eyes, nose, and ears of humans and animals and in high numbers, they can be exceptionally bothersome. The number of eye gnats in the Jacumba area is extremely high, and the problem has become more widespread in San Diego County in the last few years. Bethke helped in developing a 'Nuisance Prevention Plan' for the Jacumba area in 2010. The plan utilized mass trapping and buffer crops to reduce eye gnat populations. This resulted in a 99.5% reduction in recorded eye gnats in the community in 2010 (1 eye gnats/trap) compared to 2008 (183 eye gnats/trap). Bethke is now expanding the research to include the Fallbrook and Escondido areas of the county.



The Floriculture and Nursery Industry in San Diego County is a one billion dollar industry.

### ***On the Web:***

For information on programs, workshops, presentations, newsletters, and pest alerts, visit Bethke's web site at:

[www.ucanr.org/sdf&n](http://www.ucanr.org/sdf&n)



### **'Ask the Advisor'**

Is an interactive program held monthly that addresses current topics of interest to the floriculture and nursery industry.

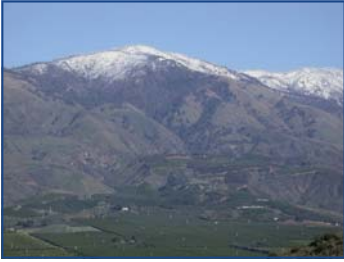
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### On the Web:

**The Search for Salinity Tolerance in Avocado: An Update on a Frozen Rootstock Trial. Topics in Subtropics 8 (3):5-7.**

[www.ucanr.org/sdavoroots](http://www.ucanr.org/sdavoroots)

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## *Tree fruit growers may reduce water costs by utilizing salt-tolerant rootstocks*

Irrigation water supply and economic problems continue to plague our avocado and citrus growers. Water supplies to the growers were cut back by 30% three years ago. Advice at that time was to cut about 30% of the avocado trees to stumps to reduce tree height and water needs. Most of the growers followed this practice and now these trees are growing back and require water. At the same time, the water districts realized that they were not selling enough water to cover their fixed costs, so they raised the price of water. In Fallbrook and Valley Center (San Diego County's two main growing regions) water costs for growers are now \$3,500 to \$4,000 per acre per year. Unfortunately, the typical avocado grove is not producing enough fruit to cover this cost and make a profit.



Dr. Bender is also evaluating salt tolerant avocado rootstocks to identify a rootstock that will do well with either saline ground water or recycled sewage water. Several new rootstocks were imported from Israel and South Africa for the avocado salt-tolerant rootstock trial. These were grown, grafted to 'Hass', and planted in Valley Center. After irrigation with saline well water most of the California rootstocks were killed, but many of the imported rootstocks survived and the trees began to bear fruit. The first harvest was accomplished in May, 2010. One of the Israeli rootstocks irrigated with very saline water bore more fruit than the County average yield. A newsletter article was published on the rootstock trial, but at least two more years of yield data will be collected before confident recommendations are made.





## *Diaprepes root weevil management is a combination of cultural, chemical, and biological control*

The *Diaprepes* root weevil is an introduced pest from Florida now found in the coastal zone of California from La Jolla to Long Beach. Citrus, as well as a wide range of ornamental trees and shrub are hosts of *Diaprepes*. The larval stage of the weevil feeds on tree roots and causes a severe decline in citrus production and can lead to early death of the trees. Farm Advisors Dr. Gary Bender and Jim Bethke were awarded a \$232,000 grant for three years to develop a biological control system to manage the pest. Research trials on *Diaprepes* are continuing in the Encinitas-Rancho Santa Fe area.

The *Diaprepes* Root Weevil Project is a multi-state, multi-agency project concentrating on the eradication and control of the weevil using an area-wide management plan that includes the establishment of natural enemies of the beetle. This year, hundreds of beetles and eggs were collected and thousands of parasitic wasps were released in an attempt to control the beetle's dispersal.

Work on controlling the weevil larvae in the soil showed that chemicals were not effective, but soil-applied beneficial nematodes provided partial control. It was also determined that merely putting down a land-



scape ground cloth under the plants is a successful cultural method for reducing *Diaprepes* adults feeding in the trees. The fabric blocks the adults from emerging from the soil and also stops the young weevil larvae that have just hatched in the trees from dropping down into the soil in search of roots for feeding.

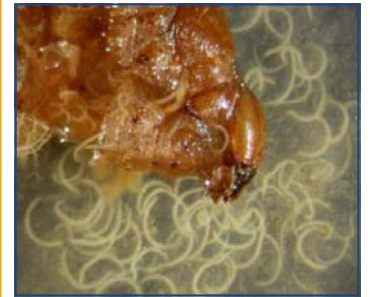
Current research focuses on evaluating the success of biological control parasitoids reared for us by the University of Florida.



Lemon tree in Encinitas affected by root feeding *Diaprepes* weevil larvae. Healthy tree is on right.



*Diaprepes* adult with pathogenic fungus



*Diaprepes* larva killed by parasitic nematodes.



Wasp Parasitoid of *Diaprepes*

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Pitahaya fruit cut to show color of the tasty flesh.

Have you tried a  
pitahaya,  
carombola,  
or pomegranate  
lately?

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## *New crops for San Diego with potential advantages in marketing, water conservation, and return*

UCCE Advisors Dr. Gary Bender and Ramiro Lobo have been assessing alternative crops for small-scale producers, with emphasis on water efficiency, yield, and marketing. These efforts have focused on production of pitahaya (dragon fruit), olives and olive oil, pomegranates, and wine grapes.



### **Pitahaya — Dragon Fruit**

Research and extension activities in cultivar evaluation and field production of pitahaya have demonstrated that it can be a viable and profitable crop alternative for producers in Southern California. The program has engaged the farming community by distributing, free of charge, an estimated 2500 cuttings of 54 cultivars of dragon fruit among potential growers in Southern California so they can identify the cultivar that best adapts to their local micro-climate. In addition, approximately 5000 pounds of fruit was distributed to local consumers and community organizations to increase awareness and to obtain feedback on consumer preferences with regards to fruit quality and flavor. Research also provided practical post harvest recommendations to help growers better manage this fruit and reduce losses during marketing. The results of these efforts have been increased consumer acceptance and a heightened interest in this crop by

growers. Since 2005, the acreage planted has reached an estimated 200 acres, an increase of 400 percent .

### **Blueberries**

Blueberries are a great alternative for both conventional and organic small-scale producers in Southern California. Early season, low chill blueberries are harvested during a niche in the market when prices are quite high. However, the choice of variety and production system may influence profitability because of the timing of the harvest and prevailing market prices for each system. Results from our research and demonstration plots have helped us advise growers on the proper variety choice for their micro-climate so they can maximize the return on investments. Even though the demand for blueberries among consumers and the interest among growers continue to grow, acreage has increased only mar-

ginally over the last few years. The economics of the crop and the large expansion of acreage in other parts of the state, country, and the world have contributed to keep our local acreage at an estimated 150 acres of blueberries including conventional and organic production systems.

**Blueberry Irrigation Trial.** Dr. Bender has been running an irrigation trial on blueberries for the past four years to determine the water requirements and potential yield. The trial has three blueberry varieties and three levels of water: a “low” amount (less than what citrus requires), a “medium” amount (about what avocados require), and a “high” amount. Unfortunately, blueberries are not “water-saving” crops and they produced the best yield at the high amount. However, it appears that income per acre is much higher than avocados. Data is currently being analyzed and a paper is being prepared on this trial.

Local consumers participating in a pitahaya taste panel (right) and Dr. Gary Bender assesses yield of blueberries under three irrigation levels (below).



### **Carambola—Star Fruit**

Carambola is a tropical crop that can be grown in our subtropical region and there is a small, but excellent market for the fruit. Recently, Dr. Bender investigated the carambola collection established by the University of Florida. Six of their 17 varieties were exceptionally sweet and could be a successful new crop in San Diego County. Carambola seeds from the USDA collection in Miami were imported in October and are now growing at the Mira Costa College greenhouse. These rootstocks will be grafted to the six Florida varieties in Spring 2011 and a trial will be set up in either Fallbrook or Valley Center for growers to observe.



### **On the Web:**

#### **The Market Driven Enterprise Screening Guide,**

a tool to help agricultural producers evaluate new and potentially profitable crop alternatives is online at

[www.ucanr.org/newprise](http://www.ucanr.org/newprise)

#### **Ag in Uncertain Times**

is a webinar series and website designed to help producers and others meet the challenges of today’s uncertain economy. The series (in English and Spanish) and supporting information is online at:

[www.farmmanagement.org/aginuncertaintimes](http://www.farmmanagement.org/aginuncertaintimes)

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