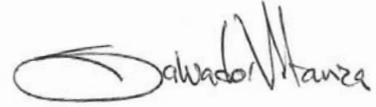


## Issues in Agriculture

*The Newsletter about Integrated Pest Management for the El Paso Valley*

Volume: 40  
Issue: 2  
Date: April 6, 2015

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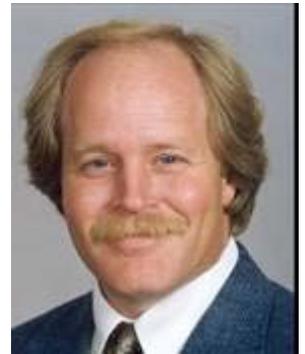


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Texas AgriLife Extension El Paso County: <http://elp.tamu.edu/> Pecan IPM Pipe: <http://pecan.ipmpipe.org/> TPMA [www.tpma.org/](http://www.tpma.org/)

## ANNOUNCEMENTS

- You can download this and other IPM newsletters, check updates, and view upcoming events at the El Paso AgriLife IPM website: <http://elp.tamu.edu/integrated-pest-management/>
- Texas Entomology Loses Dr. Mark Muegge** (Sep. 8, 1956 to Feb. 23, 2015).

I want to share with you Dr. Charles Allen's thoughts in regards to Dr. Muegge's unexpected death: "I had high expectations for the Southwestern Branch ESA Meetings, in Tulsa recently. The meeting had everything needed to live up to my expectations in spite of the winter storm, but Dr. Muegge's accident and death changed things. The mood of the meeting changed as the thoughts of many in attendance turned to the life and loss of Dr. Muegge. As I searched for meaning in what happened, I was impressed, once again, of the fragility of life. With regard to our work, Mark's passing makes me mindful of the importance using our time wisely, helping people and leaving behind something of value. With regard to friends and family, my thoughts are very similar. Our investment in "quality time" with those we care about is an essential part of who we are, impacts their lives, and is how we will be remembered."



Dr. Allen wrote the following announcement in his newsletter: "The Texas A&M Department of Entomology recently lost a faculty member, coworker and friend. Dr. Mark Muegge departed this life on February 23, 2015 in a single-vehicle accident on an icy road in West Texas. Mark was born in Greenfield Indiana to Richard and Barbara Muegge on September 8, 1956. His love of insects began as a child and continued throughout his life. Mark earned degrees in Entomology from Purdue University, the University of Tennessee, and Louisiana State University. He was hired by the Texas Agricultural Extension Service in 1997, as the Extension Entomologist at Fort Stockton, where he assisted growers with management of the pests of alfalfa, pecans, and cotton and educated Master Gardeners and home owners about managing pests. He was an expert in the development of sampling plans, economic thresholds, use of pheromones for mating disruption, and biological control of invasive plants. His work with the Pecan IPM Team won the Texas A&M AgriLife Extension Superior Service Award in 2010 and his work with the Saltcedar Biological Control Team won the Vice Chancellor's Award in Excellence and the Friends of Southern IPM "Pulling Together Award" in 2014. Dr. Muegge was a world expert in the taxonomy of the Japygidae, a primitive group of soil and litter-inhabiting Hexapods. In his time away from work, Mark enjoyed carpentry, bowling, photography, and gardening. Dr. Muegge's memorial service was a celebration of his life. He will be missed."



I, Salvador Vitanza, first met Mark in 1992, in Baton Rouge, when he was pursuing his PhD at Louisiana State University. Back then, we were part of the Linnaean Team; which represented LSU at regional and national competitions of entomological knowledge. We had fun during practice sessions, as classmates, and on road trips. Here at AgriLife Extension, we grew closer as friends and he supported my program with presentations, field trials, and donations. He was always willing to help others, had a quick-wit, and an easy-going disposition. What I remember most vividly about Mark is his contagious smile and his friendly nature. In our last conversations, I felt that he was happy and saw his future with optimism.

**2015 El Paso Pesticide Applicator Training:** on February 10, 2015, Texas A&M AgriLife Extension Service along with TDA, The El Paso Pest Management Association, The Greater El Paso Pest Control Association, and the Ysleta Independent School District organized and conducted the 2015 El Paso Pesticide Applicator Training Workshop at the Ysleta Cultural Arts Center; which dealt with diverse topics related to pesticides and integrated pest management (IPM). A series of seven presentations were the central part of the event. The topics presented during the training were relevant to the audience interest and needs. The subjects were covered by experts in their respective fields and included the following:

- Pest report for urban and Ag in El Paso for 2014 (Dr. Salvador Vitanza, Extension Agent IPM Texas A&M AgriLife).
- Pest and disease identification (Dr. Kevin Ong, Director of The Texas Plant Disease Diagnostic Laboratory).
- Pesticide laws and regulations (Randy Rivera, Administrator for Agriculture Protection and Certification Texas Department of Agriculture).
- Weed management (Tommy Kezar, CTN Educational Services Inc).
- Integrated pest management of medically important arthropods / IPM in agriculture and resistance management (Dr. Mark Muegge, Associate Professor and Extension Entomologist Texas A&M AgriLife).
- Worker protection standards (Mario Saavedra, Regional Education Specialist Texas Department of Agriculture).
- Care and management of trees in the Trans-Pecos (Oscar Mestas, Staff Forester III Texas A&M Forest Service).

A total of 260 people attended the event (including non-paying attendees). This is one of the largest and least expensive pesticide applicator training events in the State of Texas. Substantial savings in time and money were gained by workshop participants because the event was centrally located, provided high-quality presentations, certificates of completion, and opportunities for business contacts. The cost/benefit ratio was a great value for attendees. The evaluation survey post training resulted in very high marks and satisfaction. For the benefit of the readers of this newsletter, I would like to present a summary of some of the presentations given at this educational event.

### **CARE AND MANAGEMENT OF TREES IN THE TRANS-PECOS** (by Oscar S. Mestas)

Steps in Diagnosing Tree Disorders:

Inspection and Examination: identify the tree, walk around the tree, look for symptoms and signs, identify the problem(s), write down and describe the problems to yourself; read, find references, and compare looking for similarities between what you are observing and what is being described; compare and eliminate unlikely causes.

Sign versus symptoms: A **sign** is the presence of the actual organism or direct evidence of the causal factor. **Symptoms** are changes in the plant's growth or appearance in response to causal factors.

#### **Common Symptoms:**

- Blight: a rapid discoloration and death of twigs, foliage, or flowers.
- Canker: dead area on bark stem, often sunken or raised.
- Chlorosis or yellowing: chlorosis is a generic term and a diagnosis is all but impossible without detailed information.
- Decline: progressive decrease in plant vigor.
- Dieback: progressive death of shoot, branch, or root starting at the tip.
- Gall or gall-like: abnormal localized swelling of a plant part caused by insects, mites, disease, or an abiotic disorder.
- Gummosis: exudation of gum or sap.
- Leaf distortion: cupping, rolling, twisting, or otherwise deformed.
- Leaf scorch: burning along the leaf margin and into the leaf from the margin.
- Leaf spot: spots or lesions on the leaf. But is it viral, bacterial, fungal, chemical, etc.?
- Necrosis: dead tissue or necrotic area, without additional information, it is difficult to determine the cause.
- Wilt: general wilting of the plant or part of the plant.
- Witches broom: abnormal broom-like growth of many shoots.

#### **Common Signs:**

- Fruiting bodies: mushrooms, pycnidia, or conks.
- Insects
- Mycelium: fungal threads on the plant surface.
- Rizomorphs: shoestring-like fungal threads under bark.
- Slimeflux: bacterial ooze or discharge, wet or dried.



## IPM OF MEDICALLY IMPORTANT ARTHROPODS (by Mark Muegge Ph.D.)

**MOSQUITOES:** Vectored diseases in Texas in 2014: Dengue-virus = 18 cases (imported); West Nile-virus = 316 cases with 4 fatalities (15 cases in El Paso County); Chikungunya = 58 cases (all imported); Eastern Equine Encephalitis, Western Equine Encephalitis, and Saint Louis Encephalitis are endemic in Texas.

In mosquito management, prevention is the Key.

**Larva Control:** remove all breeding grounds, empty anything that holds water, clean out bird baths once a week, in permanent waters use *Bt* dunks and mosquito fish (*Gambusia* spp).

**Adult Mosquito Control:** Adult mosquitoes rest on weeds and other vegetation, shaded walls of structures. Reduce mosquito shelter by cutting down weeds adjacent to the house, apply insecticides to the lower limbs of shade trees, shrubs and other vegetation, and out building walls, etc. Effective insecticide products contain allethrin, malathion or carbaryl as active ingredients. <http://mosquitosafari.tamu.edu/> is a valuable resource for information.

**Protection:** Clothing. Wear long sleeves and pants at dawn and dusk when mosquitoes are most active. Use air conditioning or make sure there are screens on all doors and windows to keep mosquitoes from entering the home. Repellents: Some of the most effective include DEET,

Picaridin, Oil of lemon eucalyptus, 2-undecanone, Citronella, IR3535, P-Menthane-3, 8-diol. The EPA website <http://cfpub.epa.gov/oppref/insect/> has data on over 700 products!

Avoid traps and automatic misting systems. Mosquito traps and similar devices have not shown to reduce biting frequency. Black light (bug zapper), many “natural” products (garlic, bananas, or vitamin-B), or ultra-sound devices have not shown to be effective.

Automatic misting systems can work, but pose many potential problems such as: unnecessary insecticide use,

lack of efficacy data, non-target impacts, promotion of insecticide resistance, and risk of pesticide exposure to humans or pets.

**TICKS:** Diseases vectored by ticks include Lyme disease, Rocky Mountain Spotted Fever, Ehrlichiosis, Babesiosis, Relapsing Fever, and Tularemia among others.

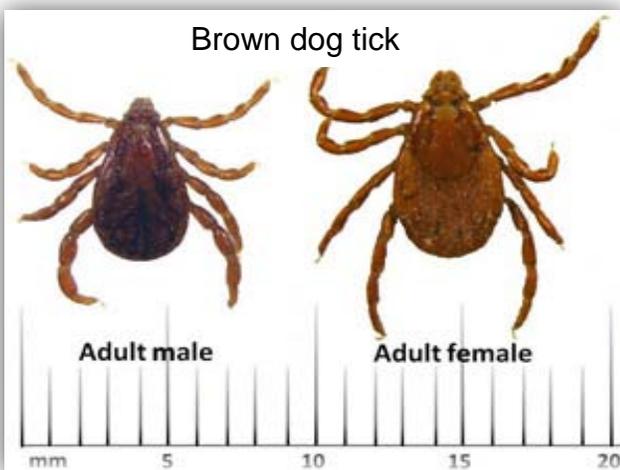
The brown dog tick, *Rhipicephalus sanguineus*, is the most common tick species in our area. It

is active all year. It vectors Ehrlichiosis in dogs and humans. It has four developmental stages: egg, larva, nymph, and adult. It is an urban tick, rarely found in wilderness areas. Uniform light to dark brown. Dogs are the primary host. Larvae and nymphs may attach to other animals. All stages occasionally bite humans. The time to complete life cycle is temperature dependent, but can be as short as 2 months. A female can deposit up to 4,000 eggs. Larvae and nymphs may live 6-9 months and adult ticks can survive unfed for over 18 months.

**Tick Management:** Keep area mowed and free of tall weeds. If the landscaping provides shady moist habitat with tall plants and shrubs, and is

frequented by the pet, then an insecticide treatment may be necessary. All places in the landscape where the pet sleeps or rests should be checked for tick infestations and treated with an insecticide if needed. Bedding material in kennels and dog houses should be inspected or replaced frequently. Caulking around windows, doors, and gas, waterline, and electrical line entry points into the home is recommended. Vacuuming will remove a substantial number of ticks from carpets and rugs. Indoor bedding areas should be inspected frequently for tick infestations. Protect pet by using effective insecticides such as K9 Advantix® II (imidacloprid, permethrin and pyriproxyfen), Kiltix® (pyrethroids), Frontline plus® (fipronil, methoprene), and Preventic® (amatraz).

**Tick Removal:** Use tweezers to grasp tick near mouthparts, then gently pull tick out. Do not use a hot match, fingernail polish remover, fingers, etc. This causes the tick to regurgitate increasing the disease transmission risk.

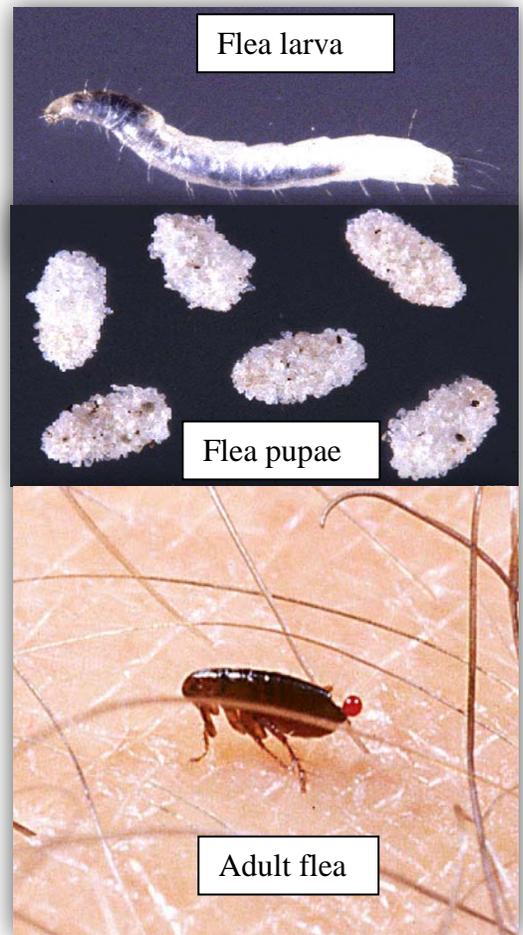


**FLEAS:** They are mostly a nuisance, but cat fleas can vector to humans: plague and Murine typhus. Cat fleas also serve as host to dog tapeworm and may cause flea allergy or dermatitis in pets.

The cat flea, *Ctenocephalides felis*, is the most common domestic flea. It feeds on both cats and dogs. Vibration and CO<sub>2</sub> stimulate adult emergence from cocoon. Adults need blood to produce eggs and live 1 to 3 weeks. The eggs are laid on or off the animal. If on an animal, they will fall off. Eggs hatch in 2 days. Larvae are worm-like and feed on any organic matter, but prefer adult flea feces. The larval stage lasts approximately 2 weeks. Larvae spin sticky silken cocoon to pupate. The pupa stage can last a few days to many months. When food supply is present, the life cycle can be completed in 30 to 75 days.

**Flea Management:** You must eliminate fleas from host, home, and yard. Clean and vacuum pet bedding. A flea comb can be used for detection. To eliminate an infestation will require pesticide use. Use insect growth regulator (IGRs) pesticides and adulticides.

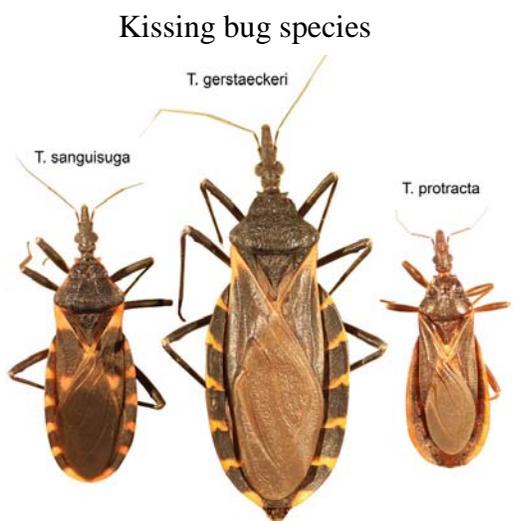
IGRs include Methoprene and Pyriproxyfen (sprays and flea collars), Lufenuron (“Program” administered orally). Treat the home and wherever pets rest. Use IGRs and adulticide (pyrethroid). Use spot-on insecticide for pets. Treat outdoor areas with IGR (pyriproxyfen) and a pyrethroid adulticide where pets frequent.



**KISSING BUGS:** They vector Chagas' disease caused by the protozoan parasite *Trypanosoma cruzi*. This disease affects humans and canines. Chagas' disease transmission occurs when feces of an infected cone nose or kissing bug are scratched into a skin wound. Kissing bugs are nocturnal blood feeders. Research has shown that up to 50% of kissing bug population is infected with *T. cruzi* in Texas. It can infect many hosts including: opossums, wood rats, armadillos, coyotes, mice, raccoons, skunks, and fox. Estimates of human cases in the US range from 300,000 to 1million. The disease has 2 phases: acute and chronic. The symptoms vary, but fever, fatigue, body aches, headache, rash, loss of appetite, diarrhea are common in acute phase. The chronic phase can last a life time. It can be asymptomatic or present cardiac/intestinal complications. Sudden death can occur anytime.

Treatment with the antiparasitic drugs benznidazole (Rochagan, Ragonil) and nifurtimox (Lampit) kill or inhibit *T. cruzi* parasites. These drugs are only available from the CDC. The canine infection is relatively common in Texas. The symptoms in canines are similar to human infection. Dog kennels may be hot spots for Chagas disease transmission.

**Management:** Check under and in dog housing and treat if needed. Remove rodent nests that are located within 300 feet of the house. Use weather stripping, caulk, or silicone seal to eliminate small cracks and crevices. Screen all windows and vent openings. Since white lights attract the insects at night, move inside lights away from doors and windows and, change outdoor and porch lights to yellow bulbs, reduce the wattage, or both. Eliminate harborages including piles of lumber, firewood, and debris. Check beds at night, and shake out the bedding before getting into bed. Keep beds at least 1 foot from walls, do not allow bedding to touch the floor, and place double-sided sticky tape on the bed legs. In extreme cases, a tent of mosquito netting over the bed that is tucked in all around the mattress will provide protection.



The Texas AgriLife El Paso IPM Program is partially supported by the following organizations:

West Texas Pecan Association  
 Ag Market Resources  
 El Paso Pest Management Association  
 Texas Pest Management Association  
 Valley Gin Company, Tornillo

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