

Special Interest Articles:

- Grasshoppers Oh My!
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- Lyme Disease
- Endosulfan Terminated



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Insect Updates Grasshoppers Oh My!

As I am sure all of you know grasshoppers are a huge problem this year. What many might not be aware of is that this is not going to be a one year problem.

Grasshoppers are most likely going to be more prevalent for the next couple years.

Therefore it is important to know how to prevent/limit and control them.

Good news is that fall is just around the corner and hopefully bringing much needed rain and cool weather that will cause the

grasshoppers to disappear until next spring. The best way to prevent/limit the numbers of grasshoppers in your pasture is to start taking control in the fall and winter.

This consists of tilling dormant fields in order to break open egg cases buried in the soil, cut or spray weeds near pastures and delay planting.

When spring arrives your first tools are to eliminate any weeds near the pasture by cutting or herbicides and to scout the fields. Early

intervention is the most effective means of control.

When grasshoppers are small, begin treating fields appropriate to label regulations with Asana, Orthene and Sevin for non-croplands; and Dimilin, Karate, Mustang Max, Baythroid and Sevin for pastures.

Grasshoppers can be devastating and make huge economic impacts, fighting them early and all year round with cultural, biological and chemical management tactics will provide the most success.

Malaria Proof Mosquito

For the first time, University of Arizona entomologists have succeeded in genetically altering mosquitoes in a way that renders them completely immune to the malaria causing parasite, a single-celled organism called *Plasmodium*. Someday researchers hope to

replace wild mosquitoes with lab-bred populations that are unable to act as vectors (transmit *Plasmodium*).

By using molecular biology techniques, Dr. Michael Riehle and his team were able to develop a piece of the mosquito's genetic code that

essentially blocked the infection process of the mosquito with *Plasmodium* completely.

The intent is to effectively stop the spread of the malaria parasite by developing mosquitoes that are 100% resistant.

Protection needed against ticks carrying Lyme disease

Research on the population of black-legged ticks (also known as deer ticks), which transmit Lyme disease from host animals to humans, reinforces that it is important to take preventative measures when spending time outdoors.

Research conducted in Illinois found that black-legged ticks were present in every county sampled and ticks carrying the Lyme disease pathogen were

collected as well.

These ticks are very small, size of a poppy seed. The nymph stage of their life cycle is responsible for most of the human cases of Lyme disease because of peak seasonal activity coincides with human activity outdoors.

Preventative measures include:

- wear light-colored clothing so

ticks are easy to see

- wear long sleeves & pants
- tuck pants into socks or tape pants to boots
- use insect repellent with DEET
- stay in the center of maintained trails
- do frequent tick checks
- check for ticks at the end of the day
- put clothes in dryer when you get home

Cattle Care

Anthrax Is Here – Vaccinate Livestock Now



“Outbreaks usually end when cool weather arrives and the bacteria become dormant.”

Late summertime in certain parts of Texas means livestock producers should be on the lookout for the resurfacing of anthrax in their animals.

Among the cases confirmed this summer are one bovine in Crockett County, one whitetail deer in Kinney County and one whitetail deer in Uvalde County.

Anthrax which is caused by *Bacillus anthracis* is a naturally occurring disease with worldwide distribution, including Texas.

“Anthrax cases are not unusual; especially at this time of year. This is peak season for anthrax to resurface and affect livestock

and deer,” Dr. Dee Ellis, Texas Animal Health Commission (TAHC) Executive Director and State Veterinarian, said. “Ranchers and livestock owners should be aware of recent anthrax confirmations in their area and consider vaccinating their livestock to protect against the disease.”

Anthrax can occur anywhere in Texas but is typically confined to a triangular area bounded by Uvalde, Ozona and Eagle Pass. This includes portions of Crockett, Val Verde, Sutton, Edwards, Kinney and Maverick counties.

If an animal dies from anthrax and isn't properly disposed of

by burning, the bacteria can spill into the soil and remain there. The bacteria will then resurface on grass or forage under ideal weather and soil conditions during spring and summer months.

By the time an animal shows signs of staggering, trembling or convulsions after ingesting anthrax, death is expected.

TAHC requires animal carcasses, manure and bedding be incinerated until thoroughly consumed. This will keep wild animals from being exposed to the disease and it will kill the bacteria.

Real California Milk

The following link contains videos of real dairy owners and the sacrifices they make. If you have the time it is worth watching a few to learn more about dairy farming.

http://www.dairyherd.com/news_editorial.asp?pgID=675&ed_id=12180&news_id=28515&ts=nl2

TAHC Office Changes

Effective 9/1/10, the number of agency regional offices has been reduced to seven. The Hallettsville office has been closed and the Crockett location has moved to Hempstead.

Because of the changes, counties have been shifted to different regional offices.

Changes are:
Region 2: Hempstead –

acquired counties: Walker, Tyler, Montgomery, Hardin, Orange, Fort Bend, Wharton, Galveston, San Jacinto, Jasper, Harris, Chambers, Waller, Brazoria, Matagorda, Victoria, Polk, Newton, Liberty, Jefferson, Austin, Colorado, Jackson, Calhoun

Region 4: Mt. Pleasant – acquired counties: Shelby, Sabine, Nacogdoches, San

Augustine, Angelina, Houston

Region 5: Beeville – transferred Comal and Guadalupe to Region 7

Region 7: Rockdale – acquired counties: Fayette, Gonzales, Lavaca, DeWitt, Guadalupe, Comal. Transferred Waller to Region 2

Region 8: closed

Cattle Theft Prevention & Legislative Discussion Headline TSCRA Ranch Gathering in Memphis

Come join the Texas & Southwestern Cattle Raisers Association for a ranch gathering on **Thursday September 9** at the Bradley 3 Ranch in **Memphis, TX**. The gathering will begin at 5:30 PM with registration followed by a free fajita dinner and presentations.

“TSCRA ranch gatherings are a great place for folks to get together and discuss what is going on in the cattle business and how they can help. In addition to a legislative update, TSCRA Special Rangers will be on hand to discuss how to protect your property and livestock from theft. Anyone who would like to come out and

enjoy the evening is invited,” said Dave Scott, TSCRA president.

Please RSVP to Brook Messer at 1-800-242-7820 ext 192 or rsvp@tscra.org

Bradley 3 Ranch is located at 15591 County Road K in Memphis.

Ear Tag Rebate

Bayer ear tags Corathon & CyGuard are giving a 5¢ return on every tag purchased. See products for details.

Pesticides Update/Outlook

EPA moves to terminate all uses of insecticide Endosulfan

EPA is taking action to end all uses of endosulfan in the US. Endosulfan, which is used on vegetables, fruits, & cotton, can pose unacceptable neurological and reproductive risks to farm workers and wildlife and can persist in the environment.

Endosulfan is an organochlorine first registered in the 1950s; it is also used on ornamental shrubs, trees & herbaceous plants.

Most crop uses will end in 2 yrs, more

in 4 yrs and the last use on July 31, 2016.

End July 31, 2012: almond, apricot, broccoli, Brussels sprouts, carrots, cauliflower, celery citrus, collard greens, dry beans, dry peas, eggplant, filbert, kale, kohlrabi, mustard greens, nectarine, macadamia, plum & prune, poplars grown for pulp & timber, strawberry (Annual), sweet potato, tart cherry, turnip, walnut, ornamental trees, shrubs & herbaceous plants, other

uses not listed above or below, cabbage, cotton, cucumbers, lettuce, stone fruits, summer melons, summer squash, tobacco

End July 31, 2013: pear

End July 31, 2015: apple, blueberry, peppers, potatoes, pumpkins, sweet corn, tomato, winter squash

End July 31, 2016: Livestock ear tags, pineapple, strawberry (perennial/biennial), vegetable crops for seed

New natural Topia insecticides available from FMC

A new, completely natural pest control product for use by pest management professionals to control cockroaches, bed bugs, ants, flies and more than a dozen other pests is now available from FMC Professional Solutions.

Topia insecticide features a proprietary

blend of natural oils with well documented insecticidal properties. It is a water-based product that delivers contact control of many structural pests.

Topia is a minimum risk product; it is non-flammable and has a very

mild aroma that quickly dissipates.

For more information about Topia insecticide and other FMC products, visit www.fmcprosolutions.com or contact your FMC sales representative.

Organic pesticides not always 'greener' choice, study finds

Consumers should not assume that, because a product is organic, it's also environmentally friendly. A new University of Guelph study reveals some organic pesticides can have a higher environmental impact than conventional pesticides because the organic product may require larger doses.

Environmental sciences professor Rebecca Hallet and PhD candidate Christine Bahlai compared the effectiveness and environmental

impact of organic pesticides to those of conventional and novel reduced-risk synthetic products on soybean crops.

They examined four synthetic pesticides: two conventional products commonly used by soybean farmers and two new, reduced-risk pesticides. They also examined a mineral oil-based organic pesticide.

"We found the mineral oil organic

pesticide had the most impact on the environment because it works by smothering the aphids and therefore requires large amounts to be applied to the plants," said Hallett.

Compared to synthetic pesticides, the mineral oil-based and fungal products were less effective, as they also killed lady bugs and flower bugs, which are important regulators of aphid population and growth.

Special Topics of Interest

Evolution biology: Lice in Hiding

Bird lice reduced their chances of being picked off by their hosts by evolving to match the color of the birds feathers

Camouflage has been well documented in predator-prey relationships. Sarah Bush and colleagues at University of Utah Salt

Lake City now report that the same evolutionary trend exists between parasites and their hosts.

By comparing lice from species of dark and light colored birds. The researchers found that 'feather' lice match the color of their hosts'

plumage.

However, 'head' lice do not necessarily blend in. this suggests that bird preening drives lice color evolution: birds cannot see or groom their heads, so there is no selective pressure for head lice to be camouflaged.

Journal Reviews

Salivary gland thrombostasin isoforms differentially regulate blood uptake of horn flies on control – and thrombostasin- vaccinated cattle. 2010. Cupp et al. *K Med Entomol.* 47:610-617.

This study reports results of similar studies testing blood uptake of horn flies feeding on a natural host, cattle. This confirms the association of *ts* genotype with blood uptake of horn flies and showed that it was hot

species specific.

These experimental results confirm the efficacy of vaccines targeting horn fly salivary proteins and provide new insight into the dynamics of horn fly-cattle

interactions in nature.

The Impact. Use of a vaccine to discourage or completely eliminate horn fly blood feeding is another possible means of horn fly control.

Activity of *Bacillus thuringiensis* isolates against immature horn fly and stable fly (Diptera: Muscidae). 2010. Lysyk et al. *J Econ Entomol.* 103:1019-1029.

Eighty-five *Bt* and two *B. sphaericus* were screened against immature horn flies and stable flies. The majority of *Bt* and the *B. sphaericus* isolates had little

or no activity against horn fly and stable fly.

Five isolates were found to be highly toxic to horn fly and stable fly immatures, > 50% mortality.

The Impact. The five highly toxic *Bt* may have potential for use in integrated management of horn flies and stable flies.

Distribution and abundance of natural parasitoid (Hymenoptera: Pteromalidae) populations of house flies and stable flies (Diptera: Muscidae) at the University of Florida Dairy Research Unit. 2010. Romero et al. *Neotropical Entomol.* 39:424-429.

House fly and stable fly pupae were collected weekly from three fly habitats at the University of Florida Research dairy to evaluate for parasitism.

affected by temperature, precipitation or fly abundance. There was an average percentage rate of 27% for both fly species. A total of 10 parasitoid species were recovered.

a higher rate of parasitism than those from calf pens and open pastures.

The Impact. Several parasitoid wasps species are present in the fields naturally and are effectively parasitizing muscid pupae.

Varying percentages were observed throughout the study but they were not

Pupae collected from bunker silos had

Repellency to *Stomoxys calcitrans* (Diptera: Muscidae) of plant essential oils alone or in combination with *Calophyllum inophyllum* nut oil. 2010. Hieu et al. *J Med Entomol.* 47:575-580.

The repellency of female stable flies of 21 essential oils (EO) alone or in combination with nut oil (tamanu oil) was examined. Results were compared with those of DEET. Patchouli was found to be the most effective EO but less active than DEET.

Very strong repellency was also produced by clove bud, lovage root and clover leaf Eos and strong repellency from thyme white EO. Protection time with Eos alone was shorter than DEET, but this increased when combined with tamanu oil.

Binary mixtures of essential oils and tamanu oil merit further study as potential repellents from stable flies.

The Impact. The use of Eos and tamanu oil provide a more natural form of fly repellency.

Dispersal of stable flies (Diptera: Muscidae) from larval development sites in a Nebraska landscape. 2010. Taylor et al. *Environ Entomol.* 39:1101 – 1110.

Seven mark-recapture studies were conducted over 3 yr to assess dispersal of newly emerged adult stable flies from larval development sites in a mixed agricultural environment.

adults had dispersed beyond 1.6 km of their natal site, but only 5% had dispersed beyond 5.1 km. these results indicate that stable fly adults on cattle in a given area are most likely to have originated from larval development sites

within an ≈5 km radius of the subject cattle.

The Impact. Stable fly populations stay close to home. Traveling far from their breeding grounds just is not necessary.

Feeding success and trappability of horse flies evaluated with electrocuting nets and odour-baited traps. 2010. Murazi et al. *Vet Parasit.* 171:321-326.

The relative capacity of different tabanid species to mechanically transmit infectious diseases was assessed by comparing their feeding success on a horse. Ten species were collected with an electrocuting net while attempting to

feed on a horse and compared to the species collected by odour-bait traps.

The species collected were similar for both methods and had a similar composition.

The Impact. Knowing which species of horse flies frequent a blood meal on a horse provides insight into the possibility of transmitting infectious diseases. Some species are more prone to carry the pathogens than others.

Comparison of sampling tabanids (Diptera: Tabanidae) by four different potential attractants. 2010. Krcmar et al. J Appl Entomol. 34:608-613.

Synthetic and natural attractants in traps are used in many parts of the world to attract female tabanids. Certain attractants in different geographical regions may be ineffective under different environmental conditions for horse flies.

The effectiveness of 1-octen-3-ol, donkey urine, lactic acid and fresh human urine were tested as attractants for bait traps.

All attractants were more attractive to horse flies than nothing at all; with the

1-octen-3-ol being the most attractive.

The Impact. Got me on this one, I see no benefit to using the other three attractants. Ok maybe it is beneficial in countries that cannot afford to purchase 1-octen-3-ol, plus now we know what will attract horse flies to a location.

Protection of livestock against bluetongue virus vector *Culicoides imicola* using insecticide-treated netting in open areas. 2010. Med Vet Entomol. 24:169-175.

In this study the efficacy of surrounding yearling ewe pens with a canvas barrier or a cypermethrin-treated canvas barrier was assessed as to whether it reduced the entry of *Culicoides* spp. and *Culicoides imicola*.

The treated canvas did provide a reduction in the number of flies present within the pens. More research is needed to assess the degree of protection as a function of barrier height, *C. imicola* abundance, and the size of the area to be

protected.

The Impact. A barrier that effectively lowers the number of tiny *Culicoides* could reduce the numbers of bluetongue virus in livestock.

Host selection by questing female *Amblyomma maculatum* Koch, to cattle with feeding male ticks in southern Texas. 2010. Sleeba et al. Vet Parasit. 172: 105-108.

The feeding associations among male and female Gulf Coast ticks were examined using archived data obtained from untreated free-ranging

cattle pastured on native rangeland. There was significant evidence to show that female ticks are more attracted to grazing cattle with feeding males than

those without.

The Impact. This data can help optimize surveillance and control efforts for Gulf Coast ticks.

Trial of a minimal-risk botanical compound to control the vector tick of Lyme disease. 2010. Rand et al. J Med Entomol. 47:695-698.

The application of IC2, a minimal-risk botanical compound containing 10% rosemary oil, was compared to bifenthrin, a commonly used synthetic compound for control of *Ixodes scapularis*.

bifenthrin and water were applied during peak nymphal and adult seasons in three separate grids.

The IC2 grid had no ticks found after first spraying, very few found after second spraying and 6 months later. No ticks were dragged or collected from the

bifenthrin treated grid.

Substantial numbers were collected from the water treated grid during this period.

The Impact. IC2 appears to be an effective, minimum-risk acaricide to control the vector tick of Lyme disease.

Formulations of deet, picaridin, IR3535 applied to skin repel nymphs of the Lone star tick (Acari: Ixodes) for 12 hours. 2010. Carroll et al. J Med Entomol. 47:699-704.

The legs of human subjects were treated with several different formulations and then 70 host-seeking nymphs were released on each volunteer's ankle.

The formulations with $\geq 20\%$ active ingredient were highly effective, with less than $< 10\%$ of the ticks crossing through the treatment bands.

The Impact. Another study looking at alternative insecticidal choices to DEET that actually works against the arthropod pest of choice.

Effects of prolonged exposure to low temperature on eggs of the brown dog tick, *Rhipicephalus sanguineau* (Latreille, 1806) (Acari: Ixodidae). 2010. Dantas-Torres et al. Vet Parasit. 171: 327-330.

Rhipicephalus sanguineau eggs were held at 8°C for varying days to see if they could survive cold temperatures.

The eggs were not successful at this cold temperature which is a limiting factor for the expansion of brown dog ticks unto more northern cold temperature regions.

The Impact. The ticks' inability to emerge from the egg stage under cold temperatures is a limiting factor for their establishment in cold temperature regions.

Laboratory and field evaluation of *Metarhizium anisopliae* (Deuteromycotina: Hyphomycetes) for the control of *Rhipicephalus microplus* (Acari: Ixodidae) in the Mexican tropics. 2010. Ojeda-Chi et al. Vet Parasit. 170:348-354.

The aim of this study was to evaluate the effect of *Metarhizium anisopliae* to control *Rhipicephalus microplus* under laboratory and field conditions.

The entomopathogenic fungi, *M. anisopliae*, showed 67.7% and 100% control of larvae in the field during the wet and dry season.

The Impact. With the increase in resistance to pesticide chemicals, this entomopathogen provides another means to control southern cattle tick.

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Baculovirus expression, biochemical characterization and organophosphate sensitivity of rBmAChE3 of *Rhipicephalus (Boophilus) microplus*. 2010. Temeyer et al. Vet Parasit. 172:114-121.

At least three genes expressing AChEs were found to be present in *R. B. microplus*. At least two contained mutations expressed as OP-sensitive enzymes. This strongly suggests phenotypic resistance to Ops may be complex and multigenic in character.

The Impact. Solving OP resistance will not be a straight forward task with the southern cattle tick, they are genetically more complex than most arthropods.

Recombinant peptides as new immunogens for the control of the bovine tick, *Rhipicephalus (Boophilus) microplus*. 2010. Prudencio et al. Vet Parasit. 172:122-131.

The complex nature of ectoparasites has imposed restrictions on the development of a vaccine. By using Phage Display technology, specific immunogens that mimic *R. microplus* antigens were developed and found successful.

The Impact. This new data gives hope in developing an effective vaccine for ectoparasite control; a much less expensive and labor-intensive treatment.

Survey of *Rhipicephalus microplus* resistance to ivermectin at cattle farms with history of macrocyclic lactones use in Yucatan, Mexico. 2010. Perez-Cogollo et al.

Vet Parasit. 172:109-113
Engorged females were collected from farms in Yucatan, Mexico to evaluate ivermectin resistance.

microplus demonstrated various levels of resistance to ivermectin. The level of ivermectin resistance for most samples was relatively low.

ivermectin is suspected and a possibility in the future due to the overuse of macrocyclic lactone products in Yucatan, Mexico; therefore making it harder to control the southern cattle tick.

Field populations of *R.*

The Impact. Resistance to

Evaluation of the action of *Heterorhabditis bacteriophora* (Rhabditida: Heterorhabditidae) isolate HP88 on the biology of engorged females of *Rhipicephalus (Boophilus) microplus* (Acari: Ixodidae). 2010. Monteiro et al. Vet Parasit. 170:355-358.

The objective of this work was to evaluate the effect of different concentrations of the entomopathogenic nematode (EPN) *H. bacteriophora* strain HP88 on the biological parameters of the non-parasite phase of engorged females of the cattle fever tick.

The nematode caused significant alterations in the egg mass weight, oviposition period, survival period, hatching percentage, egg production index, and nutritional index between the treated group and the control group.

The Impact. Results show that *H. bacteriophora* has the potential to be a biological control agent of southern cattle ticks.

Laboratory evaluation of verbutin as a synergist of acaricides against larvae of *Rhipicephalus (Boophilus) microplus* (Acari: Ixodidae). 2010. Li et al. J Econ Entomol.

Synergist effects of verbutin to three commonly used acaricides were evaluated against both susceptible and resistant strains of southern cattle ticks.

Verbutin alone was more toxic than PBO to tick larvae but when mixed with coumaphos, permethrin and amitraz, the results were not significantly different.

The Impact. Verbutin is an alternative synergist for common chemicals used on southern cattle ticks that shows similar effectiveness against resistant ticks as PBO.

Identification of a dieldrin resistance-associated mutation in *Rhipicephalus (Boophilus) microplus* (Acari: Ixodidae). 2010. Hope et al. J Econ Entomol. 103:1355-1359.

Resistance to cyclodienes, dieldrin in particular, was researched in depth. It was found that resistance southern cattle ticks

exhibit a two base pair mutation in the GABA-gated chloride channel gene. This base pair change is what allows for

resistance to dieldrin in Australian populations.

The Impact. Insecticide resistance appears to be more genetically involved.

Development and evaluation of two nested PCR assays for the detection of *Babesia bovis* from cattle blood. 2010. AbouLaila et al. Vet Parasit. 172:65-70.

Two nested polymerase chain reaction (nPCR) assays were developed and evaluated for the diagnosis of *Babesia bovis* infection in cattle based on two membrane protein genes from *B. bovis*.

The nPCR assay of BV5650 was the most sensitive for field sample detections. This provides a good diagnostic tool for laboratory diagnostic assessment of *B. bovis* infection in cattle worldwide.

The Impact. This new nPCR assay provides a more accurate and simpler way to test for *B. bovis* both in the laboratory and in the field.