

Veterinary Entomology

Insect Updates

Reduce Horn Fly Numbers on Pastured Cattle

By this time, if you have not already treated your cattle for horn flies, you are probably behind the game. Horn flies are the most economically damaging for beef cattle in the US but are not the only flies we see on pastured cattle.

The horn flies are small; half the size of house flies, and are primarily located on the shoulders and back of the animal. They will stay in

constant contact with cattle and will feed about 30 times per day. The most effective means to control stable flies is with sanitation. Cleaning up after hay bales and placing new hay bales in a different location.

The horn fly only leaves the animal in order to lay eggs in the very fresh manure.

Cattle that are not treated for horn flies can have an 18% reduction in weight gain.

In addition to the horn flies, stable flies have become a constant presence in many pastures. Once considered only an issue for confined animals, the stable fly has found a niche

developing in a hay bales/feces mixture. Research entomologist have shown that the stable fly costs the US cattle industry \$2.4 billion each year.

Research shows granular cyromazine to be an effective larval treatment.

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Fly Control Strategies for Dairy Calves and Heifers

Controlling flies on a dairy is very important. Flies have a negative impact by spreading diseases such as *E. coli* and Salmonella and can cause a reduction in animal comfort which leads to stress and reduced growth.

The key for good fly management is to start early in the season. The flies most often encountered will be stable flies and house flies.

As discussed earlier, stable flies are hard to control, excellent sanitation is a must, even in the hard to clean locations, in addition to larvicide products.

House flies are more commonly associated with damp organic matter and can be reduced with excellent sanitation. Minimizing wet bedding, waste hay and manure near calves and heifers will help. Sand is a better bedding alternative since it does

not support fly development.

Using insect growth regulator larvicides will help lower the larval populations and can be administered as a feed additive.

Premise sprays and scatter baits are additional products that can be applied to control adult populations.

Using multiple tactics is necessary to achieve effective management.

Oklahoma Death from Lone Star Tick-borne Heartland Virus

Five years ago a new disease was discovered in Missouri, since then it has spread and the latest case is a confirmed death in Oklahoma.

The disease is called the Heartland virus, in reference

to the hospital that identified it.

The lone star tick has been implicated as the carrier of this new disease.

Ten cases have been confirmed, all in older white males that come

in contact with the tick while outdoors.

One previous death had occurred in Missouri. This is the first case and death in Oklahoma.

Broadleaf Pollinator Plants, Critical Role in Pastures

With the decline in honey bees, the need for other pollinators has become more of an issue.

Maintaining native pastures

assists with the survival of pollinators but the improved pastures with the illumination of weeds hinders their survivability.

Producers should practice

discretion and engage in self-education so as to maintain necessary weeds but allow pollinators a place to survive and minimize pesticides.



Pesticides

Novartis Introduces Natunex

Novartis Animal Health, which was just purchased by Eli Lilly and Company (Elanco), has just announced the introduction of Natunex.

Natunex is an innovative new line of non-toxic biocides that provide highly effective and fast insect control in livestock and production animal facilities, says Gary Bosch, DVM, Vice

President Sales and Marketing.

The active ingredients of Natunex are plant-derived essential oils said to kill on contact.

“Costumers have requested a non-toxic and less restrictive alternative to chemical-based insecticides with increased frequency over the past few years,” added Bosch.

Pay Attention to Lameness in Beef Cattle

While lameness is viewed as a nuisance issue, it can drive profitability much more than producers realize.

Addressing lameness is doing the right thing for the animals and this generally correlates well with performance and profitability.

Usage of the Step-Up system (Zinpro Corporation) will serve the industry well.

Cattle Care

Control Internal Parasites, Don't Feed Them

Every year it is important to control for internal parasites in order to get the most out of your cattle. Investing in and following a strategic deworming plan can help minimize the effects of parasites on cattle operations.

Even with the colder than usual weather this past winter, parasites are very resilient and will have survived. They simply overwinter in the

pasture and wait for the favorable weather to return in the spring.

Planning for parasite protection should be top of mind for cow/calf producers each year. Controlling for parasites is simple with these few key tips:

1. Read and understand the label
It is extremely important to read the label every time to ensure correct dosing, reduce the risk of side effects and not create resistance.

2. Injectable vs. Pour-on
Choosing which to use can differ with weather conditions and the parasite being treated for.

3. Store and handle products carefully
Storage and handling can influence the efficacy of a product. Follow label instructions.

Working With Your Veterinarian on BRD

Working with your veterinarian before a case of BRD (bovine respiratory disease) is the best medicine.

Your veterinarian's job is to be the expert in an ever-changing industry and enlisting their expertise is worth every

moment and penny.

Your veterinarian is a valuable advisor that can prevent issues before they start, providing prevention.

The relationship before a problem can be the matter of life and

death and more affordable, then waiting until an issue or problem occurs.

However you work with your veterinarian, they are there to help you be successful with their value going well beyond treating sick cattle.

Human & Animal Disease & Health

Texas Animal Health Commission Announcements

TAHC Adopts Cattle Tuberculosis Rules and Proposes Changes to Trichomoniasis Program – New rules when into effect on June 3, 2014

New rules:

Chapter 43, Tuberculosis, Authorized Calf Ranch/Grower Facility: creates a new section establishing standards, procedures and other requirements for young dairy cattle exposed to tuberculosis which may be fed in drylot facilities.

Chapter 43, Tuberculosis, Mexican Origin Cattle: requires TX veterinarians to include statement on any official

document issued by the veterinarian for cattle that originated from Mexico which states that “the cattle represented on this document are of Mexican origin.”

Chapter 49, Equine, Microchip Piroplasmosis Reactors: rule requires Equine Piroplasmosis (Piro) reactors to be implanted, by an authorized veterinarian or TAHC representative, with an ISO 11784/11785 compatible RFID microchip within 10 days of final classification.

Chapter 51, Entry Requirements, Mexican Origin Cattle, and Definition Change: rule requires veterinarians in other states

creating official documents on cattle which originated in Mexico and are intended for entry into TX to include a statement that “the cattle represented on this document are of Mexican origin.”

Chapter 54, Domestic and Exotic Fowl Registration: rule requires fowl in a live bird marketing system to be confined at all times and to be kept separate and apart from wild bird populations or other unconfined domestic fowl. Intended to address concerns regarding potential disease exposure and clarifies existing biosecurity protocols.

Atlas of Salmonella: mapping awareness of the foodborne illness

Salmonella causes an estimated 1.2 million illnesses each year that result in 23,000 hospital visits and 450 deaths. The presence of Salmonella should not be taken lightly.

40 years of data on this illness has been made available to the public from the Centers for Disease Control and Prevention (CDC). Titled *The Atlas of Salmonella in the United States 1968-2011*, it is a detailed summary of the top

30 serotypes of Salmonella that pinpoint demographic, geographic and other information related to the illness.

The intent of this data is to allow researchers and others to assess what has happened and think more about how to reduce Salmonella infections in the future.

The 248 page summary allows access to trending information relating to

human infections and connections from animals and sources such as environments and feeds.

Salmonella Prevention:

Children under 5 are most infected; cook poultry, ground beef and eggs thoroughly; do not eat or drink foods with raw eggs or raw milk; wash hands; avoid direct contact between reptiles and infants or immunocompromised persons.

Second Case of BSE in Brazil Confirmed

BSE, bovine spongiform encephalopathy, also known as mad cow disease, has been confirmed in Brazil. This is the second confirmed case of spontaneous BSE, the first was confirmed in 2012.

The animals was recognized and

incinerated without entering the feed chain in March at a slaughterhouse in Mato Grosso.

Brazil still maintains a country status with an insignificant risk of BSE but many countries will no longer accept their beef.

Humans can develop what is known as variant Creutzfeldt-Jakob disease from consuming animals with BSE, and more than 150 have died from it.

Cattle contract BSE from eating brain or spinal tissue but this is prohibited.

EHV-1 outbreak: Protect your Ranch Horses

A recent string of equine herpesvirus type-1 (EHV-1) has horse owners on edge trying to prevent the infection of the highly contagious virus in their herds.

There are two forms of the virus; one causes neurological symptoms and respiratory infection (type-1) and the other aborts pregnancies in mares.

“Horses with neurological

disease caused by EHV-1 infection can soon become uncoordinated and weak and have trouble standing.” says UC Davis Vet Med Center for Equine Health.

Other symptoms include elevated fever of 102°F or greater, nasal discharge, cough and in some cases, reddish mucous membranes.

Numerous cases of the virus have been confirmed in states including Iowa, Colorado, Minnesota, Wisconsin and Kansas.

EHV-1 can be spread from contaminated caregivers with virus on their hands, vehicles and other inanimate objects. It can also be contracted through airborne transmission and horse-to-horse contact.



“Often the rear limbs are more severely affected than the front. Signs of brain dysfunction may occur as well,” UC Davis says.

Biosecurity Measures for Swine Validation – What you Should Know

Congregating swine have an increased risk for the spread of PEDV, PRRS and influenza.

Prior to validation, clean and disinfect trailer, don't mix swine from different premises in trailer, and monitor swine health.

Prior and during validation, encourage sick pigs to be reported, use single traffic flow, vehicle separation, separate line for unhealthy looking swine, limit foot traffic, only have owners enter trailers and have them move the pigs for tag application, use boot bath stations for all, disinfect

equipment.

After validations, isolate validated pigs from other swine for 21 days, monitor swine daily for signs of sickness and clean and disinfect equipment, clothing, shoes and trailers.

Special Topics of Interest

A serving of meat a day keeps the doctor away

A recently published study from the Medical University Graz, Austria, found that the regular consumption of meat made subjects healthier overall and happier when compared to vegetarians.

This study reports that vegetarian

Austrians were found to be less healthy in terms of cancer, allergies and mental health disorders. As well as having a lower quality of life and require more medical treatment.

While the study found vegetarians to

have lower body mass indexes, be more physically active, drink less and smoke tobacco less frequently than meat-eaters, they were 50% more likely to have heart attacks, 50% more likely to develop cancer, along with twice as likely to develop allergies.

Alfalfa is beneficial to livestock and soil

Producing alfalfa is a bit more work due to improved varieties, well-defined harvesting schedules, and precise fertilization practices but it is worth it.

Alfalfa removes a large amount of nutrients from the soil – 14 lbs. of

phosphate, 58 lbs. of potash and 30 lbs. of calcium per ton of dry matter of alfalfa.

But alfalfa has many advantages to hay producers, or livestock owners, including fixing nitrogen, improving the soil structure and producing high-quality

forage for beef or dairy or haying operations.

Keeping nutrients in balance is important, soil testing is critical.

Study finds antibiotic-resistance genes in cattle manure

Researchers from Yale and the Univ. of Connecticut report detecting genes relating to bacterial resistance to antibiotics in the manure of dairy cows.

The research results are published in the April 22 issue of *mBio*, an online journal of the Am. Soc. for Microbiology. The

findings create some concern about introducing these genes into the environment when using the manure as fertilizer.

The data shows great diversity of genes in the manure samples which might be a good signal that antibiotic-resistant

genes from cow gut bacteria are not currently causing problems for human patients.

The researchers hope the study will open up a larger field of surveillance to find and identify new types of resistance before they affect humans.

CDC issues mixed food-safety report

Some foodborne illnesses have declined and some have increased, according to a new report from FoodNet at the CDC.

Released on April 17, the report shows that the incidence of salmonella infections decreased by about 9% in 2013 compared to the

three previous years.

But campylobacter infections, often linked to dairy products and chicken, have risen 13%.

The FoodNet data, which cover 10 states with 15% of the US population, found 19,056 cases of culture-confirmed bacterial and

laboratory-confirmed parasitic infections, 4,200 hospitalizations and 80 deaths in 2013.

Salmonella was the most frequent food-related cause of infection followed by *Campylobacter*. *E. coli* 0157 numbers were up 16%.



Here's what GMO labeling will cost families

Get ready to dig deeper into your wallet at the grocery checkout if labeling for GMO food is made mandatory.

A new study out of Cornell University found that in New York a proposed genetically modified organisms (GMO) labeling bill could cost families as much as \$800 per year.

The labeling law would increase food costs for a family of four by an average of \$500

annually. The state will also have to shell out more money and this could be millions of dollars more in added costs to implement and monitor the labeling initiative.

"American families deserve safe, abundant and affordable food," Claire Parker, spokeswoman for the Coalition for Safe and Affordable Food, said. "GMOs have been used in our food supply for more than **20 years** and no study has ever shown them to be unsafe or different from foods without

GMOs. Repeated studies, however, have shown that the high cost of mandatory labeling would dramatically increase the price of groceries at the checkout aisle for consumers. A mandatory GMO label will just make it more difficult and expensive for hard-working American families to put food on the table."

<http://www.cattlenetwork.com/cattle-news/Heres-what-GMO-labeling-will-cost-families-259584201.html>

HSUS to pay \$15.75 million to settle racketeering lawsuit

HSUS will be paying \$15.75 million in a lawsuit brought by Feld Entertainment, the parent company of Ringling Bros. and Barnum Bailey Circus. The activist animal rights group was involved in alleged illegal witness payments as part of a scheme to pursue malicious litigation against the circus.

The cases originally stemmed from a

complaint filed under the Endangered Species Act, alleging misconduct toward Asian elephants and has dragged on for 14 years.

"This case has exposed the despicable tactics of the Humane Society of the United States and other animal rights fanatics, and the settlement sends a message they will be held accountable

for their actions," says Coggin a senior research analyst for the Center for Consumer Freedom.

"Most troubling is that this settlement will be paid with donations intended to help animals. Americans should think twice before donating any money to the HSUS," Coggin continues.

Prevent the spread of invasive species

One man's flower is another man's noxious weed.

Leafy Spurge (*Euphorbia esula*) can be found in every county of Montana now. The yellow flowered plant, found in rangeland, kills cattle carrying capacity by the vigorous root system that can reach depths of 30 feet.

Then there is the Asian Longhorn Beetle (*Anoplophora glabripennis*). This white spotted, black beetle bores into

the heartwood of trees killing them. It can be found in MA, NY and OH.

April has been named Invasive Plant Pest and Disease Awareness Month by the USDA due to the increased tourism traffic with the onset of the warm season.

"Invasive species threaten the health and profitability of US agriculture and forestry, and the many jobs these sectors support," says Kevin Shea Administrator of USDA's APHIS.

Guidelines for farmers and ranchers:

- Learn to identify invasive species in your area
- Report any sightings to your County Extension Agent or local USDA office
- Clean your boots, gear, truck bed, tires and harvesting equipment after working a site to not spread seeds, insects or spores
- Be sure to control invasive plants along fencerows, ditches and other areas adjacent to fields
- Always use weed-free hay and feed for your animals.

Journal Reviews

The influence of housefly *Musca domestica* embryo age on viability in water and at low temperatures. 2014. Cickova et al. Med Vet Entomol. 28: 70-76.

The researchers did multiple experiments to look at the sensitivity of house fly eggs to low storage temperatures (5 and 10°C) and storage in water at 26°C.

Results showed the younger eggs to be more susceptible to cold storage

temperatures and storage in water, with 45% survivability after 24 hours.

Short storage times in low temperatures and in water had little to no impact on the embryos.

Older eggs were more resilient.

The Impact. The data presented gives insight into how resilient fly eggs can be and that short periods of cold temperatures will not impact the developing embryos. Cold weather needs to last for several days to have an impact on development.

Spatial distribution of counties in the continental United States with records of occurrence of *Amblyomma americanum* (Ixodida: Ixodidae). 2014. Springer et al. J Med Entomol. 51: 342-351.

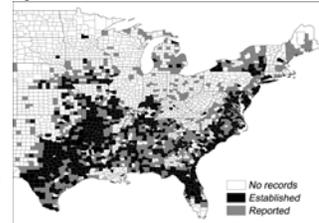
The lone star tick is not only a nuisance biter but is also recognized for vectoring pathogens to humans, domestic animals and wildlife.

Efforts have been lacking to define the spatial occurrence of this tick in the US but this paper presents it at the county level.

The researchers show a summary for 18,121 collections made btw 1898-2012 of the tick being established or reported in various locations.

The core distribution area was found to be the southern part of the eastern US but it also occurs further north.

The Impact. This study can be used as an aid in identifying areas where the lone star tick might pose a health risk. (Texas had the most collections!)



The effects of temperature and innate immunity on transmission of *Campylobacter jejuni* (Campylobacterales: Campylobacteraceae) between life stages of *Musca domestica* (Diptera: Muscidae). 2014. J Med Entomol. 51: 670-677.

The house fly is a mechanical vector of the human pathogen campylobacter, which can cause infection of broiler chicken flocks and humans from contaminated chickens.

The researchers looked to see if *Campylobacter jejuni* can be transferred between life stages. Results show the transfer from larvae to the pupae but not to the adult stage.

The Impact. The infected larvae will not develop into infective adults, providing a break in pathogen transmission. Adults will only acquire pathogens from infected chickens.

Solvent, drying time, and substrate affect the responses of lone star ticks (Acari: Ixodidae) to the repellents deet and picaridin. 2014. Carroll et al. J Med Entomol. 51: 629-637.

Tick repellent bioassays are used to get a repellent approved, but results can be affected by basic variables of the assay. This paper looks at the effects of substrate, solvent, and drying time on tick responses.

The repellents deet and picaridin were applied to filter paper strips and challenged by ticks for 10, 20, 30 40 and 120 min after application.

Acetone solutions of both repellents

were more effective than ethanol solutions. The type of paper used impacted the results of both chemicals.

The Impact. The porosity of the surface sprayed with a repellent could affect its repellency.

Suppression of *Amblyomma americanum* (Ixodida: Ixodidae) for short-term field operations utilizing cypermethrin and lambda-cyhalothrin. 2014. Hughes et al. J Med Entomol. 51: 709-712.

The researchers of this paper tested two acaricides against the lone star tick in Florida.

were treated with either cypermethrin or lambda-cyhalothrin and ticks were recovered.

A total of 8,193 ticks were identified and

results showed a reduction in numbers.

The Impact. The use of cypermethrin or lambda-cyhalothrin will effectively suppress tick populations.

Susceptibility of cat fleas (Siphonaptera: Pulicidae) to fipronil and imidacloprid using adult and larval bioassays. 2014. Rust et al. J Med Entomol. 51: 638-643.

The adult and larval bioassays of fipronil and imidacloprid were compared for both field-collected and laboratory cat fleas.

The results of this project show laboratory and field caught fleas to be no less susceptible to fipronil than 2001 results but they are more susceptible to imidacloprid.

The Impact. Although all fleas are somewhat resistant to fipronil and imidacloprid there appears to be no increase in the resistance in the last decade.

Efficacy of products to remove eggs of *Pediculus humanus capitis* (Phthiraptera: Pediculidae) from the human hair. 2014. Lapeere et al. J Med Entomol. 51: 400-407.

Head lice infestations are common in children; the eggs of the head louse are difficult to remove due to them being firmly attached to the hair.

This study looked at the efficacy of several products to remove eggshells from human hair.

The Impact. Water and conditioner did just as good as or better than specialty products. Formic acid and almond oil did not have beneficial effects.

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Mosquito and West Nile virus surveillance in northeast Montana, USA, 2005 and 2006.

2014. Friesen and Johnson. *Med Vet Entomol.* 28: 85-93.

Mosquito and WNV surveillance was conducted for two years in Montana, during which outbreaks of WNV in a colony of American white pelicans was

observed and resulted in mortality.

Four main species of mosquitoes were collected but few infected *Culex tarsalis*

were collected.

The Impact. This paper shows the complexity of finding WNV infected mosquitoes in a particular location.

Cross resistances in spinosad-resistant *Culex quinquefasciatus* (Diptera: Culicidae).

2014. Su and Cheng. *J Med Entomol.* 51: 428-435.

A *Culex quinquefasciatus* colony was selected for spinosad resistance to show various effects.

resistance was found to Bti, Bti + *Bacillus sphaericus*, methoprene, pyriproxyfen, diflubenzuron, novaluron, temephos, or imidacloprid.

Cross-resistance was shown to Bs, spinetoram, abamectin,

and fipronil, but no back cross-resistance.

The Impact. Resistant populations of *Cx. quinquefasciatus* to spinosad could exhibit some cross-resistance to other chemicals.

Spinosad resistance increased significantly after established in the population. No cross

Susceptibility to chlorpyrifos in pyrethroids-resistant populations of *Aedes aegypti* (Diptera: Culicidae) from Mexico. 2014. Lopez et al. *J Med Entomol.* 51: 644-649.

Resistance to the organophosphate insecticide chlorpyrifos was evaluated in females from six strains of *Aedes aegypti* and expressed high levels of cross-resistance

to 8 pyrethroid insecticides.

High levels of α - or β -esterase activity in the sample populations were correlated with resistance, suggesting this activity may cause the

development of OP resistance

The Impact. Insecticide rotation is a must in order to control the presence or increase of resistance.

Nontarget effects of aerial mosquito adulticiding with water-based unsynergized pyrethroids on honey bees and other beneficial insects in an agricultural ecosystem of North Greece. 2014. Chaskopoulou et al. *J Med Entomol.* 51: 720-724.

The researchers looked at the non-target effects of ultra-low-volume (ULV) aerial spraying with two new water-based, unsynergized pyrethroid formulations.

The non-target organisms used were honey bees, mealybug, and green

lacewings.

No significant non-target mortalities were observed. Beehives exposed to the insecticidal applications remained healthy and productive.

Mosquitoes were controlled to adequate

levels.

The Impact. This paper provides some much needed evidence that when mosquito aerial spraying is conducted properly, non-target insects are not harmed

Fenitrothion: an alternative insecticide for the control of deltamethrin-resistant populations of *Triatoma infestans* in northern Argentina. 2014. Germano et al. *Med Vet Entomol.* 28:21-25.

Deltamethrin based chemicals are no longer effective against the kissing bug in Argentina.

The researchers show that fenitrothion formulations applied to glass or brick had

90-100% mortality and applied to wood or mud at 6.7 – 56.7% mortality.

The Impact. Although the kissing bug levels in the US have not reach high

enough to see resistance when treating, it is good to know that there are other insecticide class chemicals available to control for them if needed.

Prey preferences of aquatic insects: potential implications for the regulation of wetland mosquitoes. 2014. Saha et al. *Med Vet Entomol.* 28: 1-9.

Wetlands are potential breeding sites for mosquitoes and the use of some chemicals in these areas can have a negative impact on non-target organisms.

The authors looked at the

prey preferences of water bugs and odonate naiads.

The results indicated that in a laboratory setting, the predator insects can effectively reduce mosquito densities in the presence of multiple alternative

prey.

The Impact. These results help provide evidence that native predators are successful in lower mosquito larval populations.

Livestock/veterinary website

<http://livestockvetento.tamu.edu>

Livestock Veterinary Entomology on [facebook](#)