

## Special Interest Articles:

- Pasture Flies
- Grasshoppers
- Deworming & supplements
- Heat Stress
- Chemical mixing & loading



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## Insect Updates

### Pasture Flies

With the Texas heat falling just a bit and some rainfall throughout the state, the fly populations will start to increase as we head out of summer and into the fall.

Most fly populations decrease during the peak of the summer because it is just too hot, for everything. But with temps being less than 100 degrees F, fly numbers will begin to rise again.

The two most important pasture flies are horn flies and stable flies.

**Horn flies** have the most impact on beef cattle, with the

economic threshold being just 200 flies per animal. When numbers begin to rise about this, weight gain can be significantly less in calves and heifers.

If you have been treating your animals and the horn fly numbers are still increasing, switch to another insecticide class and retreat. If you have not treated this year, find a product you are comfortable applying and treat your cows. In Texas we can't just wait for winter since it could be several months or not until next year when that arrives and horn flies will bite 30 times a day until then.

The other fly of importance is the **stable fly**. A nasty biter that causes cows to bunch and go off of feed. They can be hard to control with chemicals but need to be maintained by cleaning up old hay bales in the field and removing the old hay.

The stable fly larvae do not breed in fresh manure, like house and horn flies do. The stable fly prefers to breed in hay/straw/vegetation that is mixed with manure and urine.

Cleaning up manure, feed, and hay on a regular basis and using biting fly traps are the most effective means of lowering a stable fly population.

### Grasshoppers break out – but not as much as 2011, in some locations

Grasshoppers ended up being an issue again this year, just like the last several years.

In parts of Texas, the numbers were high but not as bad as they were in 2011. In Central Texas, this was not true. Grasshoppers showed up early and continue to still

make their presence known throughout the area.

If you are still experience high populations for grasshoppers and they have not developed wings yet, Prevathon and Dimilin 2L are recommended for treatment.

If the grasshoppers are adults

(winged) it is trickier to get control but there are several products available that will kill them. Such as: Mustang Max, Prevathon, Karate Z, Warrior II, Lambda-Cy, Baythroid XL, Tombstone Helios, Sevin 4F, and Malathion. Some of these are fast acting and some have a very short effective period.

### Study finds bugs can cut methane on the ranch

A new study shows that methane gases can be reduced by keeping dung beetles around the farm.

Researchers from the

University of Helsinki find dung beetles living in cow pats are able to reduce the emissions of methane, a gas associated with global warming.

The study shows that the tunneling nature of dung beetles aerates manure pats, easing anaerobic conditions and preventing carbon dioxide from converting to methane.



*“Fluffy Cows are showing up on the internet and enlightening people to show cattle and the cattle industry. The Fluffy Cow page will hopefully keep fueling the love folks have for these cattle, says Matt Lautner.”*

## Cattle Care

### Effects of de-worming and late summer protein supplements

The use of high protein supplements on late summer native range and Bermuda grass pastures is well documented in Oklahoma. Adding late summer deworming may pay additional dividends.

OSU beef nutritionalists studied the effects of de-worming and protein

supplementation on fall-born heifers grazing native warm-season pastures.

Both protein supplementation and de-worming treatment resulted in improved weight gains during the treatment period.

Late summer de-worming increased daily weight gain by 0.29 lb/day and feeding

cottonseed meal increased daily weight gain by 0.49 lb/day (on average). Combining them can increase daily weight gain by 0.76 lb/day.

Researchers also found that the heifers given just supplement lost that weight in the winter but heifers given the de-wormer maintained the added weight in the winter.

### The role of vaccination in a FMD outbreak

The nature of foot and mouth disease (FMD) makes a vaccination a complex issue. A vaccine would play a role as a control strategy if FMD ever emerged in the United States.

Current control strategies include biosecurity and “stamping out” or destruction of animals in an affected area.

But officials are beginning to look into a vaccine just in case the

stamping out method does not achieve control.

Implementing a vaccine with the current strategies could increase containment of an outbreak in the US.

### Take steps to reduce heat stress in cattle

Soaring temperatures and humidity can take a toll on cattle, resulting in reduced rates of weight gain to death loss and everything in between.

Although cattle in Texas are most likely adapted to the heat, it is not always the

case and many Texas cattle are not adapted to humidity.

The heat and humidity are things producers can control but there are things that can be done to protect cattle.

- Provide cool drinking water
- Make sure there is plenty of space around the water

- Provide shade
- Remove anything that will impact airflow
- Control flies, too many biting flies will cause cows to bunch
- If handling cattle, do it early in the day, before 10 am
- Where possible, use sprinklers but not mist which increases humidity

### Will beef production plummet with Zilmax suspension?

There has been lots of discussion and debate over Zilmax in the last month but one thing most agree on is that it works as advertised.

With Tyson no longer purchasing cattle fed Zilmax and Merck suspending sales, many have start to wonder how it would affect beef production markets.

It is noted that fed-cattle futures and boxed-beef prices have moved higher, with the anticipation shorter beef supplies playing a role too.

However, the industry reports have suggested that the impact, while significant, might not be as dramatic as some speculated.

It is noted that feeders will switch to Optaflexx during Zilmax’s suspension. The switch will reduce carcass weights by 6-8 lbs.

Lower corn prices and the Optaflexx option will help moderate any decline in beef production.

### Death due to Blackleg in Arkansas

Blackleg, a bacterial infection that often occurs during drought, has claimed cattle herds in two counties of Arkansas.

The disease is caused by *Clostridium chauvoei* and easily and inexpensively prevented by a vaccine. The vaccine costs about 70 to 80 cents per dose and will prevent blackleg.

## Pesticides Update/Outlook

### Mixing and loading pesticide – best practices

It is important when working with pesticides that proper procedures are followed when mixing and loading pesticides and disposing of pesticide containers. Sometimes a refresher course is necessary and one can now be found at the following website by DuPont.

<http://www.dupont.com/products-and-services/land-vegetation-management/articles/product-stewardship.html>

The site provides tutorials on Understanding Pesticide Product Labels, Handling, Storing and Transporting

Pesticides, and Mixing and Loading Pesticides and Disposing of Pesticide Containers.

If you need a to increase your knowledge and just can’t remember exactly what it is you should be doing with used containers, check out the videos.

# Human & Animal Disease & Health

## Lyme disease more prevalent than many realize

A recent report from the Centers of Disease Control and Prevention (CDC) indicates that the number of diagnosed cases of Lyme disease in the United States is about 10 times more than the number of cases reported to the CDC through routine surveillance.

Lyme disease is the most commonly reported tick-borne illness at 30,000 per year to the CDC but they believe that more like 300,000 cases are diagnosed

each year.

Most cases are concentrated in the Northeast and upper Midwest, with 96% of cases in 13 states. The causative agent, a bacterium *Borrelia burgdorferi*, is transmitted by the bite of the blacklegged tick, *Ixodes scapularis*.

Symptoms include fever, headache, fatigue, and a characteristic skin rash called erythema migrans. If left

untreated, infection spreads to joints, the heart, and the nervous system.

It has been detected in cattle as well but there are currently no current set of symptoms, diagnosis or treatments. Cattle may develop fever, stiffness and swollen joints, lameness, and decreased milk production. Others exhibit weight loss, laminitis and abortion, a rash can occur but hard to see.

## FDA changes compliance policy for salmonella in feeds

In July FDA released a new Compliance Policy Guide (CPG) regarding salmonella contamination in food for animals, creating a zero-tolerance standard for pet foods and a less-stringent risk-based standard for livestock feeds.

Contaminated pet foods pose a higher risk to human health due to more frequent contact to pet owners.

For livestock and horse feed the policy was changed to outline a risk-based

salmonella enforcement policy that focuses on the strains of salmonella present. The strains present must not be those that can cause disease in animals or humans.

## Identifying a new cattle virus helps rule out BSE

Many time neurologic symptoms in cattle are thought to be from bovine spongiform encephalopathy (BSE) but researchers at U of Cali, Davis have identified a new cow virus that cause neurologic symptoms.

The new virus referred to as BoAstV0NeuroS now, is unlikely to a pose a threat to human health or the food supply.

It is hard to diagnose neurologic diseases in cattle because there are many causes and pre-mortem sampling is cumbersome and/or expensive.

The new virus is likely found in the spinal cord and causes a uniquely patterned tissue abnormality, which quickly eliminates BSE as the cause

of neurologic symptoms.

Early and rapid recognition of the causes of neurologic disease in cattle is of the utmost importance, but diagnose is labor-intensive, costly and challenging.

All cattle that have neurologic symptoms are vigilantly screened.



*“Further research is needed to determine the viral origin and progression, like whether development of neurologic symptoms from this astrovirus requires other factors such as a co-infection by some other microbe or a weakened immune system”*

## Machine tests for E. coli before leaving facility

A small machine has been developed that can analyze a meat sample under an hour and help avoid *E. coli* outbreaks.

The machine is the size of a shoebox and tests the meat before it is packaged and shipped from the facility.

This breakthrough will yield a result-on-site, rather than taking several hours to send a sample to a laboratory for analysis.

## Special Topics of Interest

### The meaning of ‘natural’

What is natural?

“It’s a slippery term to fully define, and one that has many meanings for many people, says Dan Murphy of Drovers CattleNetwork.

Applied to animal agriculture, modern production science is deemed “unnatural” by critics but when applied elsewhere there is more tolerance.

For example seedless watermelons, which

have been developed by crossing male pollen and female watermelon flowers and renders a sterile hybrid. In nature this would not happen regularly and would be frowned upon since seeds are needed to grow plants.

Another acceptable phenomenon is the development of “designer dogs,” such as Dorkies, Schweenies, Beabulls, etc. These mixes are considered acceptable and do not spark the outrage like plants.

As Dan concludes, “deep-seated outrage is reserved for plants – horrible, evil plants created to resist herbicides. Nothing is more sacred than manual weeding, after all, and any scientist who figures out how to improve on that age-old chore must do so the way they did with seedless fruit and designer dogs.

Naturally.”

## Food borne disease outbreaks in the US

A study conducted by the CDC over a 10 year period has found that raw milk and pork contributed to food illnesses across the US, but fell short of the number caused by poultry, fish and beef.

The study looked at more than 13,000 food borne disease outbreaks from 1998-2008. These outbreaks resulted in 273,120 cases of illness, 9,190

hospitalizations and 200 deaths.

Poultry accounted for 19% of outbreaks, as did fish and beef accounted for 12%.

Dairy and pork were found to be responsible for fewer outbreaks but still made the list.

Pork outbreaks were comparable to leafy vegetables while dairy, due to raw

products, is on the increase.

From 2009-2010, 81% of outbreaks are linked to dairy and this is due to unpasteurized milk.

Some things we should all be able to agree on from this study, meat should be cooked fully before consumption, consume only pasteurized dairy products and clean surfaces after fixing raw meat.

## No drones allowed

The town of Deer Trail, Colorado has proposed an ordinance that would create drone hunting licenses and offer \$100 bounties for hunters who shoot down unmanned aerial vehicles.

The ordinance is focused at government

drones being used across the county as a law enforcement tool and many feel they are an invasion of privacy.

Although drones have not been spotted in Deer Trail, residences are not taking any chances.

If the ordinance passes, people must purchase a drone hunting license for \$25 and then if they shot one down they must bring identifiable parts in to claim their \$100 bounty.

## Skipping breakfast is bad, especially for men

Apparently mom was right, again. Breakfast is the most important meal of the day, especially for men.

Harvard researchers have found that guys who regularly skip breakfast could be more likely to develop heart disease. The study included nearly

27,000 middle-aged and old men over a 16 year period.

The author concluded "in this large, prospective study of middle-aged and older US male health professionals that breakfast eating was associated with a lowered risk of (coronary heart disease)."

But other factors such as body mass index may be involved as well.

Reason for the benefit is still not known but some think it might be timing or content of breakfast that is important.

## NOAA: July one of the wettest in the U.S.

July 2013 can be described as "warm" and "wet." According to NOAA, the average temperature this past month for the contiguous U.S. was 74.3 degrees F. This is 0.8 degrees above the 20<sup>th</sup> century average and it ranks as the 30<sup>th</sup> warmest July on record.

In addition to the high temperatures, there were also high amounts of precipitation. The national average was recorded at 3.47 inches and this is 0.7 inches above average. This makes the 5<sup>th</sup> wettest July on record.

Unfortunately, the increased rain is not everywhere, 46% of the US was/is affected with drought, especially the Plains region. Compared to the drought two years ago, this is considered "moderate."

## Tight beef supply may force Chipotle to change standards

Chipotle is the first fast-casual restaurant to go with all humanely-treated and environmentally-friendly ingredients, but they may be forced to ease some of its beef requirements as beef supplies deplete.

Chipotle has a Food With Integrity program that requires their products meet naturally raised standards. According to Chipotle, this means the beef served is raised without the use of

antibiotics or added hormones.

With the current decline in cattle numbers, a 60-year low, it is getting hard for Chipotle to meet the purchasing requirements. Last year all purchased beef met the requirements but this year it is more like 80-85%.

The changes Chipotle did have to make to their standards are not major but now they allow beef from cattle treated with

antibiotics to recover from an illness. The company still does not take cattle given antibiotics to promote weight gain or prevent disease.

According to Chipotle spokesman Chris Arnold the company increases ingredient purchases by 20-25% every year and the beef supply hasn't been able to keep up with the company's growth.

# Journal Reviews

Spatio-temporal variation of biting flies, *Stomoxys* spp. (Diptera: Muscidae), along a man-made disturbance gradient, from primary forest to the city of Makokou (North-East, Gabon). 2013. Mavoungou et al. Med Vet Entomol. 27: 339-345.

This study was conducted in Africa to determine the spatio-temporal location of several *Stomoxys* spp., stable flies.

Only one species, *S. calcitrans*, is found in Africa and US. The data collected

showed that this species has an affinity for man-made environments.

In Africa, secondary forest locations were the most abundant for *Stomoxys*, followed by man-made environments.

**The Impact.** Data showing *S. calcitrans* prefers man-made environments in Africa is typical of where these flies cause the biggest issues in the US.

Discovery of MicroRNAs of the stable fly (Diptera: Muscidae) by high-throughput sequencing. 2013. Tuckow et al. J Med Entomol. 50: 925-930.

The stable fly is a serious ectoparasite and scientists at USDA have been conducting discovery research into the genetics of these flies.

This paper discusses the current project

to analysis MicroRNAs in search of genetic markers that will assist with controlling stable flies.

**The Impact.** Stable flies are hard to control due to chemical resistance

and environmental considerations. Researching the genetic markers provides insight into other ways to control for stable flies since traditional methods are no longer effective.

Gonotrophic development and survival in field populations of *Musca domestica* (Diptera: Muscidae) at dairies in California, Minnesota, and Georgia, and the relationship of fly age to relative abundance of (Z)-9-Tricosene (Muscalure). 2013. Butler et al. J Med Entomol. 50: 748-757.

Female *Musca domestica*, house flies, were collected for a year from several dairies in three different states.

The researchers examined and dissected the house flies to check for muscalure levels, pterin levels, fly age, gonotrophic development and parity, and sperm load.

Older flies were found to have more muscalure. It was also found that females mated in early-intermediate stages of egg development.

These results show a comparison to laboratory raised house flies and natural flies. The natural flies need more time

to develop eggs and this is due to suboptimal diets compared to laboratory reared flies.

**The Impact.** Without the necessary limiting resources available, house fly development will be delayed or nonexistent.

Expression of lysozyme in the life history of the house fly (*Musca domestica* L.). 2013. Nayduch and Joyner. J Med Entomol. 50: 847-852.

Researchers have identified lysozyme enzymes in the larval midgut of house flies. This study aimed to determine the temporal expression of lysozyme in the life history of house flies on both the mRNA and protein level.

The study found that lysozyme enzymes are present in the larval and adult stages only and this is assumed to assist in digestive and defensive functions.

**The Impact.** The presence of lysozyme active enzymes in larva and adult flies are key players in the ability of house flies to thrive in microbe-rich environments.

Evaluation of fipronil oral dosing to cattle for control of adult and larval sand flies under controlled conditions. 2013. Poche et al. J med Entomol. 50: 833-837.

Sand flies are notorious vectors of many pathogens that lead to diseases, one of which is Visceral Leishmaniasis (VL). In the Old World, cattle are exposed to more diseases and new control options are always helpful.

The researchers studied the efficacy of a single oral fipronil dose to cattle against adult and larval sand flies in India.

The results were positive, with up to 100% mortality in both adult and larval sand flies over a 21 day period after a single dose of fipronil.

**The Impact.** The ability to get fly control for a 21 day period with fipronil provides options to limiting the spread of VL by sand flies and other biting flies. VL is a disease that does affect animals in the US and more specifically Texas.



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Prevalence of *Dirofilaria immitis* (Nematoda: Filarioidea) in mosquitoes from northeast Arkansas, the United States. 2013. McKay et al. 50: 871-878.

Mosquitoes were surveyed in northeast Arkansas to identify which species of mosquitoes carry *Dirofilaria immitis*, dog heartworm.

Dog heartworms were identified from mosquitoes with the use of polymerase chain reaction, PCR.

Overwintering biology of *Culex* (Diptera: Culicidae) mosquitoes in the Sacramento Valley of California. 2013. Nelms et al. J Med Entomol. 50: 773-790.

At temperate locations, *Culex* mosquitoes typically will overwinter as adult females in reproductive arrest and also may serve as reservoir hosts for arboviruses when cold temperatures arrest viral replication.

The researchers looked further into overwintering

Sixteen mosquito species were identified and *D. immitis* was identified in nine of the species. A total of 1212 mosquito pools were tested and 7.3% of these tested positive for *D. immitis*.

One collection site (in the kennel) of a heartworm positive

dog, collected 114 mosquitoes, 84 (74%) of which were positive for *D. immitis*.

**The Impact.** Several species of mosquitoes can transmit dog heartworm and the frequency of infection increases with access to a heartworm-positive dog.

behavior of *Culex* mosquitoes in order to evaluate their role in the persistence of West Nile Virus (WNV).

Adult females of different species of *Culex* were found to overwinter in various stages of reproductive arrest. Some adults were even found to still be detectable for WNV.

**The Impact.** *Culex* mosquito adults are persistent throughout the winter and can be collected when temperatures reach above average temperatures. Some of these overwintering adults could potentially transmit WNV in late winter or early spring.

Socioeconomic status affects mosquito (Diptera: Culicidae) larval habitat type availability and infestations level. 2013. Dowling et al. J Med Entomol. 50: 764-772

The researchers sampled for mosquito larvae in microhabitats in six different neighborhoods in the Washington DC area. The neighborhoods varied in socioeconomic status and housing structures to test the associations among neighborhood characteristics, microhabitat abundance and parameters, and mosquito occurrence and densities.

Five specific container types (drains, corrugated flexible drainpipes, planters, garbage cans, and buckets) accounted for the majority of water-holding and mosquito-positive microhabitats sampled.

No association between SES or housing structure was found. *Aedes albopictus* were 83% more abundant in disused containers and *Culex pipiens*

were more abundant in structural and functional containers.

**The Impact.** The results just provide further evidence that containers are important to mosquito breeding. Container disuse needs to be a major point in integrated mosquito management education for the general public.

Livestock/veterinary website

<http://livestockvetento.tamu.edu>

Livestock Veterinary Entomology on

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