

# Veterinary Entomology

## Insect Updates

### Stored Grain Insect Pest – How to prevent them

This year there may be excess corn or other grains that will be stored in on-farm bins and in unconventional ways.

Stored grains attract insects and cause major damage, producers need to take measures to protect their investment, says Wayne Bailey, U of Mo Extension entomologist.

1) Remove grain residues from

bins, nearby bunks or feed storage areas. Sanitize empty bins, combines, trucks and augers.

2) Apply labeled protectant surface spray on grain to be stored. This is essential for grain that is being stored through the summer months or longer.

Make a second application on the top layer of grain; fill bins

only to height of sidewalls to prevent invading insects and use hanging pest strips in the bin above the grain.

3) Monitor stored grain for pests. Do monthly visual checks from the roof access door from Nov to April, and check twice a month May to Oct.

A sour smell indicates a problem. Use probes and traps to check within the grain.

### Tiny insect delays lucrative Australia-China cattle trade

Never under estimate the impact of insects, even teeny, tiny ones the size of a pen tip.

Australia's effort of signing a deal to export cattle to China and bring in billions of dollars has stalled due to the presence of Bluetongue disease in the herd and biting midges in China.

While the disease has little effect on cattle, it would pose a major threat to China's 140 million-strong sheep flock, the world's largest.

Official talks have been in the works since February but nothing has been secured yet.

Shipping live animals from

Australia to China could help curb high beef prices in China and open up a new market for Australian farmers.

Bluetongue, which is common in tropical and subtropical regions, was first detected in Australia 35 yrs ago, and has since spread across the country's north.



## Pesticides

### EPRINEX® Gets a Makeover

The highly regarded pour-on dewormer by Merial now features a new packaging design that highlights the EPRINEX brand and its numerous benefits for beef

and dairy cattle.

EPRINEX kills 39 species and stages of internal and external parasites in cattle – more than any other on the

market. It also ensures zero milk or meat withholding after use.

Learn more by visiting [www.EPRINEXkillsit.com](http://www.EPRINEXkillsit.com)

### LONGRANGE® provides long lasting protection

LONGRANGE is the first extended-release dewormer that provides up to 100 to 150 days of parasite control in a single treatment. The extended duration is provided by the unique THERAPHASE™ formulation, which allows for a gradual

release of eprinomectin with two peaks.

Merial describes LONGRANGE as a major breakthrough in helping to battle resistance. Due to the THERAPHASE formulation, this systematically delivers the active ingredient

into the animal's system.

The initial peak achieved by LONGRANGE is roughly 2 ½ times that of EPRINEX.

THERAPHASE allows more battle time with the parasites and less binding to fat in the tissues of the animal.



*Wielgus' data stems from a study on cougars; when mature adults are killed, the inexperience cougars kill more livestock.*

# Cattle Care

## Calf care for winter weather

Calves are the future of a dairy and need extra care during the colder months of winter.

Good practices to follow:

Feed strategies –

- Consistency – same volume, same solids, same time of day and same temp every feeding
- Fat content – should receive a ration of at least 20% fat
- Feeding times – number of

times and amount fed may need to be adjusted

- Starter – always have high quality, free choice
- Consider colostrum cubes – freeze in ice cube tray for addition immunoglobins when needed
- Water – serve at calf's normal body temp, same with feedings
- Electrolytes – have on hand to prevent dehydration

Housing strategies -

- Birth – all year, follow proper calving protocols; in winter especially, keep calves clean, dry and warm first 2 hrs after birth
- Bedding – provide clean and dry place to live, deep for nestling down
- Ventilation – draft-free ventilation is a must

### Study finds killing wolves leads to more cattle deaths

A recently published study shows that killing wolves might lead to more livestock attacks.

Shooting wolves is a practice that helps ranchers protect their livestock in north western states.

Rob Wielgus, an ecologist at Washington State University, looked at the impact of killing wolves and found that the chance of livestock being killed the next year was raised by 5-6%. He also found that the number of livestock continued to increase each year.

### Zoetis response to Reuters' drug residue article

A Reuters' article that incorrectly published information on the antibiotic ceftiofur threatening human health has been called out by the very people who were asked to provide information for the article.

The author left out much of the information provided by Dr. Roger Saltman, Group Director for Cattle and Equine Technical

Services for Zoetis. Thus giving the impression that the US meat and milk supply is unsafe.

Saltman has rebutted by saying there are remarkably low numbers of true antibiotic residue violations that potentially enter the food supply.

USDA's two-part program includes scheduled random sampling, designed to gain

statistical insights about the prevalence of drug residues in animals going into the food chain.

The stats presented by Reuters' article were from a rather specific monitoring system that targets suspect animals and does not represent the industry as a whole.

### APHIS rule proposal could devastate American cattle herd

On Aug 29, 2014, a rule proposal was published in the federal register that would allow the importation of live cattle and fresh or frozen beef from Northern Argentina.

TX and SW Cattle Raisers Assoc. (TSCRA) are deeply concerned by this proposal due to Foot-and-Mouth Disease (FMD).

FMD is a severe and highly contagious viral disease of cows, pigs, sheep, goats, deer and other hooved animals. FMD is one of the most economically devastating livestock diseases.

Argentina has had FMD in the past and APHIS claims that site visits were done to check that

they are now "FMD free with vaccination being practiced."

This is not sitting well with many Texas and the TSCRA. Comments of concern will be submitted by TSCRA and you can do the same by visiting [www.regulations.gov](http://www.regulations.gov) and searching for APHIS-2012-0032-0131 by Dec 29, 2014.

## Human & Animal Disease & Health

### TAHC Rule changes adopted in November

#### Ch. 38, Trich, Testing/Herd Certification

1. If bull is sold and later found infected, other bull(s) from original herd may be required to be tested.
2. Infect stray bull found, all bulls(s), original herd and temp herd need to be tested.
3. TAHC can evaluate herd management effectiveness

#### Ch. 51, Entry Requirements, Cattle & Swine

1. Texasbreeding bulls moving out-of-state for feeding will not need to be tested upon return to TX as long as there is not female interaction.

2. Vet certificate stating no Novel Swine Enteric Coronavirus (SECD) or exposure in last 30 days required for swine entering TX for other than immediate slaughter

#### Ch. 39, Scabies and Mange mites

Content and title modified to allow new treatments

#### Ch. 45, Reportable Diseases

SECD added to the list

#### Ch. 43, Tuberculosis, MRZ

Movement restriction zone redefined and removes annual and bi0annual TB test requirements

#### Ch. 49, Equine, Piroplasmosis testing

Broadens testing of equine to not licensed "racetrack facilities"

#### Ch. 40, Chronic Wasting Disease, MRZ

The two CWD zones have been combined into one "Containment Zone"

#### Ch. 51, Entry Requirements, Swine

Registration tattoos and ear notches are now considered official identification

#### Ch. 57, Poultry, Laryngotracheitis Vaccine Virus

Poultry entering Texas need vet certificate verifying no contact with "active chicken embryo origin Laryngotracheitis vaccine virus"

## Proper worm control begins with your veterinarian

Resistant internal parasites are estimated to have an economic impact of \$2 billion on the US cattle industry.

Resistance is present in many herds – sheep and goats – and soon cattle due to

the over use of avermectin, broad-spectrum deworming products.

Resistance is on a climb due to grabbing for the bottom before identifying the issue. To ensure continued efficacy and

economic rewards from a parasite-control program the first step is to contact your veterinarian.

Let them assess the parasites present and develop an appropriate control plan.

## New vaccine technology combats Bluetongue virus

Scientists have developed a faster method of producing an effective vaccine for Bluetongue virus (BTV); a virus spread by biting midges that has infected and killed thousands of livestock throughout the world.

Infected animals experience a range of symptoms, which are fatal in some cases.

Previous control measures included

culling animals and using an inactivated vaccine. The vaccine has helped in limiting and eventually stopping BTV epidemics in Europe but only protect against a specific strain of the virus.

A study published in the J of Virology, describes a new, cost effective method that doesn't rely on the use of live, infectious virus and uses a synthetic

biology approach.

Synthetic vaccines offer many benefits compared to the traditional vaccines, but most importantly is the speed in which they can be designed and produced - ~6 months.

They can be brought to market more quickly but with the same level of quality and reliability.

## Anticipate antibiotic adjustments

Effective antibiotics are very important for people and animal health; making it very important for animal agriculture to demonstrate their part to protect antibiotic effectiveness.

Labels of certain classes of antibiotics for animals and

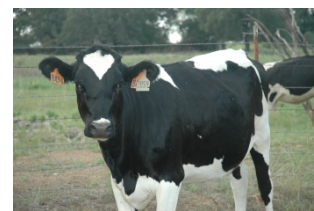
people will be transitioning.

Three documents were set forth by the FDA in 2012 and deemed voluntary but now changes will be evaluated and the FDA will consider if further action is warranted.

The three documents were

designed to provide a “what” and “how” component and to streamline procedures.

This might seem a bit of an inconvenience but it is preferable to alternatives such as eliminating medications or Congressional oversight.



*Use of medically important antimicrobial drugs in food-producing animals should be limited to assuring health and include veterinary oversight.*

## USDA scientists awarded for FMD vaccine research

Years of dedicated research on foot-and-mouth disease by USDA scientists is paying off.

A team of USDA ARS scientists and US Dept of Homeland Security collaborators received the DHS Secretary's Exceptional Service Gold Medal Award

at a recent ceremony for their successful development and license of the world's first molecular FMD vaccine for cattle.

This is the most significant scientific accomplishment in FMD vaccine development in the past 50 years and the

first FMD vaccine that can be manufactured in the United States.

Although the US has not had an FMD outbreak since 1929, the disease is still considered a serious threat to our nations' economy and food supply.

## Keep germs out of your expanding herd

As cattle prices continue to go up, many are thinking of increasing their herd size. Follow the steps listed below to protect your herd from outside diseases that can be brought in by new cattle.

1) **Assess your herd first:** before bringing in new animals, work with your veterinarian to assess the status of your own herd. Consider diseases like IBR,

BVD, leptospirosis, Brucellosis and trichomoniasis.

2) **Isolate new arrivals:** new animals should be isolated from the existing herd for at least 30 days. Isolation should not have fence line contact with the existing herd and these animals should be observed, fed and handled last. This will give adequate time to be sure new

animals are up to date on vaccines, dewormer and external parasite control.

3) **Appropriate diagnostic testing:** during isolation, test animals for potential diseases.

An ounce of prevention goes a long way to save your herd from potential diseases and infections.

## Special Topics of Interest

### Once you go veggie... You'll definitely go back to meat

That is the conclusion from a new Harris Interactive Survey poll of 11,399 American adults.

The poll revealed that only 2% of American adults are currently classifying themselves as vegetarians or vegans, 10% acknowledged that they are former

vegetarians or vegans, while another 88% have never experimented with veggie diets.

That seems a bit skewed given the purpose of the survey but it was directed at people who cared about the issue of

vegetarian diets. Of course it did not get everyone but that is what happens with surveys.

Respondents (more than half) indicated going back to meat within the first year, while 1/3 went back within 3 months



## Cow age and cow productivity (When is she too old?)

Strong cattle prices have ranchers keeping any cow that might have a live calf to sell at the next weaning period.

But at what age do cows usually start to become less productive?

There is great variability in the longevity of beef cows. Breed may have an influence, region of the country and soil type may affect the teeth.

Data presented by U of Florida indicates

that cows are consistent in the rebreeding performance through about 8 years of age.

After 10 years of age, a more consistent decline was noted and an even steeper decline as they became 12 yrs of age.

## Study finds that urban farming covers an area the size of Europe

City dwellers are growing their own food on a much greater scale than previously thought.

Most of the land lies just outside of cities (456 million hectares).

Urban farmers typically grow relatively expensive foods, like fresh vegetables.

In sub-Saharan Africa it is the urban farmers that supply up to 90% of the leafy salad greens.

In Ghana, 2,000 urban farmers

are supplying greens to 800,000 people every day. In Ghana's capital, urban farmers are recycling more waste water than local treatment plants and helping keep the city a little cleaner.

There are perception problems with urban farming, especially in developing countries where it is most needed.

The wealthy countries are praised for reducing emissions

and enhancing a green economy, while developing countries see it as an inconvenient vestige of rural life that stands in the way of modernization.



## Altered milk protein can deliver AIDS drug to infants

Penn State researchers have developed a novel method of altering a protein in milk that will allow it to bind with an antiretroviral drug that would improve treatment for infants and young children suffering from HIV/AIDS.

This is critical science for the estimated 3.4 million children living with HIV/AIDS.

One major complication is that most antiretroviral drugs are not well tolerated by very young children. They have poor water solubility and make the children sick.

To solve the problem, a group of proteins in cow's milk called caseins were looked into. The casein micelles in mammals' milk are natural delivery

systems for amino acids and calcium from mother to young.

Researchers have found that micelles are able to carry molecules with low water solubility, low molecular weight and very hydrophilic – like Ritonavir.

Final tests are being conducted on a baby formula.

## Journal Reviews

Development and oviposition preference of house flies and stable flies (Diptera: Muscidae) in six substrates from Florida equine facilities. 2014. Machtinger et al. J Med Entomol. 51: 1144-1150.

The common equine facility pests, house flies and stable flies, were studied in the laboratory to determine the success and duration of larval development and oviposition preferences on 6 different substrates normally found on equine facilities.

The substrates tested were 1) hay soiled with urine and manure, 2) fresh horse

manure, 3) pine shaving bedding soiled with urine and manure (< 12 hr), 4) pine shaving bedding soiled with urine and manure (aged >72 hr), 5) builders sand bedding soiled with urine and manure aged 3 days, and 6) soil from an overgrazed pasture mixed with urine and manure of variable age.

Results found that the house flies could not

develop in hay, soil and sand. The stable flies preferred the plant material substrates and not on fresh manure.

**The Impact.** Knowing the preferred location to lay eggs and for optimal larval growth helps target sanitation efforts and trap locations. Most effective control measures start with sanitation.

Temporospatial fate of bacteria and immune effector expression in house flies fed GFP-*Escherichia coli* O157:H7. 2014. Fleming et al. Med Vet Entomol. 28: 364-371.

The researchers assessed the temporospatial fate of illuminated *E. coli* (GFP) O157:H7 in house flies along with fly antimicrobial responses up to 12 h post-ingestion.

The house flies fed the illuminated *E. coli*

revealed a steady decrease in bacterial load over 12 h. However, the flies can transmit the pathogen in excreta.

The research data collectively indicated that house flies can serve as reservoirs of *E. coli* O157:H7 for up to 12 h.

**The Impact.** Many disregard the house fly as no big issue on the farm but just one fly has the ability to carry *E. coli* O157:H7 from cattle (natural carriers) to other animals and humans down the street.

Life history parameters of the cattle long-nosed sucking louse, *Linognathus vituli*. 2014. Colwell. Med Vet Entomol. 28: 432-437.

The cattle sucking lice, *Linognathus vituli*, common name cattle long-nosed sucking louse, was observed on cattle in a confined controlled environment.

understand the life history such as survivability per stage, egg production and longevity at various temperatures.

Results showed the lice to perform better and develop faster at 30 to 35°C.

**The Impact.** Knowing detailed information about this louse, or any insect, helps set more precise parameters for controlling them and when to expect an infestation.

The purpose of the project was to better understand the life history of brown recluse and brown widow spiders (Araneae: Sicariidae, Therididae) to a commercial sulfuryl fluoride fumigation. 2014. Vetter et al. J Econ Entomol. 107: 1813-1817.

The researchers looked into the effectiveness of commercial fumigation on brown recluse spiders and brown widow spiders.

control. The basis of the study was to test if fumigation was ineffective on spiders like most pest control operators claim.

Results demonstrated that a sulfuryl fluoride fumigation with an accumulated

dosage of 162 oz-h per 1,000 ft<sup>2</sup> 21°C over 25 h was sufficient to kill adult brown recluse and brown widow spiders.

**The Impact.** There are potential opportunities for controlling or studying the effects of fumigation on venomous spiders.

Effects of mammal host diversity and density on the infection level of *Trypanosoma cruzi* in sylvatic kissing bugs. 2014. Oda et al. Med Vet Entomol. 28: 84-390.

The researcher looked at the extent of which host diversity and identity played in determining the infection level of *T. cruzi* seen in the vector population (i.e. disease risk in humans).

Their efforts indicate that there is no correlation between disease risk and host diversity.

What was observed was a correlation between the densities of rodent species

with disease risk.

**The Impact.** A little insight into a complicated disease and vector, both of which are found throughout Texas; Bottom line: remove rodents!!

Estimating *Culicoides sonorensis* biting midge abundance using digital image analysis. 2014. Osborne et al. Med Vet Entomol. 28: 461-464.

The ImageJ open-source software tool has been used to estimate mosquito abundance previously and now the researchers used it on *C. sonorensis* for the first time.

The ImageJ software was tested on gross trap enumeration of *C. sonorensis* and found to be comparable to currently used methods (i.e. dissecting scope and hand sorting.)

**The Impact.** This is the first report of using the ImageJ on an insect other than mosquitoes and shows great potential and could possibly be used on other insects. Student workers and grad student everywhere rejoice.

Desiccation tolerance in the eggs of the primary North American bluetongue virus vector, *Culicoides sonorensis* (Diptera: Ceratopogonidae), and implications for vector persistence. 2014. McDermott and Mullens. J Med

*C. sonorensis* is the primary vector of bluetongue virus, a disease that affects many livestock such as sheep, cattle and deer.

after a dry period. The researchers experimented with the eggs and different periods of drought to see how this affected them.

eggs over that age can withstand many hours of desiccation and still be viable upon rehydration.

**The Impact.** Even dried mud can breed these biters. Proper sanitation is a must even if the area looks inactive.

The eggs are laid in polluted mud habitats and can remain viable even

Results show that eggs less than 12 hr old cannot withstand the desiccation but

Susceptibility of *Culicoides* species biting midges to deltamethrin-treated nets as determined under laboratory and field conditions in the Balearic Islands, Spain. 2014. Del Rio et al. Med Vet Entomol. 28: 414-420.

Few studies have been conducted on the efficacy of commercially available insecticides and treated nets against *Culicoides*.

deltamethrin in the laboratory and the field.

Results showed that the treated nets provoke high and rapid mortality of the midges (90-100%) and this increases when deployed in the field.

**The Impact.** The biting midges are becoming more an issue in the US and are extremely small; having additional means to control them is always appreciated.

The present study evaluated polyethylene nets treated with

Assessing the efficacy of candidate mosquito repellents against the background of an attractive source that mimics a human host. 2014. Menger et al. Med Vet Entomol. 28: 407-413.

The research team developed a new bioassay for accurate assessment of candidate repellent compounds, using a synthetic odor that mimics the odor blend released by human skin.

There results find lactones to be highly promising repellents due effectiveness as a repellent, their pleasant smell and natural base.

**The Impact.** A difficult task in research is

being able to test products without the need for humans and animals. Here a synthetic model was developed and new potential repellent compounds were discovered.

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Vector competence of selected mosquito species in Kenya for Ngari and Bunyamwera viruses. 2014. Odhiambo. J Med Entomol. 51: 1248-1253.

The objectives of the study were to identify which mosquito species in Kenya were efficient in transmitting the viruses that cause Ngari and Bunyamwera to humans.

Results showed that *Aedes aegypti*, *Culex quinquefasciatus* and *Anopheles gambiae*, are all competent vectors. All three species are already known to transmit other diseases and are highly associated with humans.

**The Impact.** Knowing the vector species for any virus or diseases is crucial for controlling the insect and protecting humans from disease transmission.

Protection from mosquito biting provided by permethrin-treated military fabrics. 2014. Frances et al. J Med Entomol. 1220-1226.

The researchers evaluated the ability of permethrin-treated military combat uniforms to protect against *Ae. aegypti* feeding after 1, 3, 5, 10, 30 and 50 washes.

The uniforms were treated in the US and Europe and results show that the fabric was repellent against feeding after each testing. The uniforms were still repelling mosquitoes after 50 washes.

**The Impact.** Military personnel depend on the USDA entomologist and scientist to develop uniforms and products that protect them from biting mosquitoes, midges and sand flies, among other things for when they are overseas. .

Comparative behavioral response of pyrethroid-susceptible and -resistant *Aedes aegypti* populations to citronella and eucalyptus oil. 2014. Sathantriphop et al. J Med Entomol. 51: 1182-1191.

The objective of the study was to compare the behavioral responses between susceptible and resistant populations of *A. aegypti* to citronella and eucalyptus extracts. DEET was used as the standard reference repellent.

DEET and citronella produced a stronger excitation and more rapid flight escape response in the pyrethroid-resistant populations.

Eucalyptus oil was found to be the least effective compound tested.

**The Impact.** Just some food for thought so to speak, we should all be using mosquito repellents regularly be sure to pick wisely, you want to product to work.



*Merry Christmas  
 From my family  
 To yours!!*

Livestock/veterinary website  
<http://livestockvetento.tamu.edu>

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