

Special Interest Articles:

- Control flies in calf housing
- Control disease-carrying insects
- Restrictions on cephalosporins
- Resistance blame game



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Insect Updates

Flies breeding with hay feeding

High levels of stable flies that attack pastured cattle in the spring and early summer will most likely come from round bale feeding sites.

Alberto B. Broce, emeritus professor and livestock entomologist at Kansas State University, notes that cattle feeding from round bales can waste up to **50%** of the hay, and the wasted hay, mixed

with manure, becomes an ideal habitat for stable fly larvae.

Broce stresses that management practices this winter can help limit fly populations later.

Suggested steps:

- Frequently move feeding tubs to prevent the accumulation of hay-manure medium over one spot.

- Use modified feeders, such as cone feeders, which have been shown to reduce the amount of wasted hay

- Unroll round bales on pastures, but not over the same site

- Spread out accumulated hay-manure medium to dry

- Encourage your neighbors to use similar practices to keep fly populations in control around the area

Control fly populations in calf housing

Calf pens and hutches provide an ideal environment for flies. Flies not only spread disease to calves but they also cause the calf discomfort and stress, reducing feed intake and affecting the health and growth of your calves.

An integrated pest management (IPM) plan is the most cost-effective way

to reduce fly populations and the stress they cause the calf.

- Start by cleaning up spilled feed and milk, eliminate standing water, clip grass, and store manure and soiled bedding away from the calf facilities.

- Flies lay eggs in manure, use feed-through larvicide in both milk replacer and calf

starter to break the fly lifecycle.

- Use scatter baits when you see adult flies around calves.

- Add the feed-through larvicide to your calf feed program 30 days before the fly season starts.

Get a fly control program in place before the flies arrive this spring.

New ways to control disease-carrying insects

Purdue researchers are discovering the next generation of insecticides directed at disease-carrying insects like mosquitoes, ticks and tsetse flies (found in Africa). These insects are developing resistance to insecticides sprayed in the air or embedded in bed nets. The increased resistance makes insecticides less effective.

The researchers are targeting

receptors involved with feeding which leads either to killing the insect or stopping it from feeding, which is how pathogens and parasites are spread.

This approach focuses on vector insects' DNA, insecticides created through this method may be safer for humans and non-targeted organisms like companion pets and non-vector insects like

honey bees. They may also have less impact on the environment than other insecticides.

The next steps to develop the genome-centric method are to expose other drugs through an in vivo assay to discover insecticidal or larvicidal properties and identify novel chemicals that affect the targeted receptor of disease-carrying insects.



“Sidney Aki, reported the find as the largest number of fever ticks found by agriculture specialists this season.”

Cattle fever ticks intercepted in Texas

Custom officials report intercepting a “significant” number of cattle fever ticks on a deer hide being transported from Mexico. The *Associated Press* reports that the discovery of 23 fever ticks was

made by U.S. Customs and Border Protection agents in Laredo, TX.

The tick can cause Texas Cattle Fever, which results in slow growth, reduced reproductive ability and death.

If just one fever tick is discovered outside the traditional border-wide quarantine zone in South Texas, the consequences would be costly for the nation’s largest cattle-producing state.

Cattle Care

Don’t waste your vaccine dollars

If you purchase vaccine for a disease and inject it into your animals you can rest assured that you won’t have to worry about that disease. Right? Wrong! To start with no vaccine is 100% effective at providing immunity to all animals it is administered to.

Further, your techniques for purchasing, storage and use of vaccines can diminish their effectiveness tremendously. Although you can’t expect perfect protection, there are

some common sense things you can do to get the greatest possible benefit from your investment in animal health products.

Proper vaccine management starts at the purchase. If you order online, purchase on Monday. If you purchase local, take a cooler with you or request one from the retailer.

Most realize vaccines should be kept in a cool, dark place but research shows many

producers do a poor job of achieving this. Vaccines should be stored between 35 and 45°F. Too warm temperatures can quickly deactivate the vaccine, but too cold is even worse.

It is a good idea to purchase a small, modern and efficient apartment-sized refrigerator in a convenient place for vaccine storage only. Discard all vaccines that have been frozen, opened or partially used, and expired.

FDA places some restrictions on the use of cephalosporins

Starting April 5 FDA placed restrictions on the use of antibiotics known as cephalosporins in livestock due to concern that the drugs were being used beyond what the label specifies.

The new rules are:

- Dairy veterinarians can continue to use approved

cephalosporins for those health conditions that have labeled approvals. For disease conditions not on the label, they can use cephalosporins as long as they utilize approved dosages, frequencies, durations and routes of administration.

- It continues to allow

veterinarians to use their discretion and professional training when it comes to improving the health and well-being of animals.

- Widespread debate still exists whether antibiotic use in livestock contributes to bacterial resistance that threatens humans.

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Anaphylactic reactions are a true emergency

After giving enough injections over time, many have run across an anaphylactic reaction. These events can be scary but one needs to be sure to act fast because these are true emergencies.

Anaphylaxis is a type of hypersensitivity disease where an immune response goes uncontrolled and is not self-limited. These reactions are seen shortly after injections are given.

The degree to which an animal is affected can vary from swelling of the injection site

to difficulty breathing. Other signs include muscle tremors, anxiety, salivation, bloat, nasal discharge, vocalization, edema, diarrhea and dilation of blood vessels. The blood vessel dilation drops blood pressure and this with breathing difficulty can lead to death.

Epinephrine is the drug of choice to counter the reaction. Be sure to carry it in your vaccine and treatment cooler. Replace expired bottles even if unused or not opened.

Certain breeds of cattle and genetic lines have higher reported incidences of anaphylaxis. Animals should be monitored for 24 hrs, especially pregnant animals.

Always walk back through the group after giving injections. Work in the cool part of the day, more reactions are seen in hot weather.

Anaphylactic reactions occur when least expected, so it is best to be prepared and act fast.

Human & Animal Disease & Health

Researchers unravel challenges of drug-resistant bacteria

For years, medical professionals and the livestock industry have made great efforts not to overuse antibiotics, but drug-resistant microorganisms continue to thrive.

Researcher Wang says resistance come from antibiotic usage but more so of commensal bacteria (otherwise harmless bacteria) than pathogenic bacteria (which cause diseases).

Antibiotic-resistant bacteria "have been found not only in various food products and environmental samples but also in hosts without a history of direct exposure to antibiotics."



"The human and animal gut is like an incubator for these resistant bacteria"

Resistance blame game – Humans first?

Livestock have been repeatedly implicated as the source of antimicrobial resistance, but new research from Scotland shows that, at least in the case of *Salmonella* Typhimurium DT104, resistance profiles are often showing up in humans before animals.

It is reported that transmission is likely to occur in both directions, animal-to-human and human-to-animal, the critical issue is

the proportion of transmission that occurs in each direction.

Three conclusions:

1. While a number of DT104 phenotypes are common to both animal and human populations, there are a significant number of phenotypes that are unique to each population.

2. For resistance to individual antimicrobials, there is no clear pattern,

but the majority of resistance profiles that are common to both human and animal populations were identified first in humans.

3. The origins of resistance profiles can be estimated. When a putative source population can be identified for each profile, and for each isolate, significantly more of these putative precursors were identified in the human population.

Trichomoniasis cases continue to rise in Arkansas

A total of 97 cases of Trichomoniasis were reported in Arkansas during 2011. This number has steadily increased since new regulations went into effect last year. The regulations indicate that any breeding bull changing ownership in AR must be accompanied by a negative test for trichomoniasis, similar to the regulations in TX.

Trich is a venereal disease of cattle caused by the protozoa organism *Tritrichomonas foetus*. The disease leads to infertility, poor pregnancy rates, an extended breeding season and a

diminished calf crop in cattle, which is very costly to producers.

Trich is transmitted from an infected bull to the cow's reproductive tract during breeding. Infected cows will experience infertility and early embryonic death, causing the cow to return to estrus (heat) and subsequently leading to poor pregnancy rates and an extended breeding season.

Infected bulls show very little outward signs of illness, allowing Trich to be present for a considerable amount of

time before it is suspected and diagnosed. Most bulls, once infected, will stay infected for life.

Currently, there is no approved treatment for breeding bulls in the US, therefore, infected bulls must be condemned to slaughter. The majority of infected cows will clear the infection if given 120 to 150 days of sexual rest.

38 people confirmed sick from drinking raw milk

Health authorities are still assessing the number of people sickened from drinking raw milk from a Pennsylvania dairy outlet.

On Friday, February 3rd, the

Pennsylvania Department of Health reported the number had reached 38. More could be possible.

The agencies have focused their attention on raw milk sold at The Family Cow in

Chambersburg Pa.

Among the confirmed cases, most of the people live in Pennsylvania, while a few live in Maryland, West Virginia, and New Jersey.

Season for Q Fever

Q fever is a rickettsial infection cause by *Coxiella burnetii* bacterium. It is widespread globally among livestock and domestic ruminants, and sheep, cattle and goats are the most frequent source of human infection.

Veterinarians should be aware of Q fever and its transmission

to humans as calving, lambing and kidding season approaches.

Pregnant women, can be at risk for inhaling or ingesting the bacterium through dust or birthing fluids and tissues such as the placenta. Acute Q fever during human pregnancy may result in an adverse

effect on the fetus including prematurity, low birth weight, or abortion.

The CDC says most people who get sick start having symptoms two or three weeks after getting *C. burnetii*, although symptoms can start sooner.

Beyonce gets 'bootylicious' horse fly named after her

A newly discovered horse fly in Australia was so 'bootylicious' with its golden-haired bum, there was only one name worthy of its beauty: Beyonce.

The fly was caught in 1981, the same year Beyonce was born and its founder named it *Scaptia (Plinthina) beyonceae* to pay respect to the insect's beauty.



Special Topics of Interest

Cut bedding cost now, pay later

It's tempting to make a load of sand or sawdust last a week or two longer and you may get away with it for a while but the long-term effects can be expensive.

Research shows that when stalls were bedded with sand that was 2" below the

curb, cow lying time was reduced by 2 hrs / day.

When bedding is wet, cows spend 5 hrs less lying down and more time perching with only two feet in the stalls.

Reduced amounts of bedding and/or replacing bedding less often leads to cows standing for longer periods of time.

Unwanted outcomes of increased standing are hoof lesions and lameness.

Group housing insights

Raising calves is arguably one of the most challenging and labor intensive jobs on the farm.

Recent studies indicate that group housing may be an option to reduce

labor associated with raising calves; in addition to benefits such as increased milk consumption, socialization and exercise.

Smaller groups are easier to manage: less than 10 calves. Decide the feeding

method to be used. Feeding more milk reduces competition and improves efficiency of automated feeders. Take into account design and management of the housing system. All-in, all-out management of groups aims to reduce the risk of disease.

Shrinking US cattle herd smallest in 60 years

A devastating drought, record feed costs and intensifying competition with case crops for land are accelerating a 5 year decline in the US cattle herd, which is forecast to be the smallest in six decades as of Jan 1.

Analysts polled by Reuters expect the data to show the US cattle herd at 91.26 million head, the smallest since 1952 and down from 92.58 million a year earlier.

The drought in the southern Plains that

stretched through nearly all of last year, has been a primary driver in ranchers liquidating their herds. It also has them selling their calves to auction barns and feedlots soon after being weaned off milk.

More men at the market

Another sexual barrier is breaking down, new data shows that men are increasingly taking on the task of grocery shopping – not in my house but I guess this occurs somewhere.

Even in this day in age where most gender-based barriers have disappeared, the supermarket has remained primarily the domain of

women.

Data shows there has been an increase from 14% to 31% from 1985 to 2011 of men doing the grocery shopping. Another study that polled 1000 fathers shows that 51% men are primary grocery shoppers and 60% claim to make their family's food decisions. In my house I can't even get input on what to make more less get my husband to shop by himself.

It is expected that this shift toward more men pushing grocery carts could be positive for the beef industry. Most men like meat and meat-based meals.

To fully capitalize on this trend, marketers need to adjust some of their messages and strategies and store layout.

Night milk shows promise as aid for insomniacs

Forget a nightcap – the answer for insomnia may soon be available in a glass of milk.

A Chinese-controlled milk powder manufacturer may soon be giving those suffering from sleeping disorders a natural sleep aid. Synlait Milk collects milk from cows during the night for melatonin, a sleep-promoting hormone. By expressing melatonin in the milk, the product, Synlait Night Milk, can aid those suffering from sleep disorders.

Simon Causer, Synlait Milk research manager, points that melatonin is a key ingredient in the Night Milk.

"Melatonin plays a key role in helping humans regulate day-night cycles, and by selectively collecting milk produced by cows during the night we can create a 100% natural sleep aid," Causer said.

Currently dairy farmers get up at 4 am to milk their herds but they would need to start a few hours earlier. Suppliers would be paid a premium for their early-morning milking.

"Having determined the feasibility of production, and that the change of routine has little effect on the behavior of the cows, the next step in the process will involve carrying out a clinical trial to demonstrate efficacy of the product

when taken by a study group comprising patients with insomnia," Causer said.

In the study, participants would be asked to drink a glass of Night Milk 30 minutes before going to bed. Sleep quality will then be monitored against results for people who consume conventional milk.

The market for Night Milk in Asia and Europe will target working professionals, the elderly and international travelers.

Journal Reviews

Economic impact of stable flies (Diptera: Muscidae) on dairy and beef cattle production. 2012.

Taylor et al. J Med Entomol. 49: 198-209.

The stable fly is among the most damaging arthropod pests of cattle worldwide. The last time the economic impact of stable flies on United States cattle production was published was 20 years ago and placed at a loss of \$608 million.

The authors analyzed published studies and developed a yield-loss related to stable fly infestation levels to cattle productivity, and then they estimated the economic impact of stable flies on cattle

production in the US.

Four different industry sectors were taken into consideration: dairy, cow-calf production, pastured stockers, and feeder cattle.

It is estimated that the national losses from stable flies \$360 million for dairy cattle, \$358 million for cow-calf herds, \$1,268 million for pastured cattle, and \$226 million for cattle on feed, for a total impact to US cattle industries of \$2,211 million per year.

Additional research on the effects of stable flies on high-production dairy cows and nursing beef calves is needed to increase the reliability of the estimates.

The Impact. This is a very impacting article that is way overdue from the economic standpoint. This data is a major resource for all cattle owners and Extension personnel that deal with cattle owners and researchers looking to control stable fly infestations.

Population dynamics of stable flies *Stomoxys calcitrans* (Diptera: Muscidae) at an organic dairy farm in Denmark based on mark-recapture with destructive sub-sampling. 2012. Skovgard & Nachman. Environ Entomol. 41: 20-29.

The researchers of this paper collected stable flies from organic dairies for two consecutive years with sweep nets and marking.

Using a statistical model, they were able to explain 86.6% of the variation

in the growth rate as a function of current temperature, precipitation, and population size.

The peak of stable fly populations occurred at 71.24°F and development was not found at temperatures below

50.36°F and above 92.3°F.

The Impact. This data backs the knowledge that stable flies have a temperature preference for development. It might also add in stable fly management.

Enterococcus faecalis OG1RF:PMV158 survives and proliferates in the house fly digestive tract. 2012.

Doud & Zurek. J Med Entomol. 49: 150-155.

The presence of fluorescing *E. faecalis* was traced through the mouth parts, foregut, midgut and hindgut of house flies.

E. faecalis was found in the midgut 1 hr

and 4 hr after ingestion; in the labelum counts were low 24 hrs after ingestion but increased with time. In the foregut bacteria peaked at 48 hrs and remained high for 96 hrs. In the hindgut levels remained low.

Both drinking water and feed sampled were contaminated by fluorescing *E. faecalis*.

The Impact. This data supports the notion that house flies can act as a carrier of bacteria.

A behavioral method for separation of house fly (Diptera: Muscidae) larvae from processed pig manure. 2012.

Cickova et al. J Econ Entomol. 105: 62-66.

A house fly larval separation method that is based on placing a cover over the larval rearing trays, was looked at.

The escaping larvae were collected in collection trays. Trays were held in the dark and the larvae would pupate within 48 hours after separation.

The Impact. This paper shows an easier way to separate larvae being reared in a laboratory and helps facilitate experiments.

Sampling flies or sampling flaws? Experimental design and inference strength in forensic entomology. 2012.

Michaud et al. J Med Entomol. 49: 1-10.

Forensic entomology is an inferential science because postmortem internal estimates are based on the extrapolation of results obtained in field or laboratory settings.

Although enormous gains in scientific understanding and methodological practice have been made in forensic entomology over the last few decades, a majority of the field studies we

reviewed do not meet the standards for inference, which are 1) adequate replications, 2) independence of experimental units, and 3) experimental conditions that capture representative range of natural variability.

The authors of this publication identified the design flaws in field and lab experiments and suggested

methodological solutions for increasing inference strength that can inform future casework.

The Impact. Technically, this does not affect the livestock/veterinary community, but it is a publication in the same category. This publication points out ways to improve research experiments for forensic entomology studies.

Sonja L. Swiger, PhD
 Assist. Professor
 Livestock Extension
 Entomologist

1229 North US Hwy 281
 Stephenville, TX 76401

CELL:
 (239) 220-0168

PHONE:
 (254) 968-4144

E-MAIL:
 SLSwiger@ag.tamu.edu



Plant terpenoids: Acute toxicities and effects on flight motor activity and wing beat frequency in the blow fly *Phaenicia sericata*. 2012. Waliwitiya et al. J Econ Entomol. 105: 72-84.

The researchers evaluated the acute toxicities and the physiological effects of plant monoterpenoids (eugenol, pulegone, citronellal and α -terpineol) and neuroactive insecticides (Malathion, dieldrin and RH3421) on flight muscle impulses and wing beat signals of the blow fly, *Phaenicia sericata*.

Eugenol, pulegone, citronellal

and α -terpineol applied topically produced neurotoxic symptoms but less toxic than Malathion, dieldrin, or RH3421.

Wing beating was blocked permanently within 6-7 min of administering pulegone or citronellal and within 16 mins with eugenol, α -terpineol-treated flies could not beat their wings despite normal flight muscle impulses.

Eugenol, pulegone and citronellal readily penetrate blow fly cuticle and interfere with flight muscle and/or central nervous function.

The Impact. The tested plant monoterpenoids show great potential for controlling flies and are less toxic to the environment than Malathion, dieldrin and RH3421.

Livestock/veterinary website

<http://livestockvetento.tamu.edu>

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