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Veterinary Entomology

Special Interest Articles:

- Horn Fly Insecticide Resistance Management
- Cattle Theft Penalty Upgrade
- Feral Swine Flu?

Individual Highlights:

Insect Updates

Horn Fly Insecticide Resistance Management

Some important guidelines to help prevent resistance:

1) Begin horn fly control procedures in the Spring when cattle average approximately 200 horn flies.
2) If ear tags are used, the insecticide classes must be rotated between pyrethroid and organophosphates or any of the new classes of ear tags. Continuous use of ear tags in the same insecticide class will eventually result in horn fly resistance.
3) Remove ear tags at the end of the fly season or when they lose their effectiveness. Do not tag cattle more than once per fly season, regardless of insecticide class.
4) If additional horn fly control is needed later in the year, use sprays, pour-ons, dusts or back-rubbers. If possible, alternate insecticide classes when changing control methods.
5) If pyrethroid ear tags have failed to control horn flies in the previous year, pyrethroid insecticides in any form should not be used for at least two years. In the meantime, use non-pyrethroid ear tags, sprays, pour-ons, etc.

Ear tags on the market include: OPs Patriot, Terminator II, Warrior, Optimizer, Dominator and X-terminator; Pyrethroids PYthon, PYthon MAGNUM, Gardstar Plus, CyLence Ultra, Saber Extra and Super Deckem; Organochlorine Avenger and Macrocyclic Lactone XP 820.

Maggot therapy similar to standard care for leg ulcers

Maggot would therapy is being considered more often for debridement of leg ulcers as opposed to the use of hydrogel. Some believe the maggots allow for faster healing times and lower bacterial levels.

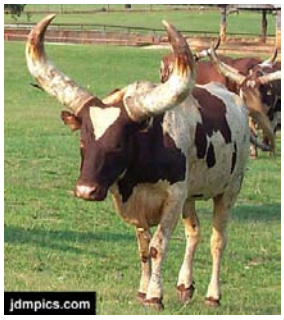
A study shows that this is not the case. Although maggot would therapy is effective and allowed for slightly quicker healing times, the larvae are painful and do not lower bacterial levels. Therefore this does not make them a miracle alternative to the common practice of using hydrogel for leg ulcers.

Of course this does not rule them out either as an effective way to care for leg ulcers.

http://esciencenews.com/article/2009/03/19/maggot.therapy.similar.standard.care.leg.ulcers

Cattle Care

TSCRA: Cattle Theft Bill Passes Texas Legislature



"SB1163 increases the penalty for cattle theft from a state jail felony to a 3rd degree felony."

As of today (May 12, 2009), theSB1163 bill introduced by Sneator Kel Seliger (R-Amarillo) and Representative Lois Kolkhorst (R-Brenham), unanimously passed the House and is on its way to the Governor to be signed or vetoed. If it passes, the bill will increase the penalty for livestock theft in Texas.

"Texas is the number one cattle producing state in the nation, but the penalty for cattle theft in Texas is more lenient than the neighboring states of Oklahoma, New Mexico and Louisiana," TSCRA President Dave Scott, of Richmond, TX, said.

Texas cattle theft has more than doubled in the past year. For protection of the industry, stricter penalty is needed. SB1163 increases the penalty for cattle theft from a state jail felony to a third degree felony.

Pesticides Update/Outlook

List of Disinfectants Registered for Use against Influenza A Viruses

In response to the emerging threat posed by the spread of the H1N1 Flu, EPA has provided a list of disinfectants registered for use against influenza A viruses in pdf form at http://www.epa.gov/oppad001/influenza-disinfectants.html

The list contains over 500 antimicrobial products registered by EPA for use against influenza A viruses on hard surfaces.

Nearly 70% of US farmers & ranchers surveyed have taken steps toward implementing sustainable agricultural practices.

3 out of 4 US farmers are aware of sustainable practices and most have used direct seeding, minimized the use of chemicals or employed crop rotation.

http://www.greenbook.net/viewStory.aspx?StoryID=835

Pesticide contaminated fruits & vegetables

http://www.foodpolitics.com/2009/03/ewgs-guide-to-pesticides-on-produce/

Have you ever been curious as to how much pesticide residue is actually on that head of broccoli or those ripe strawberries? Well, now you can find out.

The listed website contains the Environmental Working Group listing of the **most** and **least** pesticide contaminated fruits and vegetables.

Carbaryl: Amending product registrations to terminate uses and eliminate certain application methods

This notice announces the amendment set forth by the EPA to terminate uses and eliminate certain application methods for carbaryl products, as requested by registrants, of certain end-use and / or manufacturing – use carbaryl products registered under section 3 of FIFRA.

Product Name - Uses being terminated

Ortho Sevin Dust – Poultry & premises; pets & premises

Sevin garden dust – pets & premises; succulent/fresh beans & peas

Get-A-Bug Snail, Slug & Insect Killer – Succulent/fresh beans & peas; leafy veggies (except Brassica)

Sevin liquid brand Carbaryl Formula II – Suuculent/fresh beans & peas; poultry & premises

Sevin Brand 85 sprayable; Sevin 80 Solupak; Sevin brand XLR plus carbaryl insecticide; Sevin bran 4F; Sevin brand 80 WSP – peas & beans succulent shelled; millet; wheat; preplant root dip for seet potato; dip drench for nursery stock; vegetable transplants, bedding plants, & foliage plants; ULV application for adult mosquito control; outdoor pet sleeping quarters

Sevin brand 80% dust base – agricultural uses

Sevin brand RP2 – peas & beans, succulent shelled; preplant root dip for sweet potato; outdoor pet sleeping quarters; liquid broadcast use for residential lawns

Sevin brand RP4 – peas & beans, succulent shelled; millet; wheat; preplant root dip/drench for nursery stock, vegetable transplants, bedding plants, & foliage plants; ULV application for adult mosquito control; outdoor pet sleeping quarters; liquid broadcast use for residential lawns

Sevin brand grular carbaryl insecticide; AES Sevin granules ant, flea, tick & grub killer (1% Sevin) – leafy vegetables (except Brassica)

Sevin brand 97.5% Insecticide – Peas & beans, succulent shelled; preplant root dip/drench treatment for nursery stock, vegetable transplants, bedding plants, & foliage plants

AES Carbaryl Insecticide Spray, RTU; BES Garden Dust 10%; Security Brand 50% Sevin wettable; Helena Sevimol 4; Ferti-Lome Liquid Sevin home garden spray – Peas & beans, succulent shelled

Sevin grub killer granules; Sevin granules ant, flea, tick & grub killer; Sevin brand 5% turf insecticide granules; Cutworm & cricket bait; The Andersons 8% granular; The Andersons insect killer granules with 2% carbaryl; Coastox carbaryl cutworm bait; 10% Sevin granules; Bonide snail, slug & sowbug bait – leafy vegetables (except Brassica);' peas & beans, succulent shelled

Sevin 40WSP – preplant root dip/drench for nursery stock, vegetable transplants, bedding plants, and foliage plants; outdoor pet sleeping quarters; liquid broadcast use on residential lawns

Sevin SL – outdoor pet sleeping quarters, liquid broadcast use on residential lawns

BES Garden Dust 10% - bean succulent shelled

Suregard brand Sevin 80S – peas & beans, succulent shelled; preplant root dip (sweet potato); wheat

Sevin brand 80% DB – Peas & beans, succulent shelled; preplant root dip (sweet potato); use of dust formulations in/on agricultural crops; wheat

Sevin Brand carbaryl Insecticide 2% granular; Cony's slug, snail & insect killer; Turf & Garden Sevin % granular – leafy vegetables (except Brassica)

SA-50 brand Sevin 5% Dust – direct application to domestic pets or dwellings; succulent/fresh peas & beans; all agricultural uses

Wilbur – Ellis Sevin 5 bait – wheat; peas & beans succulent or fresh; leafy vegetables (except Brassica)

Black leaf Sevin brand; Ferti-Lome Garden Dust; Hi-Yield 10% carbaryl garden dust – peas & beans, succulent shelled; direct applications to domestic animals & their dwellings / premises

Drexel Carbaryl 4L – succulent beans & peas; preplant dip for sweet potato; wheat; millet; dip or drench treatment to nursery stock or transplants, etc; indoor uses; ULV mosquito adulticide; all applications using backpack sprayers

Drexel carbaryl 80S – succulent beans & peas; preplant root dip for sweet potato; wheat; millet; poultry & premises; seedling dip/drench for nursery stock; pet premises; pet sleeping quarters; ULV mosquito adulticide; all applications using backpack sprayers

Drexel carbaryl 10D – all agricultural uses; succulent beans & peas

Drexel carbaryl technical – succulent beans & peas; proso millet

Carbaryl 2L – succulent beans & peas; preplant dip for sweet potato; indoor applications; ULV mosquito applications using backpack sprayers

Carbaryl 10D – dust for agricultural use; cotton; succulent beans; poultry; dogs; cats (household pets)

Carbaryl 5D – all agricultural uses; succulent beans & peas

Carbaryl 80 Dust base – succulent peas & beans; wheat; millet; poultry; dogs & pets; all indoor uses (domestic dwellings, residential & commercial, barns); formulation into products for dip or drench treatments

Carbaryl 85 Sprayable – succulent beans & peas; preplant dip for sweet potato; root dip or drench treatments; ULV mosquito adulticide; all applications using backpack sprayers

Carbaryl 4L – peas & beans, succulent shelled; millet; wheat; preplant root dip for sweet potato; seedling dip or drench; all indoor applications

Human & Animal Disease & Health

"The bacteria isolated from flies had similar resistance characteristics."

Drug-Resistant Bacteria Dispersed near Broiler Houses

http://esciencenews.com/articles/2009/03/15/flies.may.spread.drug.resistant.bacteria.poultry.operations

Researchers at the John Hopkins Bloomberg School of Public Health have found house flies near broiler houses dispersing drug-resistant bacteria. The collected flies tested positive for antibiotic-resistant enterococci and staphylococci bacteria.

The bacteria isolated from the flies had similar resistance characteristics and resistance genes to bacteria found in the poultry litter. These results suggest that flies in intensive production areas could efficiently spread resistant organisms over large distances.

TAHC: Wild Hogs – No Indication of Flu Danger

According to Texas Animal Health Commission you are more likely to catch the flu from your sick hunting buddy than from domestic or wild hogs. This disease is spread from person to person.

If you are hunting wild hogs or know people who are, it is more critical to preotect oneself against potential exposure to swine brucellosis than H1N1 influenza. 10% of wild hogs carry swine brucellosis, a bacterial disease, not related to the flu in any way.

Protection is necessary "when processing or butchering a wild hog against the blood and bodily fluids," Dr. Bob Tillman says, Texas state veterinarian and head of TAHC. The swine brucellosis bacteria are destroyed when the meat is cooked.

Trappers who catch wild hogs and owners of domestic swine should practice biosecurity to prevent spreading the flu to pigs. Stay away from swine if you become ill and avoid visitors near your pigs. Have someone else feed the pigs when you are ill with flu-like symptoms and always wash your hands after handling animals.

The Texas Lice Squad

www.texaslicesquad.com

The Texas Lice Squad has opened the first and only professional head lice removal treatment center in the state of Texas. Conveniently located just minutes from Houston, parents who visit the salon will enjoy a full range of services.

Including head checks, updated lice education and for those in need of it – complete head lice and nit removal services. Future treatment centers in Dallas, Austin and San Antonio.

Coming to Dallas Soon!

Purdue experts speak out on livestock and antibiotic resistance

Two Purdue University experts speak up about a NY Times opinion piece that establishes pigs as a source of MRSA infection for humans. Drs. Paul Ebner, a livestock microbiologist, and Ching Wu, a veterinary pathobiologist and microbiologist call the piece "highly speculative."

MRSA (methicillin-resistant staphylococcus aureus) or antibiotiv resistant staph, is found in nature and more commonly spread among humans from humans than animals, although they can be carriers.

The piece was written off of a pilot study that only looked at two farms, and only one of them had the organism. The Drs. Say that because MRSA is so prevalent, the best way to avoid infections is to always use proper hygiene.

Journal Reviews

Evaluation of phloxine B as a photoinsecticide on immature stages of the horn fly, *Haematobia irritans* (L.) (Diptera: Muscidae). Filiberti et al. Aust J Entomol. 48: 73-78

Researchers in Australia have discovered that applying phloxine B to horn fly larvae renders them unable to develop into adults when combined with phototoxic levels of 5000 lux. Phloxine B is an environmentally friendly xanthenes derivative that is safe for mammals but toxic for dipterans.

Thus far administering PhB in the field has yet to be worked out but there is potential to prevent horn fly development without the use of insecticides.

Salivary gland thrombostasin isoforms differentially regulate blood uptake of horn flies fed on New Zealand white rabbits. Cupp et al. J Med Entomol. 46: 351-357.

This article discusses the important the anticlotting protein thrombostasin (TS) in the salivary gland has in horn fly feeding. Through their research efforts, the authors discovered that the TS isoform plays a significant role in blood volume uptake by horn fly adults during feeding.

As stated by the authors, "host immune response to salivary proteins may play a pivotal role by either facilitation or diminishing feeding success in response to different structural epitopes." Further understanding and research of TS will benfit effots to develop an effective antifeeding vaccine for horn flies.

Local infestation or long-distance migration? The seasonal recolonization of dairy farms by *Stomoxys calcitrans* (Diptera: Muscidae) in South Central Ontario, Canada. Beresford & Sutcliffe. J Econ. Entomol. 102: 788-798.

Researchers investigated whether or not dairies in south central Ontario, Canada were maintaining stable fly populations throughout the winter. They found that there were three farms that were refuge for stable flies In the winter and that adult and larval stages could be collected indoors during the winter at these farms.

Therefore, it was concluded that seasonal recolonization of dairy farms was mostly due to the populations located at these refuge farms. Adults would leave these farms in the spring and move to another farm for the season. None of the other dairies had overwintering colonies

Competence of the housefly, *Musca domestica*, as a vector of *Microsporum canis* under experimental conditions. Cafarchia et al. Med Vet Entomol. 23:21-25.

This article looked at the potential of house flies transmitting *Microsporum canis*, a dermatophyte of dogs and cats that cause skin lesions.

It was discovered that house fly adults have the ability to carry the dermatophyte mechanically (on their bodies) for up to five days.

The eggs, larvae, pupae, feces and vomitus tested negative for the dermatophyte, therefore ruling out other means of transmission.

This just adds another pathogen to the long list of those transmitted mechanically by house flies

Luring houseflies (*Musca domestica*) to traps: do cuticular hydrocarbons and visual cues increase catch? Hanley et al. Med Vet Entomol. 23: 26-33.

The research conducted in this paper looked at the efficacy of cuticular hydrocarbons and visual attractants as effective lures for adult house flies.

The ending results showed that there were no cuticular hydrocarbons or visual color stimulations that maintain attraction to house fly male or female adults. These results support commonly observed inconsistencies associated with lure-and-kill systems.

Evaluation of metaflumizone granular fly bait for management of houseflies. Ahmad & Zurek. Med Vet Entomol. 23: 167-169.

The authors looked at the efficacy of metaflumizone (BAS 3201; BASF) bait on house flies from feedlots in Kansas. Metaflumizone (BAS 3201) was compared to methomy-based bait (Golden Malrin), commonly utilized bait in livestock facilities. The metaflumizone was significantly more slow-acting than the methoyl bait but just as effective cumulatively later in the bioassay.

These results show that metaflumizone is an affective candidate for incorporation into IPM and integrated resistance management programs against houseflies.

Toxicity to vapor exposure and topical application of essential oils and monoterpenes on *Musca domestica* (Diptera: Muscidae). Tarelli, Zebba & Alzogaray. J Econ. Entomol. 102: 1383-1388.

The toxicity of essential oils (eucalyptus, mint, orange, lavender and gernanium) and monoterpenes (eucalyptol, limonene, linalool, menthone, and menthyl acetate) on house flies was observed. Researchers found an LD50 of less than 0.20 for all the essential oils and less than 0.15 for the monoterpenes.

These results suggest that the studied essential oils and monoterpenes are potential tools for controlling house flies.

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Selective advantage for III^M males over Y^M males in cage competition, mating competition, and pupal emergence in *Musca domestica* L. (Diptera: Muscidae). Hamm et al. Environ. Entomol. 38: 499-504.

The study presented here discusses the two different clines of male house flies. The researchers compare their survivability and competition, as well as location.

The study is conducted and presented well, but is limiting to scientists interested in learning more about the genetic separation of male house flies.

Host ranges of gregarious muscoid fly parasitoids *Muscidifurax raptorellus* (Hymenoptera: Pteromalidae), *Tachinaephagus zealandicus* (Hymenoptera: Encyrtidae), and *Trichopria nigra* (Hymenoptera: Diapriidae). Geden & Moon. Environ. Entomol. 38: 700-707.

A laboratory study was conducted to determine the effectiveness of the three parasitoids on house flies, stable flies, horn flies, black dump flies and flesh flies.

All three parasitoids parasitized pupae of the hosts. *Muscidifurax raptorellu*, was most effective on stable flies and least on horn flies. *Tachinaephagus zealandicus* was most effective on black dump flies and flesh flies and least on horn flies and house flies. *Trichopria nigra* was ineffective on house flies but most effective on stable flies.

Development of the black soldier fly (Diptera: Stratiomyidae) in relation to temperature. Tomberlin, Adler & Myers. Environ. Entomol. 38: 930-934.

The developmental rates of the black soldier fly larvae were observed at varying temperatures.

Results showed that as little as 3 Celsius degrees significantly impacted fitness tradeoffs for males and females.

A sustained release gel formulation of doramectin for control of lone star ticks (Acari: Ixodidae) and horn flies (Diptera: Muscidae) on cattle. Lohmeyer et al. J. Econ. Entomol. 102: 804-808.

An inexpensive hydrogel formulation containing doramectin (an avermectin) was injected into 4 steers to observe the control effects on Lone star ticks and horn fly adults and larvae. Blood and manure were collected from the injected steers and fed to the ticks, adult flies and larvae.

Tick control was maintained for 12 wk and larvae control for 16 wk. It was not as effective on adult horn flies. Results provide evidence of ectoparasite control at a lower cost

Efficacy of eprinomectin and doramectin against *Amblyomma americanum* (Acari: Ixodidae) on cattle. Lohmeyer et al. J. Econ. Entomol. 102: 809-814.

Eprinomectin and doramectin were administered to steers by daily oral capsules for 28 days. Results showed both insecticides to be 100% effective against estimated larvae of *Amblyomma americanum* throughout the entire 28-day study period. The authors note that eprinomectin could be utilized as an effective method of medicated bait for controlling ticks on white-tailed deer due to its effectiveness at lower serum levels and rapid elimination rate. Thus helping assist in the Cattle Fever Tick Eradication Program.

Cattle can develop immunity to paralysis caused by *Dermacentor andersoni*. Lysyk, Veira & Majak. J Med. Entomol. 46: 358-366.

It was determined that cattle are capable of developing antibody responses to 13 antigens in paralyzing tick saliva.

Therefore preventing tick paralysis to occur simultaneously in the same cattle.

These results indicate that the immune response of cattle to tick paralysis is more complicated than was originally expected.

What to look for in next month's issue – August 30, 2009

- What's new with Livestock Insect Workers
- Fighting late horn fly outbreaks
- Pesticide Recommendations for beef & dairy cattle
- Insects of Interest