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YOU CAN VIEW PAST ISSUES OF *ag animal health*:
<http://extension.wsu.edu/vetextension/Pages/Newsletters.aspx>

From the Editor – It's coming! The FDA report on their milk testing study (for many different drugs) should be out sometime in April. To refresh your memory, they were going to test milk from repeat dairy market beef residue violators (about 900 of them across the country) and some milk from those who have not had repeat violations in meat from their market cows. I don't think you need a PhD in Epidemiology to know that if you test enough you are liable to come up with something. So, be prepared to talk to your consumers, family members, or producers about what the testing might mean when we get the results. For a quick course on drug residues and the reasons for them, see Farm-a-cology on our website at:

<http://extension.wsu.edu/vetextension/Pages/Courses.aspx>

What we (VetMedExtension & FDIU) have been up to:

Drs. Moore and Allen gave a number of talks – in Oregon to dairy and goat producers, and on the Westside to sheep, goat and beef producers at the Country Expo in Stanwood. Drs. Moore and Wenz were on the road March 11-15 to bring research results to dairy producers and veterinarians in five Washington locations. Dr. Moore also talked to the WA State Fair Association about biosecurity and disease control at local fairs and livestock exhibitions.



Current Research

Our own Dr. Larry Fox teamed up with investigators from Connecticut to look at a way to reduce bacteria in dairy stall bedding and on teat ends for mastitis reduction.

Proietto RL, Hinckley LS, Fox LK, Andrew SM. Evaluation of a clay-based acidic bedding conditioner for dairy cattle bedding. *J Dairy Science*. 96(2):1044-1053.

This study investigated the effects of a clay-based acidic bedding conditioner on sawdust bedding pH, dry matter (DM), environmental pathogen counts, and environmental bacterial counts on teat ends of lactating dairy cows. Sixteen lactating Holstein cows were paired based on parity, days in milk, milk yield, and milk somatic cell count, and were negative for the presence of an intramammary pathogen. Within each pair, cows were randomly assigned to 1 of 2 treatments with 3-wk periods in a crossover design. Treatment groups consisted of 9 freestalls per group bedded with either untreated sawdust or sawdust with a clay-based acidic bedding conditioner, added at 3- to 4-d intervals over each 21-d period. Bedding and teat ends were aseptically sampled on d 0, 1, 2, 7, 14, and 21 for determination of environmental bacterial counts. At the same time points, bedding was sampled for DM and pH determination. The bacteria identified in the bedding material were total gram-negative bacteria, *Streptococcus* spp., and coliform bacteria. The bacteria identified on the teat ends were *Streptococcus* spp., coliform bacteria, and *Klebsiella* spp. Teat end score, milk somatic cell count, and intramammary pathogen presence were measured weekly. Bedding and teat cleanliness, environmental high and low temperatures, and dew point data were collected daily. The bedding conditioner reduced the pH, but not the DM, of the sawdust bedding compared with untreated sawdust. Overall environmental bacterial counts in bedding were lower for treated sawdust. Total bacterial counts in bedding and on teat ends increased with time over both periods. Compared with untreated sawdust, the treated bedding had lower counts of total gram-negative bacteria and streptococci, but not coliform counts. Teat end bacterial counts were lower for cows bedded on treated sawdust for streptococci, coliforms, and *Klebsiella* spp. compared with cows bedded on untreated sawdust. The clay-based acidic bedding conditioner reduced environmental pathogens in sawdust bedding and teat ends without affecting teat end integrity.

Biosecurity for Cow-Calf Operations

By Drs. A. Allen and G. Barrington



A biosecurity plan is designed to prevent the introduction and spread of disease in a herd, or group of animals. External biosecurity includes practices directed at preventing the entry of new diseases into a herd. Internal biosecurity involves practices that aid in preventing the spread of disease within a group. A basic biosecurity plan in beef cow/calf operations should address risks associated with bringing in new animals, quarantine of new animals, communal grazing practices, and basic hygiene including cleaning and disinfection.

New Animals and Testing -- The primary means of introducing new diseases into a herd is via introduction of new animals into the herd. National studies have

shown that approximately 40% of beef producers imported cattle into their herds, yet rarely did the producers purchasing animals obtain any medical history from the source herds.

Testing imported cattle for diseases can decrease the risk of introducing new diseases. At a minimum, considerations for testing animals should include *when* animal will be tested (prior to or after purchase or shipment), *where* animals will be tested (farm of origin or quarantine facility), and *what tests* will be performed. Determining what diseases to test for should be done in concert with a consulting veterinarian and involve the risk of specific diseases (considering history of past and current diseases of the seller and buyer), as well as the ultimate goals of the buyer. Veterinarians can also provide advice regarding the value of specific testing strategies since testing methods vary in their reliability and no test is 100% accurate.

An alternative strategy to testing imported cattle can involve testing the source herds or only allowing the purchase and importation of animals from certified disease-free herds or herds with low likelihood of disease. Clearly, communication between the purchaser and seller is paramount and should include appropriate detail, transparency, and integrity. The biosecurity policies that are used in source herds should be no less stringent than those ultimately used in the buyer's herd.

Finally, producers may attempt to mitigate the risks associated with importing animals by increasing the use of vaccines. It is important to understand that even under optimal conditions, responses to all vaccines can vary and vaccination cannot fully guarantee protection. Importantly, vaccines must be seen as a part of a complete biosecurity plan, but they cannot replace appropriate management practices.

Quarantine -- Quarantine of incoming cattle may decrease the likelihood of introducing certain diseases into a herd. It is most likely to be effective for diseases with short incubation periods and no inapparent carrier states (e.g. Bovine respiratory syncytial virus, parainfluenza virus-3, Bovine viral diarrhea) but is less likely to be effective for diseases with prolonged incubation periods and inapparent carrier states (paratuberculosis, leukosis, brucellosis, leptospirosis, neosporosis).

Quarantine facilities should be physically separate from the main herd. During the quarantine period, animals need to be monitored for signs of disease. Animals placed in quarantine should all leave at the same time (all-in, all-out). Workers attending quarantined animals should wear protective, washable clothing that is devoted solely to the facility. Ideally, individuals working with quarantined animals should have minimal or no contact with the main herd. If this is not practical, the quarantined animals must be worked with only after tending to the main herd. Equipment and supplies used in quarantine must be devoted to the quarantine facility. A quarantine period of at least 60 days is recommended. This period allows adequate time for identifying diseases with short incubation times, performance and evaluation of tests, and preventative measures such as deworming and vaccinations.

Communal grazing -- Communal grazing of beef cow/calf operations is most prevalent in the Western regions of the United States. Communal grazing increases the risk of disease exposure and transmission through contact with potentially large numbers of animals outside the herd. Cooperative management practices can be incorporated in communal grazing situations that help control the risk of disease transmission. An example includes testing of bulls used in communal grazing for *Tritrichomonas foetus* ("Trich"), combined with the culling of all test-positive animals.

Hygiene -- Appropriate cleaning and disinfection is critical to breaking transmission cycles of disease agents that contaminate housing, feeding and treatment equipment, or other vectors or fomites. Personal hygiene of workers and sound sanitation practices is crucial to stopping the disease transmission between animals (including to and from humans). Personal hygiene should include

frequent hand washing, cleaning and disinfection of boots, and thorough washing of clothing. The most important first step to cleaning any equipment involves the thorough removal of organic debris (feces, urine, milk, saliva, etc.). Thorough cleaning must precede the use of disinfectants since as organic debris can inhibit or inactivate many products. Use of manure-handling equipment to feed cattle can greatly increase the risk of transmitting certain disease agents such as *M. paratuberculosis* and *Salmonella* spp. Avoiding fecal contamination may be important in minimizing the prevalence of pathogens known to infect humans such as *E. coli* O157:H7 and *Salmonella* spp. Lastly, fecal contamination of feed by rodents and domestic animals (dogs, cats) is a risk factor for the transmission of various organisms including *Neospora caninum* and *Salmonella* spp.

Closing thoughts -- The most economically significant infectious disease processes affecting beef calves is acute undifferentiated diarrhea. While no single management system is suitable for all herds under all circumstances, the principals of Radostits and Acres in 1983, are still relevant today. These include providing a calf with a non-contaminated environment, increasing the non-specific resistance of calves (adequate colostrum intake), increasing specific immunity of calves via vaccination (typically of the dam), and reducing stress. Monitoring for dystocia, aiding birth when necessary, ensuring early and adequate consumption of colostrum, and promoting bonding/avoiding miss-mothering are all means of increasing the non-specific resistance of calves.

A more recent and effective means of lessening the impact of calf hood scours in beef herds is through the adoption of the "Sandhills Calving System". Numerous descriptions of this system can be found on the world-wide web by simply searching under the term "Sandhills calving system".

New AVMA Guidelines for Euthanasia

By Dr. D. A. Moore

When I was in practice, for me, euthanizing an animal was agonizing. But, I did see that it was an alternative that was needed to prevent additional animal suffering. I also learned that there are right ways and wrong ways to euthanize an animal. Just recently, the American Veterinary Medical Association provided new guidelines for euthanasia. It is always helpful to review what we are doing on the farm or in practice to make sure we are current with our standards of care, including euthanasia methods. In this note, I will summarize the current AVMA guidelines for adult and young cattle. The full PDF of this large document that covers all species can be found here:

<https://www.avma.org/KB/Policies/Documents/euthanasia.pdf>

The focus of this article will be on cattle because they are often the most difficult to euthanize correctly. They are difficult because of their large body size and skull thickness. The following is a table of the accepted methods of euthanizing adult cattle with specific requirements and their advantages and disadvantages.

Method	Advantages	Disadvantages
Barbiturates	Animal goes from conscious to unconscious smoothly before death	Requires a licensed veterinarian with DEA registration; Good restraint; Cost of the drug
Gunshot	Usually available	Dangerous to have around People; Requires training

*Handguns	.32 to .45 caliber	Limited to close range of 1 to 2 feet; Solid lead bullets only; Not .22 caliber
*Rifles	Can shoot from a distance; >.22 to .308 for adult cattle	Requires solid point bullet; Good aim with experience
*Shotguns	Can use birdshot or slugs; 20, 16, or 12 gauge; shot penetrates but does not exit skull	Close range of 1 to 2 yards; Number 6 or greater shot
Penetrating Captive Bolt	Use pistol-grip on-farm; Induces immediate loss of consciousness; Safer to use around people	Need higher velocity for bulls, larger cattle; Death is not always assured; Need to store and maintain equipment for proper functioning; Needs to be followed by exsanguination or IV KCl to ensure death; Need operator eye and ear protection; Requires animal restraint to place equipment on the animal's head; May require 2 nd or 3 rd shot

Proper placement of captive bolt or gunshot is at the intersection of lines drawn from the outside corner of the eye to the center of the base of the opposite horn (or where the horn would be). The muzzle should be perpendicular to the skull.



Young calves should be euthanized just as the adults, with barbiturates, gunshot or captive bolt. Captive bolt euthanasia still requires a secondary method to ensure death because of the difficulty in hitting the brainstem to achieve respiratory failure. Manual, blunt force trauma to the head is not acceptable because it will not always lead to unconsciousness and death. The major reasons for this are that there is a great degree of variability from time to time, from operator to operator in where the blunt force it applied, and because of the thickness of the calf skull.

As much as we dislike putting animals down, each farm should have a euthanasia plan that includes (1) Criteria for when the decision to euthanize will be made; (2) What method(s) will be used on the farm; (3) Where the procedure will take place; (4) Who is responsible for carrying out the procedures; (5) What the training and retraining plan is; and (6) How animals are to be disposed. Anyone and everyone responsible for the humane euthanasia of cattle should be properly trained and retrained on an annual basis to ensure that the correct, accepted methods are being employed. Farms should enlist the assistance of the farm veterinarian to help develop the plans and provide training.

References

AVMA Panel on Euthanasia. AVMA Guidelines for the euthanasia of animals: 2013 ed. URL: <https://www.avma.org/KB/Policies/Documents/euthanasia.pdf>

Turner PV, Doonan G. Developing on-farm euthanasia plans. Can Vet J. 2010;51(9):1031-1034. (online at: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2920162/>)

What's New at WADDL?

Bovine Leukosis Virus Testing – Bovine Leukosis Virus (BLV) can cause leukemia and tumors in cattle and is a major reason for condemnation at slaughter. Other consequences of BLV infection include inability to export cattle, semen or embryos to some countries, and its affect on the immune system, lost milk production and reproductive inefficiency. Because dairy herds with high infection rates have much lower milk and increased culls, veterinarians are recommending specific testing to assist with control programs.



Cow with large Lymph nodes due to lymphoma caused by BLV infection (USDA).

The manufacturer of the bovine leukosis virus (BLV) antibody ELISA recommends that positive ELISA test results on animals in low prevalence herds or individual animals with high value, be confirmed by another test method. WADDL is now offering a BLV confirmatory Agar Gel Immunodiffusion (AGID) Assay on serum positive by the BLV ELISA at the veterinarian's request. The AGID takes 24-48 hrs to run, please allow the extra time when anticipating results. There will be a charge of \$5.50 (in-state) or \$8.25 (out-of-state) for each serum run by the BLV Confirmatory AGID. Contact the WADDL Consulting Microbiologist at 509-335-9696 or waddl@vetmed.wsu.edu if you have questions.



WSDA Corner

By Dr. Leonard Eldridge, State Veterinarian

Bovine Tuberculosis

In December of 2012 my office received a report of a positive Tuberculosis (TB) cow at slaughter in an Arizona plant. Cattle from a Washington livestock market were among the load of cattle that had multi-state origins and were presented by a buyer that had illegally removed all official identification before presenting the cattle at slaughter. This left only the brand to be able to trace where the cow came from and by the time the TB lesion was detected, the hide had been removed along with the brand. There was no way to trace which state or ranch the cow came from, so tracing was reduced to all cattle that the buyer presented for slaughter that day. We have identified four Washington cattle operations that the cow could have come from and were in the process of determining how we should move forward with testing when we were notified on the 16th of January of another TB positive cow that was identified as a Washington cow at slaughter by United States Department of Agriculture (USDA) officials.

So, for the first time in over 25 years the State of Washington is dealing with a positive case of TB that has been proven to originate from Washington. On Jan. 11 Animal Services received notice of a TB compatible sample from the National Veterinary Services Laboratory in Ames, IA. The sample was collected from a 5 year-old cow culled from a dairy in Moses Lake and processed in Woodland. The first

stage of the tissue testing is very routine. We get hundreds of these surveillance samples in a given year as part of ongoing surveillance for TB. This was a fixed tissue test and further testing with the Polymerase Chain Reaction (PCR) was declared positive on Jan. 16.

At that point I put the California trace on the back burner and WSDA organized a TB testing team on the east side of Washington and a testing team on the west side as well. The west side team is necessary because the source (positive) cow was raised on a dairy in Monroe and sold to the dairy in Moses Lake in January 2012. This dairy subsequently culled her and submitted her to the surveillance at slaughter. There was also a dangerous contact herd of bulls next to the Moses Lake dairy that was issued movement restrictions and tested. At this point in the investigation, testing has been completed on the Monroe dairy, the bull herd and the source herd in Moses Lake. The bull herd and the Monroe dairy were all negative and the source herd had 11 responders. This is a lower than expected rate, as with a typical herd test we would expect to see 1-3%. Due to the discovery of the source animal, all of the responders will be sacrificed. These results, as well as the genotyping of the organism, will determine the extent of the tracing and follow-up testing that will be necessary. I am very concerned as tracing possible sources has been less than accurate because some of the transactions have not been reported either to brand or animal health officials.

The Moses Lake dairy has been placed under a quarantine order, although the milk is allowed to move as this is a conventional dairy and subject to the normal pasteurization process which is highly effective at eliminating the TB organism. TB is considered infectious since it is caused by a live disease-causing organism, but the risk is very low for spread by casual contact. It is however spread by the infective organism being shed in milk and nasal secretions from affected animals-often times before significant clinical signs are noted. This last point along with the fact that the disease is very slow to develop signs makes tracking down the source of the infection difficult. A disease traceability system that follows the movements of individual animals is essential for prompt and efficient epidemiological disease tracing to determine contact herds and potential exposure to the organism. Unfortunately, Washington State has elements of this system but this TB investigation strongly points toward the need of a robust system to trace diseased and exposed animals to minimize the impact of any disease, be it Foot and Mouth disease, Brucellosis, Tuberculosis or a multitude of other animal and zoonotic diseases.

My office has received numerous inquiries about the effect this will have on the TB status of the State a whole. USDA is very close to finalizing the rule regarding positive herds with TB or Brucellosis and the effect on the "status" of the state. No longer will we see "Free" or Class A or B for Brucellosis. Nor will we see TB Free or Modified Accredited Free or lower for TB. Rather the state or region will be evaluated on their response to the outbreak, herd management plans developed and the ability **TO TRACE THE DISEASE**. Failure in one or more of these areas could result in the lowering of the status from "Consistent" to "Provisionally Consistent" or the worst case scenario-"Inconsistent". So far, only the State of Wisconsin has imposed increased testing requirements on all cattle from Washington. Formerly only one TB test was required on all dairy cattle.

What Is Needed for Animal Disease Traceability?

There has been a lot of discussion by the cattle industry on just how much is needed for traceability. We in the Animal Services Division have been working since 2006 on this question and have identified several parts needed from the instructions given by the 3033 committee. The directions were to keep the information secure in a state database, use the existing information we have, use brand as a tool, build on the system as technology improves and as the need is identified, and spread the necessary stable source of funding across the cattle industry so no one individual sector has more burden than another. There should also be a state general fund support since a traceability system supports a safe food supply and addresses zoonotic disease detection and prevention.

There are many parts to a total and efficient Animal Disease Traceability (ADT) system; however, official individual animal identification along with the information when an animal changes ownership within a state, moved across the state line, or at slaughter is the back bone. Brand is a very important tool in providing that information but has limitations at slaughter when the hide and brand are gone before a lesion is detected. My office also does not receive information on brand documents when issued by another state. This presents challenges when feeder and slaughter cattle are moved into the state destined to feeder or slaughter channels and then put back into production because my office has no knowledge of these entries. These cattle then become high risk because they do not meet entry requirements and the possibility for disease and possible disease exposure exists. With no traceability information on these types of cattle, they put the whole cattle industry at risk.

Animal Services has a database to capture the necessary traceability information. We must receive the information to enter into the searchable database in order to prevent animal disease spread and provide confidence to our trading partners and USDA that our animals are free of disease to facilitate free movement.

States are now required to bear the cost for traceability; proving to other states and USDA they can trace diseased and exposed cattle and be able to quarantine and stop movement to prevent the spread of an animal disease. This ability will provide the confidence that other states can accept cattle from our state that are free of disease. A robust ADT system is necessary for me to do this. Beyond my current need to trace animals for disease events, USDA is collecting traceability data from each state to establish traceability performance standards. These activities measure a state's ability to trace the movement of animals backwards or forward as necessary. Animal movement from states that fail to meet performance standards may be associated with greater risk of spreading disease than animal movement from compliant states. States that fail traceability performance standards would be published in the Federal Register and movement restrictions can be applied to their cattle by other states as their state veterinarian determines risk.

I ask we continue with the 2006 recommendations of the "3033" committee, keep ADT information in a database secure in the state, base traceability information on the existing information we have today, and find a stable source of revenue that would withstand the cyclical economic environment of harsh economies such as we are experiencing today.

Electronic Data versus Paper Based

Last month I wrote about how my Animal Disease Traceability program had finalized the electronic Certificate of Veterinary Inspection (eCVI) form. This eCVI is more efficient, it requires movement information entered only one time by an accredited veterinarian, then completed forms can be emailed to our office for easy filing, and a paper copy does not need to be mailed to my office. When my office receives the eCVI by email, the information can be extracted electronically resulting in a reduction in data entry time and keying errors; increasing traceability efficiency.

In January we presented to the cattle industry our proposal on traceability; create traceability efficiencies and eliminate traceability waste through electronic information exchange. This proposal is a two part process and focuses on regulatory animal health information I receive from accredited veterinarians and change of ownership and movement information gathered when cattle are sold. The animal health information is electronically transmitted or hand entered into a database called Animal Tracks. We are currently evaluating a system called Fort Supply Technologies for the Livestock Inspection program. This system captures information at the markets and in the filed electronically.

The initial start up and ongoing costs to move from a paper based system to an electronic system using Animal Tracks and Fort Supply is approximately the same cost I presented in the initial traceability rules for data entry. We are looking at ways that would incentivize accredited veterinarians to use the eCVI versus a paper CVI. This incentive would entail adding the cost to manually enter data for a paper CVI. There would be no cost for using an eCVI because the information would be extracted electronically

and data entry would not be required. We will also save storage space by electronically filing documents versus our current method of housing them in file storage cabinets.

I have watched our surrounding states implement and use the Fort Supply electronic market and field system and use it successfully for traces. For example, my last livestock inspection trace took 16 staff hours; similarly, Oregon that is using the Fort Supply system took only a few minutes for a similar search. The benefits of electronic systems allow me to electronically share traceability information with another state veterinarian when an animal health event occurs.

Continuing Education

Veterinarians

Academy of Dairy Veterinary Consultants Spring 2013 Meeting. April 26-27, 2012, Red Lion Inn, Portland Convention Center. Portland OR. <http://www.vetmed.wsu.edu/orgADVCL/>

Producers

Beef 100 & Pork 100 – Friday, May 17, 2013, Stanwood, WA. For more information:

<http://animalag.wsu.edu/Upcoming%20Events/2013100RegistrationBrochureFINAL.pdf>

Lamb 100 & Poultry 100 – Saturday, May 18, 2013, Stanwood, WA. For more information:

<http://animalag.wsu.edu/Upcoming%20Events/2013100RegistrationBrochureFINAL.pdf>

Send newsletter comments to the Editor:

ag animal health

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