



VETERINARY MEDICINE
EXTENSION

AG ANIMAL *health*

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From the Editor - This fall, we were able to visit with producers at their state conferences. Dr. McConnel was present at the Washington Cattlemen’s Association meeting and we both attended the Washington State Dairy Federation conference. At each meeting, we were excited to hear from producers about what they were doing for their herds, what they were doing for the environment and what they were doing for their businesses. For the environment, water recycling, energy production from manure, and by-product resource utilization are important features of some farms where they are utilizing very new technologies.

The newest member of our team, Dr. Chen, put on the Poultry Institute in November and wrote an article here on how to introduce new chickens to an existing flock.

ag animal health is devoted to the transfer of current, relevant information to food animal owners and veterinarians in the Pacific Northwest.

Curious About Infectious Diseases of Livestock?

Infectious diseases of global importance are monitored and (most often) reported by countries to the OIE or the World Animal Health Association. The disease outbreaks can be seen on their customized mapping system available on their website. For a quiz question: where are we seeing African Swine Fever now?

https://www.oie.int/wahis_2/public/wahid.php/Diseaseinformation/Diseaseoutbreakmaps



To get ready for the future of antimicrobial use and provide veterinarians and dairy producers with practical information on how to implement antimicrobial stewardship on the farm, the California Department of Food and Agriculture has partnered with WSU, WSDA, the University of Idaho and the University of California, Davis, veterinary colleges on a western states conference: ***Partnering for Dairy Antimicrobial Stewardship: A Conference for Farmers and Veterinarians in the West, Friday, April 17, 2020, Portland, Oregon***

This conference is unique in several ways. First, it brings veterinarians and farmers together to examine the practice of antimicrobial stewardship. Second, the conference will have a live program held in Portland, Oregon, for those who are located nearby, but will also be broadcast live to 5 other locations in the West to make it convenient for folks who cannot travel to **Portland**. These remote sites, in **Lynden, WA, Twin Falls, ID, and Orland, Modesto and Fresno, CA**, will be hosted by local collaborators on this project.

Dairy veterinarians and farmers are welcome to attend this day-long meeting focused on the reasons behind and the practical application of antimicrobial stewardship guidelines. For more information and registration: <https://vetextension.wsu.edu/dairy-antimicrobial-stewardship/>

Dairy: What's New on Footwarts?

By Dale A. Moore, Extension Veterinarian, WSU



Back in the day, in the early 1990's, I investigated my first 'heel warts' outbreak at a dairy farm in Pennsylvania. The farmer, the veterinarian and I had never seen the disease before but we had read a little bit about it. It was known by many names: hairy warts, heel warts and strawberry heels. We didn't really know what caused it but we do now and call it bovine digital dermatitis associated with *Treponema*.

Back to the farm. About a third of the cows were lame in this herd of 200 cows. A careful history taking and epidemiologic investigation led to the hypothesis that before the last foot-trimming, the herd had not experienced the problem. The farmer said that in order to round out the trimming day, his uncle asked to bring over a few cows to trim from his herd. (*What principle of biosecurity does this violate?*) Well, his uncle's cows had footwarts and eventually, so did his cows.

In a very recent paper from the UK, Gillespie and others investigated the survival of treponeme bacteria on hoof knife blades and tested different disinfectants to kill this pathogen. This was an experimental trial where they applied two different strains of the bacteria to the hoof knives and then took swabs at various times up to 18 hours. Bottom line - they were able to find the bacteria (by PCR testing) at all time points and could culture them after two hours. We have suspected that this could happen but now have evidence.

Of the five disinfectants evaluated (with 20-second contact times) three were effective at preventing growth of the bacteria. The first was an iodine/alcohol product from the UK. The second was 2% Virkon® and the third was 2% sodium hypochlorite (bleach). Glutaraldehyde and 5% copper sulfate were not effective in this study.

For control and reduction of digital dermatitis prevalence, a recent investigation evaluated almost 2,000 cows (Solano et al., 2017). Using an automated footbath that was about 10 feet long, had two grooves that were about 10 inches wide, each divided by a section that was about 10 inches wide for a total width of 30 inches, and 6 inches high, with weekly 5% copper sulfate solutions provided for 4 consecutive milkings, with the solution replaced at no more than 200 cow passes, investigators were able to decrease digital dermatitis prevalence in the herd. In addition to this footbath protocol, they recommended improving cow area cleanliness to reduce contact with the bacteria and help with skin health.

Bottom line?

- Footwarts is highly contagious and can be carried on hoof knives and other equipment, posing a risk between cows. If you have a “clean” herd, don’t mix them with others.
- Use 2% bleach or Virkon® to disinfect equipment between cows to minimize transmission.
- Consider a regular footbath protocol with a footbath with the proper.
- Keep cow areas clean and dry to maintain cow foot skin condition.

References

Gillespie A, Carter S, Blowey R, Evans N. Survival of Bovine Digital Dermatitis Treponemes on Hoof Knife Blades and the Effects of Various Disinfectants. *Veterinary Record*. November 2019. doi: 10.1136/vr.105406

Solano L, Barkema HW, Pickel C, Orsel K. Effectiveness of a standardized footbath protocol for prevention of digital dermatitis. *Journal of Dairy Science*. 2017;100:1295-1307.

Dairy: The Use of Disease Alerts Generated by Precision Dairy Technology

By Craig McConnel, Extension Veterinarian, WSU

Precision farming is frequently in the news and the use of precision dairy technology is often in the forefront. Yet for many of us there remains some question as to how wearable precision dairy monitoring (PDM) technologies can be used most effectively. An article in press (2019) in the *Journal of Dairy Science* (<https://doi.org/10.3168/jds.2019-16888>) explores this question as it relates to the use of PDM and disease detection.

This study by Eckelkamp and Bewley utilized both neck collars (for eating time) and leg tags (for activity and lying time). Alerts were generated based on an individual cow’s decrease of more than 30 percent in activity, with lying and eating times compared to a 10-day moving average. Producers then sorted alerts based on whether they were perceived to be true and whether the cow should be visually assessed. Over 24,000 alerts were generated as either standalone or a combination of

behavioral changes. Overall, only 8 percent of alerts were doubted by the producers, but 37 percent of alerts were not evaluated at all and only 21 percent of alerts were visually assessed at the cow level. Although there is limited data to compare against, these results are similar to previous findings related to mastitis in which producers checked cows for only 3 percent of alerts even though 40 percent actually corresponded to a mastitis event (Proc. 6th European Conf. Precision Livestock Farming).

The take home message from the Eckelkamp study is that a disease alert system is only as beneficial as producers find it. More to the point, producers were more likely to perceive cow alerts to be true and visually check cows when less than 20 alerts occurred per day, cows were either fresh or in early lactation, alerts occurred during the work week, or when cow alerts were for eating time, activity, or a combination of multiple behaviors. On the other hand, no action was taken in response to an alert for various reasons including the cow undergoing a pen change or dry-off, a veterinary or pregnancy check, or hoof trimming. Additional reasons to take *no action* included an issue with too many cows currently being treated, a lack of time to visually check a cow, a cow already designated for culling, repeat alerts for the same cow, or a cow having been seen in estrus. Ultimately, differences in PDM usefulness were associated both with system performance as well as producer management style and time availability (or lack thereof) for evaluating alerts and checking cows. On one farm in particular the neck collars were unable to monitor fresh cow head movements due to the structure of the feed bunk head-catches that pressed against the neck collar and disabled the triaxial accelerometer.

All in all, the authors concluded that producers may have been more willing to check alerts when the system was still novel, before becoming increasingly comfortable with the system's outcome measures and outside influences (e.g. pen changes, dry-offs, veterinary examinations, etc.). Previous researchers suggested that too many alerts or alerts without a critical change might cause users to ignore those alerts over time (Woodall WH, Montgomery DC. Some Current Directions in the Theory and Application of Statistical Process Monitoring. *Journal of Quality Technology*. 2014;46:78-94). This suggests that technology companies should consider modifying PDM algorithms or alert thresholds to account for additional outside influences that might affect disease alerts. Furthermore, showing only urgent or high-priority alerts (fresh cows, mastitis, or calving alerts for example) might help improve the use of disease alerts particularly in the face of time constraints. Certainly, minimizing data noise from pen changes or scheduled events could help restrict alerts to health-specific behavioral changes and decrease the number of alerts per day and the time needed to evaluate them.

Interestingly, the PDM authors noted that producers were more likely to evaluate eating or activity alerts instead of lying alerts. This may have been due to their familiarity with activity monitoring which has been linked to estrus detection for decades. On the other hand, the high number of lying alerts (9,777) as compared to activity alerts (1,590) may have resulted in a sense of information overload and led producers to associate the high number of alerts with false positive results. Whatever the case, producers will inevitably have different priorities, biases, and management styles that influence their use of PDM.

Eckelkamp and Bewley wrapped up their article by noting that the use of PDM is likely to increase as dairy producers aim for improved efficiency. However, producers may resist adopting technologies unless the benefits are obvious and the technology is easy to learn and use. Accounting for outside influences recorded in herd management software, creating and managing alerts by lactation stage and focusing on behaviors that producers and employees already find useful could improve the use of alerts in the future. Whether a producer already has PDM technology in place, or is considering investing in some, it might be worthwhile strategizing its use on the farm to make the most of the investment.



December 2019 LEADS Graduates

Dairy: LEADS Graduates Ready to Teach Safety

By Amber Adams Progar, Dairy Management Specialist, WSU

Teaching safety to employees can be difficult. It is even more difficult to make safety training fun and engaging. Graduates from the Leaders Enabling Advanced Dairy Safety (LEADS) program learned how to help their employees learn safe practices and received tools they can use on their dairy to make safety trainings more effective. The LEADS training is one part of a larger effort to build a Dairy Safety Network in Washington State. It is a collaborative effort among the Washington State Dairy Federation, University of Washington, and Washington State University.

We held two LEADS training sessions in 2019 and will offer two sessions in 2020. During this 4-hour training, participants learned how an effective safety training could help reduce the incidences of the most common cattle-related employee injuries on Washington dairies. Participants also completed leadership training that prepared them to become the teacher. It is a train-the-trainer program designed specifically for dairy owners and managers.

Our LEADS graduates reported that 100% of them learned something new from the training. We hope you can join us for one of our upcoming LEADS training sessions. Upcoming locations include Moses Lake and Lynden. Please contact me at amber.adams-progar@wsu.edu or 509-335-0673 for more information about LEADS.

Funding and support for this project has been provided by the State of Washington, Department of Labor & Industries, Safety & Health Investment Projects. amber.adams-progar@wsu.edu

Sheep: Can We Feed Our Way to Better Wool?

By Dale A. Moore, Extension Veterinarian, WSU

The production and quality of wool from our fiber-producing species varies with breed, genetics, age, when they are sheared, wool color and management factors. One additional, important factor is nutrition. Whether a producer has a few animals for home-spinning fibers or a commercial flock, nutritional concerns are not just for the growing lamb or late-pregnant ewe. Investigators in Poland reported on an evaluation of supplementation with a chelated zinc-methionine product on wool quality.

A commercial chelated Zinc-Methionine product (Zinpro 100) was fed as a supplement to one group of ewes and not to another group. The zinc content of the experimental diet was almost twice that of the control and the base diet consisted of corn silage, meadow hay, rye straw and barley grain. The investigators looked at differences in wool length, diameter, breaking force, elongation and tensile strength of wool after four months. The thickness, length and breaking force as well as zinc content were all greater in the zinc-methionine supplemented sheep.

It looks as if, all other things being equal, adding zinc to the diet in this chelated form improves the quality of the wool. That said, sheep producers need to ensure their rations are adequate for the stage of production and pregnancy of their flock. In addition, there are many environmental factors that can affect wool quality that must be considered such as wet weather and dust, but the answer to our question is, yes, we can feed for better wool.

References

Wyrostek A, Kinal S, Patkowska-Sokola B, et al. The influence of zinc-methionine bioplex supplementation to pregnant and lactating sheep on selected wool parameters. Arch Anim Breed. 2019;62:99-105.

For evaluating sheep rations, please see the *UME Sheep Ration Evaluator Spreadsheet* at: <https://www.sheepandgoat.com/spreadsheets>

Beef: What Should Cattle Producers Expect From Their Vet? (Reprinted with permission from the author)

By Lee Jones, DVM University of Georgia College of Veterinary Medicine

The veterinary client patient relationship (VCPR) has been getting a lot of attention lately with all the Veterinary Feed Directive discussion. Ask cattlemen what that relationship means to them and you likely will get a range of responses from ‘a vet is an expense’ to ‘a vet is a good investment’ to ‘my vet is important to my operation.’ To me a VCPR can be described in 5 P’s: protective, prevention, proactive, productive and profitable.

Having a relationship with a good cattle vet protects your assets. Many good cattle vets care about their client’s herd almost as much as if it was their own. Whether it’s recommending a biosecurity plan, identifying on farm herd health risks or maintaining vigilance to head off introduction of foreign animal diseases, cattle vets are at the forefront of protecting their client’s herd and our national cow herd. Accredited cattle vets are part of a communication network and notified by USDA if there is a regional contagious threat to their client’s cattle herds. Also, if a veterinarian is aware of a danger or risk to livestock in the area, he/she can alert the producer to take adequate precaution.

Modern cattle vets have moved away from the traditional ‘fire engine’ practice of emergencies or treating sick towards more preventive health programs. Prevention is more than just vaccinations; it includes good herd nutrition (including vitamins and minerals), timely herd checks, effective receiving programs, biocontainment plans and quick intervention to check additional problems. The old adage “an ounce of prevention is worth a pound of cure” is still just as true as ever. Emergencies happen and cattle get sick and require attention so veterinarians need to be available when clients and patients need their help, but an effective prevention program reduces the frequency of these events. An effective prevention plan saves labor and money, improves production, and reduces the need for antimicrobials.

Good cattle vets are proactive. Whether it’s dealing with potential risks on the farm or educating clients on Beef Quality Assurance (BQA) and new vaccine strategies, good cattle vets are on the

cutting edge of beef production and health. Client communication and education can be chuteside, during a farm walk-through, or through client education meetings with regional or industry experts.

Helping clients explore and implement new technologies or adapt new management strategies is an important part of high quality veterinary service. Veterinarians have access to a wide network of experts and colleagues. They can use these networks to learn about new technologies or management techniques to improve client's herd health and production.

Veterinarians are another set of eyes and may see parts of client's facilities or operation that could be improved. Producers can be proactive too by asking their vet's opinion on things like low stress handling, facility design, reducing antimicrobial use, fetal programming, heifer development and reproductive efficiency, effective receiving program, implant strategies, etc.

A healthy herd is a productive herd. The purpose of a herd health program is to achieve herd production goals. Modern veterinary medicine focuses on production medicine and management. Cow herd fertility is essential for success of the cow-calf producer. Strategic procedures like bull breeding soundness exams, heifer development program, pregnancy diagnosis, and selective culling improve the efficiency and productivity of cow herds.

Profitability is essential. The relationship has to be a win-win for the cattleman and their veterinarian. Cattlemen have a lot invested in their cattle enterprises and veterinarians have a lot invested in their educations and veterinary businesses. Any good veterinarian knows their client's success is also his or her success. Veterinarians that are good business people often make good business recommendations to their clients. Herd health recommendations have to be economical and effective.

Most cattle veterinarians that I know try to bring real value to their client's operations. If your relationship with your current veterinarian is getting the job done don't be afraid to ask their opinion about what they think you might do better. If you're not satisfied you are getting good value from your current relationship, then don't hesitate to bring it up and talk about what you want from them. The best trait a good vet can have is the ability to listen to you. After all, it's your operation and your goals.

Beef: Heritability of Immune Competence

By Dale Moore, Extension Veterinarian, WSU



Immune competence is the animal's ability to mount an effective immune response in the face of a disease agent challenge or vaccination. In beef cattle, this is particularly important for clinical problems such as Bovine Respiratory Disease (BRD) when the stressors associated with weaning and transport to the salesyard or feedlot can reduce calves' ability to resist challenges to respiratory pathogens. In a recent paper from the *Journal of Animal Science*, investigators evaluated 1,100 Angus calves for measures of immune competence and estimated genetic parameters for immune competence.

During the weaning period, when calves were 5 to 9 months of age, blood was taken to assess antibody-mediated immune responses and skin testing was done for cell-mediated immunity (CMI) evaluation. Calves were put into immune competence groups of High, Average and Low based on the measurements. Flight-time testing and “crush score” were evaluated as measures of calf temperament and calves were weighed periodically to assess average daily gain (ADG). Crush scores were evaluated over 30 seconds of placement in a chute with scores of 1 (calm, no movement) to 5 (rearing, twisting of the body, or violent struggling). Average daily gain during the yard weaning period was used as an indirect measure of management-induced stress.

All the data were compared and heritability estimates calculated. Both the antibody and cell-mediated immune competence traits were heritable (at about 30%) and were positively genetically correlated ($r=0.48$). This means that there is opportunity to select for cattle with better immune competence even when under the stress of weaning. Study results also suggested evidence that selection for production parameters, without regards to health and fitness traits, can potentially lead to increased disease susceptibility in the cattle population.

When looking at temperament, there was a significant correlation between flight time and immune competence but not crush score and immune competence. Also, high immune competence category animals (based on cell-mediated measurements but not antibody mediated measurements) had the greatest ADG. “...these results suggest that selection for immune competence in Angus beef cattle may result in additional indirect benefits for beef producers, which are realized through improvements in temperament and stress-coping ability, and which, when combined, are expected to enhance the ‘general resilience’ of animals in their herds.”

Reference

Hine BC, Bell AM, Niemeyer DDO, et al. Immune competence traits assessed during the stress of weaning are heritable and favorably genetically correlated with temperament traits in Angus cattle. *Journal of Animal Science*. 2019;97:4053-4065.

Poultry: Introducing New Chickens into an Existing Flock

By Laura Chen, Branch Chief, WADDL-AHFSL

“All in, all out” management is defined by farms that only house animals from a single source and of a single age at one time. Between flocks, there is often a fallow period to reduce the environmental harborage of viral and bacterial infectious agents. The benefits include a more stable social structure; reduced disease pressures; and improved nutrition and management for specific life stages. While “all in, all out” management is standard among larger scale poultry operations, mixed age and mixed source flocks are much more commonplace in smaller scale and backyard farms. Though not ideal, proper planning and management can mitigate some of the risks.

Source of Incoming Birds

Whether starting a new flock or adding to an existing flock, chicks and chickens should come from a reputable flock, breeder, or hatchery. Ideally, such poultry sources participate in the National Poultry Improvement Plan, a voluntary program that can certify freedom from certain (not all) significant poultry diseases. Additional documentation that these sources should be able to provide include previous disease testing results, vaccination history, and onsite biosecurity protocols.

Though not uniformly risky, sources from Craigslist, Facebook, auctions, and poultry swaps should be approached cautiously.

Quarantine Period

Once the new birds arrive on-site, they should not immediately co-mingle with the existing flock. Rather, they should be quarantined for a minimum of 30 days in a separate area that prevents contact with existing flock members. During this time, the newcomers should be monitored for symptoms of disease. Common infectious agents among small scale and backyard chicken farms include internal gastrointestinal parasites, ectoparasites, and viral/bacterial respiratory diseases; organ systems affected by these agents should be more rigorously monitored.

During the quarantine period, daily husbandry of the existing flock should be completed prior to that of the newcomers. Between handling of the two groups of birds, clothing and footwear should be changed or cleaned and disinfected to prevent cross contamination.

Prior to co-mingling the two groups of birds, diagnostic testing for common infectious agents may be warranted, depending on the health standards of the existing flock.

Co-mingling Birds and Disrupting the Social Hierarchy

After the quarantine period has been completed, the next big hurdle is the actual introduction of newcomers to the existing flock and the resulting disruption to the social hierarchy, a.k.a. pecking order. There are many successful methods reported; the common goal among all of them is to reduce aggression and injuries during the instable social structure and allow all chickens access to food, water, and shelter. Broad guidelines to this process include:

- (1) If the newcomers are chicks or young chickens, it is best to wait to integrate them into the flock until they are approximately similar in size to the other flock members.
- (2) If possible, housing newcomers adjacent to and within sight of the existing flock but still physically separated for 1 to 2 weeks can allow for a safer adjustment period without the risk of physical injury.
- (3) Ensure that there are adequate amounts of feed, feeder space, water, waterer space, and nest space to minimize competition among birds.
- (4) Closely monitor the flock for any evidence of bullying or aggression. If a bird becomes injured, rapid identification of the injury, first aid, and/or removal of the bird from the flock may prevent further problems.

Interested in additional resources to keep your flock healthy and safe? Check out the “Defend the Flock Resource Center” from USDA-APHIS at

<https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information/avian/defend-the-flock-program/df-resources>

What’s New at WADDL? Epizootic Hemorrhagic Disease Virus testing

The Washington Animal Disease Diagnostic Laboratory (WADDL) is now offering Epizootic Hemorrhagic Disease (EHD) serologic testing by competitive ELISA for individual animal (sheep, cattle, goat, deer, bison, etc.) exposure and herd surveillance, and testing for interstate and international export. The test is designed to detect antibodies against the EHD virus VP7 protein in serum or plasma of all susceptible species with nearly 100% sensitivity and specificity, and less than 1% cross-reactivity with antibodies to the Bluetongue virus.

Per OIE 2018, a competitive ELISA that can detect antibodies specific to the EHDV VP7 protein is currently the preferred serologic technique. The VP7 protein of EHD virus (EHDV) is highly conserved among all EHDV serotypes tested to date. While having broad detection of EHDV, this new ELISA test offers the advantage of having very low cross reactivity with antibodies to the Bluetongue virus, which is a main limitation of other tests methods such as AGID. If you have questions regarding testing for EHD visit the WADDL “Tests and Fees” page on our website and search for EHD or contact WADDL at (509) 335-9696.



WSU Ag Animal Faculty Research Updates

(1) Kasimanickam R1, Kasimanickam V2, Grende K. Endometrial expression of various genes (ISGs, PPARs, RXRs and MUC1) on day 16 post-ovulation in repeat breeder cows, with or without subclinical endometritis. *Theriogenology*. 2019 Nov 2. pii: S0093-691X(19)30490-X. doi: 10.1016/j.theriogenology.2019.10.036. [Epub ahead of print]

Our objective was to elucidate differences in endometrial mRNA expressions of interferon-stimulated genes (ISG15, CTSL1, RSAD2, SLC2A1, CXCL10, and SLC27A6), peroxisome proliferator activated receptors (PPARA, PPARD, and PPARG), retinoic acid receptors (RXRA, RXRB, and RXRG), and mucin 1 (MUC1) in repeat breeder cows, with or without subclinical endometritis (RB + SE and RB, respectively) and normal cows on day 16 post-ovulation (n = 4 cows per group). The CXCL10 and SLC27A6 mRNA abundances were greater for normal cows compared to RB and RB + SE cows ($P < 0.05$ and $P < 0.01$ respectively) whereas ISG15 and SLC2A1 mRNA abundances were greater for normal cows compared to RB + SE ($P < 0.05$). The SLC27A6 mRNA abundances were greater for RB versus RB + SE ($P < 0.01$). Similarly, PPARD, PPARG, RXRA and RXRG mRNA abundances were greater for normal cows compared to RB and RB + SE ($P < 0.01$ and $P < 0.05$, respectively). Abundances of PPARD, PPARG, RXRA and RXRG mRNA were greater for RB versus RB + SE ($P < 0.05$) and MUC1 was lower in abundance in normal cows compared to RB or RB + SE ($P < 0.05$). Key predicted molecular functions were binding, signal transducer and transporter; key biological processes were cellular, localization and metabolic; key cellular components were cell part, membrane and organelle components; and key protein classes were nucleic acid binding, receptor, and transcription factors. Gene networking analysis highlighted interactions and pathways involving PPARs, RXRs, and MUC1, notably among PPARD, PPARG, and MUC1. In conclusion, endometrial mRNA expressions of ISGs (CXCL10 and SLC27A6), PPAR isomers (PPARD and PPARG), and RXRs (RXRA and RXRG) were in lower abundances, whereas MUC1 expression was more abundant in RB or RB + SE compared to normal

cows on day 16. In addition, ISG15 and SLC2A1 genes were less abundant in RB + SE versus RB or normal cows. **Altered expression of these uterine genes and associated potential impairment in embryo elongation and implantation may promote embryonic loss in repeat breeder cows.** Furthermore, interactions among PPARD, PPARG and MUC1 may be therapeutically exploitable.

(2) Kamath PL, Manlove K, Cassirer EF, Cross PC, Besser TE. Genetic structure of *Mycoplasma ovipneumoniae* informs pathogen spillover dynamics between domestic and wild Caprinae in the western United States. *Sci Rep.* 2019 Oct 25;9(1):15318 doi: 10.1038/s41598-019-51444-x. Spillover diseases have significant consequences for human and animal health, as well as wildlife conservation. We examined spillover and transmission of the pneumonia-associated bacterium *Mycoplasma ovipneumoniae* in domestic sheep, domestic goats, bighorn sheep, and mountain goats across the western United States using 594 isolates, collected from 1984 to 2017. Our results indicate high genetic diversity of *M. ovipneumoniae* strains within domestic sheep, whereas only one or a few strains tend to circulate in most populations of bighorn sheep or mountain goats. These data suggest domestic sheep are a reservoir, while the few spillovers to bighorn sheep and mountain goats can persist for extended periods. Domestic goat strains form a distinct clade from those in domestic sheep, and strains from both clades are found in bighorn sheep. The genetic structure of domestic sheep strains could not be explained by geography, whereas some strains are spatially clustered and shared among proximate bighorn sheep populations, supporting pathogen establishment and spread following spillover. **These data suggest that the ability to predict *M. ovipneumoniae* spillover into wildlife populations may remain a challenge given the high strain diversity in domestic sheep and need for more comprehensive pathogen surveillance.**

WSDA Corner



Interested in Becoming a Private Field Livestock Inspector?

Robbie Parke, Livestock Identification Program Manager

Licensed veterinarians and field inspectors interested in obtaining authorization to issue WSDA livestock inspection certificates can now apply and enroll in upcoming training sessions through the agency's website. Applicants who complete training and pay a \$60.00 application fee can receive certification to inspect cattle and horses and issue livestock inspection certificates. Training includes reading of brands or other marks on animals, reading electronic official individual identification, completing official documents, and learning the livestock inspection regulations.

Additional information, application form, and scheduled training sessions are listed on our website at <https://agr.wa.gov/> on the Livestock Inspection page. For additional information, please contact Brennan Kimbel at 360-902-1808 or by email at bkimbel@agr.wa.gov.

Bringing Cattle Transaction Reporting into the Information Age

Chris McGann, Media Relations Coordinator

The Washington State Department of Agriculture (WSDA) is now offering Washington ranchers a quicker, more cost-effective way to report cattle sales and out-of-state movement of their cattle through WSDA's Electronic Cattle Transaction Reporting (ECTR) system.

Previously, beef producers had to pay fees and travel expenses for state inspectors to make in-person visits when cattle were sold or moved out of state. The on-line ECTR system was previously available only to dairy producers. This year, as part of an industry-led push to modernize the state's cattle identification system, WSDA expanded the ECTR system allowing cattle owners to

electronically report ownership changes and out-of-state movement. “Expanding the ECTR system is a major step toward simplifying and streamlining reporting requirements that increases efficiency and reduces costs for our producers as well as our agency,” WSDA Director Derek Sandison said. “It demonstrates important progress toward synchronizing the industry and government with today’s technology.”

Cost Savings Cattle producers using ECTR to report ownership changes and out-of-state movement could save up to 39 percent compared to using traditional livestock inspections. For example, if a rancher records the sale of 10 branded cattle with a traditional livestock inspection, the sum of the required fees would total nearly \$50. The fees associated with a comparable sale for a rancher using the ECTR system total about \$30. The updated system came online earlier this month in a soft launch that provided time to make sure the custom software, that includes the ability to upload proof of ownership documents, was working smoothly. Now, with several successful registrations in the system, WSDA’s Animal Services Division is promoting ECTR to increase usage.

In addition to cost savings associated with change-of-ownership and out-of-state-movement transactions, the first producers who enroll in the system are eligible to receive free 840 RFID tags, which are required to use ECTR. Producers with herds of 50 head or fewer will be eligible to receive 40 tags and one applicator. Those with herds of more than 50 qualify to receive 100 tags and one applicator.

Requirements: All cattle that are reported in ECTR must have an official electronic individual identification (840 RFID) tag. A premises identification number is required to obtain 840 RFID Tags. WSDA adopted ECTR application, licensing and reporting fees through a rule that went into effect October 24 authorizing the new ECTR system for use by cattle owners. The ECTR fee is currently set at \$1.30 per head, and the system operates on a cost-recovery basis. By rule, WSDA will set the fee to match, as closely as possible, the costs associated with operating the program. For more information about ECTR, contact WSDA’s Animal Services Division at ectr@agr.wa.gov or (360) 902-1855.

Continuing Education

Veterinarians

WSU CVM Spring Conference, March 27-29, 2020. SAVE THE DATE! Pullman, WA. For updates visit: <https://cvme.vetmed.wsu.edu/>

Dairy Antimicrobial Stewardship Conference, April 17, 2020, Sheraton Airport, Portland OR. <https://vetextension.wsu.edu/dairy-antimicrobial-stewardship/>

Academy of Dairy Veterinary Consultants Spring Meeting, April 18, 2020, Sheraton Airport, Portland OR. <https://academyofdairyveterinaryconsultants.org/>

Producers

Pacific Northwest Animal Nutrition Conference, January 13-14, 2020, Grove Hotel, 245 S Capitol Blvd Boise ID, <https://www.pnwanc.org/2020/>

GUESS THAT BREED!

The Answer will be posted on the VME Homepage, under Newsletters:
<https://vetextension.wsu.edu/>



Visit our website for information on current research projects and outreach materials for veterinarians and producers! <http://vetextension.wsu.edu/>

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