

Ag animal health VETERINARY MEDICINE EXTENSION

WSU Extension & College of Veterinary Medicine, Washington State University



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From the Editor

We've all seen the videos of cows at the slaughter plant and at the salesyards. We experienced the largest beef recall in history as a result. But what of our markets for food animal products in the future? How do we let consumers know that the vast majority of producers are keen stewards of their animals and care about the quality of the products coming from them? One way that many states have promoted quality beef is through Beef Quality Assurance (BQA) programs. The State of Washington is no different. Industry representatives, county extension faculty, producers and faculty at WSU have worked to gain funding and develop a new BQA program for cattlemen and women. We have done this in cooperation with other states in the western region with support from the national BQA program.

Some of the highlights of what we have for producers and veterinarians:

- ◆ BQA educational program website for the western region so that each state is teaching the same thing and certified producers will be recognized by western region state BQA programs. <http://www.bqa.wsu.edu>
- ◆ Educational materials on how to write Standard Operating Procedures for cow-calf operations and an online educational program that explains the concepts <http://www.bqa.wsu.edu/states/wa/modules.htm>

- ◆ A cow-calf herd notebook soon to be released for use by cattlemen and women across the state. The notebook will have similar information as the NCBA Red Book but a lot more, including animal health records.

What are we missing at this point? We're missing the completion of our many BQA projects by certifying every cattle producer in the state! To help us reach this goal, look to your county extension for future meetings on BQA certification over the next year.



Featured Faculty — Dr. John Gay

Dr. Gay is an Associate Professor in the Field Disease Investigation Unit at WSU. His focus is teaching herd health and epidemiology. He is currently working on a new curriculum plan for teaching ag animal health and has a web-site devoted to evidence-based medicine and epidemiology.



<http://www.vetmed.wsu.edu/courses-jmgay/>

Recruiting Ag Animal Veterinarians

Although overshadowed by current farm worker shortages, recruiting college students to agriculture is an emerging problem not just for the veterinary profession but all of production agriculture. Solving this deficit through increased recruitment is an issue for both veterinary schools and colleges of agriculture. The adverse effects of the lack of college graduates are increasing across all of production agriculture from livestock to crops and, given the increasing complexity of the problems agriculture faces, will become critical if the trend is not stopped and reversed.

Behind the current farm worker shortage is a looming college-educated manager shortage. Earlier this spring I met the manager of a large farm producing commodities destined primarily for human foodstuffs. To give an idea of this family corporation's scale, the irrigation system included over 200 center pivots. When asked what was preventing the farm from meeting its expansion goals, without hesitation he responded "the lack of college graduates". Continuing, he explained that the critical bottleneck is the lack of college graduates with knowledge of agriculture that are employable as middle managers. He can hire enough farm workers but he can't find the people to manage them. The manager himself is farm born and raised, has a college business degree and was pursuing a successful industrial career before being recruited back to agriculture.

The flow from traditional sources of college students intent on careers in production agriculture has diminished below sustainable levels. Recently a successful veterinarian in his third decade of dairy practice related that a group of seasoned dairy practitioners had discussed the problem of recruiting their replacements. They realized they all had a common reason for entering dairy practice - they had grown up on dairy farms that were too small to support more than one family, they all had an older sibling already in line for taking over the family operation, and from a young age they understood that they had to do something else. For them, that was becoming a dairy veterinarian to maintain contact with agriculture and the rural life they had grown up with. But they also observed that among their dairy clients sibling crowding is no longer common, and most farms are sufficiently large to employ all family members who wish to return, many generating sufficient resources to expand onto large farms of their own.

These are manifestations of several megatrends, the biggest of which is the shift of the US population away from agriculture into urban life. For the most part, the farm ground is still being farmed and livestock are still being raised; it's just that most of the farms doing so are far larger and the productivity per farmer is far higher. As a consequence of fewer families directly involved in agriculture, that pool of youth who were crowded off the family farm and had to find something else to do, is now much smaller and insufficient to meet the needs they traditionally filled. The dairy practitioners mentioned are members of the "baby boomer" generation, the parents of whom were among the 40% of the population growing up on farms. In sharp contrast, children of "baby boomers" are

now three generations removed from agriculture.

That student recruitment to agricultural disciplines was not actively done did not matter historically. Because college represented a valued stepping stone to adulthood, good students with farm backgrounds usually went off to college, a significant proportion of those to land grant universities. Because of the numbers, it did not matter that a large number were lost to non-agricultural majors. Traditional production agriculture disciplines such as soil, crop and animal science were assured an adequate supply of students from farm backgrounds, with a significant proportion intending to return to the farm and another group pursuing allied careers such as ag animal veterinary



medicine. Clearly, this is no longer the case. A further consequence of the increasing scale of production agriculture is labor specialization that shifts toward employees rather than family members having specialized production skills. Now the more common case is that capable youth from families owning large farms are pursuing traditional business disciplines, such as accounting or law, to manage the farm more like a conventional business, rather than developing specialized production skills in the agriculture. Family members are more likely to obtain MBA's than a degree in an agricultural discipline.

A direct result of the declining farm population is a broader focus by traditional entities, like 4-H, through which farm youth became familiar with opportunities for obtaining a college education in an agricultural discipline. A quick perusal of the national 4-H website reveals little to suggest its former strong relationship with agriculture. Similarly, traditional agriculture-related college departments have had to broaden their appeal or disappear. Crop science departments now have major enrollments in turf grass management and urban horticulture. Although a significant proportion of animal science majors intend to pursue careers in veterinary medicine, the majority of these are interested in species other than ag animals and many departments now include courses pet husbandry and nutrition, reflecting student interest. As a consequence, departmental enrollments are not good indicators of interest in production agriculture.

From where do future ag animal veterinarians likely come? The answer is from where they have always come: rural communities. I've collected data on backgrounds and career expectations of veterinary students and observed that with few exceptions veterinary students interested in ag animal veterinary medicine grew up in rural areas, not necessarily on farms, and majored in animal science. Very few come from urban or suburban backgrounds or from other majors. On this basis I believe the most likely prospect to recruit to production agriculture and then ag animal veterinary medicine is a student attending high school in a rural community, one familiar with farms and one who has spent a significant amount of time out of doors working, recreating or playing sports. I suspect that expecting to convert youth not experienced with outdoor environments of typical farms to production agriculture and ag animal practice is unreasonable, particularly if most of their exposure to weather is during short dashes between controlled environments of houses, cars, etc.

Successfully recruiting such students from outside the traditional "farm kid" pipeline will not be easy. However, higher education and production agriculture must make a positive appeal to potential candidates on the basis of their family's values while they are still in high school. As production agriculture is essentially applied biology, science teachers need to be part of this recruitment effort. Every college graduate engaged in production agriculture should have as a personal mission recruitment of at least two youth to replace them. However, the public's negative image of production agriculture, which lays somewhere between the "American Gothic" (1930, Grant Wood) image of small family farms and the "featherless chickens, legless cows" factory farm image of large scale production agriculture, remains a problem.

On the other hand, the sizzle is in the unprecedented challenges and opportunities facing production agriculture over the coming decades. Next to air and water, food is critical for human survival and parts of the world are already continually at risk of falling seriously short. With the global human population projected to increase by 50% to over 9 billion within the careers of current students, food demand will also increase. The challenge will be producing food in an era of increasing global competition for resources, some of which are scarce. Neither conventional nor organic agriculture as currently practiced are sustainable in the face of these global trends. The winners in production agriculture will be those enterprises that meet consumer requirements for socially responsible agricultural production, with ethical, legal, environmental and community dimensions, done in a sustainable manner.

To broaden the pool of potential students, colleges of agriculture and veterinary medicine must concentrate on first recruiting students to careers in production agriculture. Colleges should provide a common entry point for all students interested in production agriculture and begin with a systems approach integrating primary agricultural disciplines. The really gnarly problems of production agriculture are systems problems not solvable with

single-discipline approach. On the livestock side, once they have a broad understanding of agricultural systems within the context of the environment and human systems, they must acquire an in-depth understanding of livestock production systems which includes coursework in nutrition, reproductive physiology, production management and agribusiness, particularly human resources, finance and marketing. Students interested in careers livestock production agriculture, whether as producers, herdsman, in allied industry such as the feed business, or veterinary medicine should follow a common curricular pathway. Included in this curriculum would be a requirement to gain hands-on experience working with employees in all segments of large livestock operations.

On the veterinary side, admissions requirements for ag animal veterinary medicine must reflect the need for a strong foundation in livestock production agriculture acquired prior to admission. General admissions requirements for veterinary experience should be replaced by a specific requirement for "hands on" experience on large livestock production units. In a recent survey of ag animal practitioners a majority responded that significant hands-on experience working in each segment of large livestock production units is essential. Other admissions requirements will likely need to be changed as well. Cornell University has pioneered moving beyond using just grades and test scores as the basis for admission to include the use of evidence of career interest and work ethic.

All facets of production agriculture face a deficit of college graduates which will have serious consequences on food production if not corrected. Recruitment of good high school students from rural environments into production agriculture must be improved. Prior to enrolling in veterinary school, these students should have a solid understanding of livestock production systems and "hands-on" experience on livestock production units. Veterinary schools will likely have to adjust admission policies to select the strongest applicants interested in pursuing careers in ag animal practice.

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Lameness in dairy cattle—it's not too hard to identify; not too late to start prevention

From Dictionary.com: lame¹

—adjective

1. crippled or physically disabled, esp. in the foot or leg so as to limp or walk with difficulty.
2. impaired or disabled through defect or injury: a lame arm.
3. weak; inadequate; unsatisfactory; clumsy: a lame excuse.
4. Slang. out of touch with modern fads or trends; unsophisticated.

—verb (used with object)

5. to make lame or defective.

—noun

6. Slang. a person who is out of touch with modern fads or trends, esp. one who is unsophisticated.

If referring to lameness in dairy cattle, we could use almost all these definitions. By the end of this article you will understand what lameness means to the dairy cow and the dairy herd, how to detect it so that you are not out of touch with lameness in the herd, and what to do about it.

Lameness is a welfare issue -- Lameness in dairy cattle is an animal welfare issue and its prevalence has become part of farm welfare assessments and audits by numerous auditing groups because it represents pain to the cow.² But, in addition to this serious aspect of the condition, lameness in a dairy herd can also have profound effects on production, reproductive performance, and premature culling.

Milk production -- In a 2008 *Journal of Dairy Science* paper, the estimated losses associated with lameness were 314 and 424 kg/cow (around 800 lbs) per 305-d lactation.³ In a study of specific causes of lameness on milk yield in the UK, "cattle which developed sole ulcer (SU) and white line disease (WLD) were higher yielding cattle before they were diagnosed. Their milk production fell to below that of the mean of unaffected cows before diagnosis and remained low after diagnosis. In cattle that developed digital dermatitis (DD) there was no significant difference in milk yield before treatment and a slightly raised milk yield

immediately after treatment. The estimated milk loss attributable to SU and WLD was approximately 570 and 370 kg, respectively"⁴, again, about 800 lbs per lactation. The effects on milk production appear to be real effects and represent lost opportunities and dollars for producers.

Reproduction -- Newer work from Cornell evaluated the association of locomotion score in the first 70 days in milk and pregnancy. Data from over 1700 cows revealed that those with a locomotion score greater than 2 (on a scale of 1-5) were at a 15% lower risk of becoming pregnant and 24% lower risk if the cow was favoring a limb or was non-weightbearing.⁵ The lameness scoring system commonly used now was actually developed and evaluated in dairy cattle reproduction research.⁶ With a mean lameness score greater than 2, cows had higher days to first service, more services per pregnancy and were more likely to become a reproductive cull.

Culling -- In a recent study, lameness increased the rate of culling or death in dairy cattle by over 45%.⁵ In a Canadian study, cows identified as lame by the foot-trimmer had a 30% increased risk of culling. The highest rates of culling were for cows with sole hemorrhages (32%), sole ulcers (34%), white line abscesses (46%) and white line separation (69%) -- all signs of laminitis.⁷

How do we identify lameness early? -- Visual locomotion scoring is better at detecting lameness than an automated weight/plate scoring system.⁸ The system widely used in welfare assessments and research evaluates the body position of a cow standing and walking. Locomotion scoring to detect lame cows is relatively simple and easy to learn. Videos of different scores can be found at: http://www.zinpro.com/ASPX_Main/en-US/species/dairy/lameness.aspx

- 1= cow has a flat back at standing and while walking
- 2= cow has flat back while standing but arches at a walk
- 3= cow has an arched back when standing and walking
- 4= cow favors one limb (limping)
- 5= cow will not bear weight on one limb

Use the score of 3 to detect lame cows (those with an abnormal gait) early.

All is not lost: keep on trimmin' and give them some space - Several recent studies have looked at management practices that would reduce a cow's risk for becoming lame. In Florida, they were able to decrease the number of new cases of late-lactation lameness in dairy cattle by trimming them in mid-lactation.⁹ In Pennsylvania, cows trimmed 3 times per year were 52% less likely to develop sole ulcers compared with cows trimmed once per year.¹⁰ Stall design can also affect the development of lameness in cows. Small free stalls and those with high slopes increased the incidence of lameness and hock lesions in dairy cattle in the UK.¹¹ "...the rate of new cases of lameness can be reduced to very low levels provided time spent resting per day is maximized through good stall design, access to stall through stocking density control and comfortable transition cow facilities..."¹² Stall use decreases as stocking density increases beyond 113%.¹³ And, the more time cows are on concrete, the more likely they are to develop lameness.

Regular trimming, more than what currently happens with confined cows, and more resting time through decreased stocking density and improved stall design will be important to prevention of lameness in the dairy herd. You can use locomotion scoring to detect lame cows early (greater than a score of 2) and get them into the hoof trimming chute.

Reference List

- (1) lameness. Dictionary.com [Dictionary.com Unabridged (v 1.1)]. 2008. Random House, Inc. 7-30-2009.
- (2) Whay HR, Main CJ, Green LE, Webster JF. Assessment of the welfare of dairy cattle using animal-based measurements: direct observations and investigation of farm records. *Vet Rec.* 2003;153:197-202.
- (3) Bicalho RC, Warnick LD, Guard CL. Strategies to analyze milk losses caused by diseases with potential incidence throughout lactation: a lameness example. *J Dairy Sci.* 2008;91:2653-2661.
- (4) Amory JR, Barker ZE, Wright JL, Mason SA, Blowey RW, Green LE. Associations between sole ulcer, white line disease and digital dermatitis and milk yield of 1824 dairy cows on 30 dairy cow farms in England and Wales from February 2003-November 2004. *Prev Vet Med.* 2008;83:381-391.
- (5) Bicalho RC, Vokey FJ, Erb HN, Guard CL. Visual locomotion scoring in the first seventy days in milk: impact on pregnancy and survival. *J Dairy Sci.* 2007;90:4586-4591.
- (6) Sprecher DJ, Hostetler D, Kaneene JB. A lameness scoring system that uses posture and gait to predict dairy cattle reproductive performance. *Theriogenology.* 1997;47:1179-1187.
- (7) Cramer, G, Lissemore, K. D., Kelton, D., Guard, C. L., and Leslie, K. The association between hoof lesions and culling in Ontario dairy cows. *J Anim Sci* 84[Suppl. 1], 8-9. 2006. Abstract.
- (8) Bicalho RC, Cheong SH, Cramer G, Guard CL. Association between a visual and an automated locomotion score in lactating Holstein cows. *J Dairy Sci.* 2007;90:3294-3300.
- (9) Hernandez J, Garbarino EJ, Shearer JK, Risco C, Thatcher WW. Evaluation of the efficacy of prophylactic hoof health examination and trimming during mid-lactation in reducing the incidence of lameness during late lactation in dairy cows. *J Am Vet Med Assoc.* 2007;230:89-93.
- (10) Smith BI, Kristula MA, Martin D. Effects of frequent functional foot trimming on the incidence of lameness in lactating dairy cattle. *Bovine Practitioner.* 2007;41:138-145.
- (11) Haskell MJ, Rennie LJ, Howell VA, Bell MJ, Lawrence AB. Housing system, milk production, and zero-grazing effects on lameness and leg injury in dairy cattle. *J Dairy Sci.* 2006;89:4259-4266.
- (12) Cook NB, Nordlund K. The influence of the environment on dairy cow behavior, claw health and herd lameness dynamics. *Vet J.* 2007;Nov 5.[E Pub]
- (13) Krawczel PD, Hill Ct, Dann HM, Grant RJ. Short communication: effect of stocking density on indices of cow comfort. *J Dairy Sci.* 2008;91:1903-1907.

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Spring 2008 BVD Control & Eradication Testing Results

The BVD Control and Eradication Project (BVDCEP) is a joint effort of WSU Extension, Vet Clinical Sciences, Animal Sciences and the Washington Animal Disease Diagnostic Lab funded through WSU Extension's Issue-focused Teams Initiative. The goal of BVDCEP is to promote cow-calf herd health by facilitating implementation of infectious disease control Best Management Practices and herd screening for BVDV persistently-infected (BVD-PI) animals to control and ultimately eradicate BVDV from Washington's cow-calf



herds.

Spring calving season herd enrollment and testing was completed by June and we are now gathering information from the operation risk assessments, management surveys completed by each producer. A total of 6,718 animals were tested from 44 herds across Washington. This is half the number of animals that were planned for in this pilot project and **represents less than one percent of cow-calf herds in the state.** There are currently two fall calving herds that are enrolled to be tested. **If you haven't enrolled in the BVDCEP yet, it's not too late for this fall or next spring!**

The table below shows the distribution of herds that were tested by herd size, the number that had at least one BVD-PI calf and how well our current sampling of herds represents all herd in Washington.

Herd Size	NASS 2006	#	% Herds	# Positive
1 to 49	8000	12	0.20%	1
50 to 99	530	7	1.30%	0
100 to 499	520	23	4.40%	3
500 +	50	2	4.00%	2
Total	9100	44	0.50%	6

The NASS 2006 column represents the number of herds reported in the state in 2006 by USDA National Agricultural Statistics Service and the % Herds Tested column indicates the percentage of all herds in that herd size category that were tested this spring. The take home message from those numbers is that only 0.5% of the herds in the state have been tested, so it is not possible to draw general conclusions about BVD-PI prevalence in all herds of the state at this point. We need more herds!!

Of the 44 herds that were tested 6 (14%) had at least one BVD-PI positive calf, while none had any other cattle (yearlings, bulls etc) test positive. The number of BVD-PI calves in a herd ranged from a single calf to 43, however, most had only a one or two. The prevalence of BVD-PI calves was 1.35% when the single high prevalence herd was included and 0.59% when it was excluded. The lower prevalence is still 2 to 5 times higher than previous reports from individual states and feedlot entry studies. The higher prevalence we observed may be associated with the reasons why a particular herd decided to enroll and may change as the number of herds sampled increases. It would not be surprising if the prevalence of young calves in cow-calf herds was higher that that observed in animals entering the feedlot as one would expect fewer BVD-PI calves would survive to that point.

The herd prevalence (14%) was also higher than reported in other studies (3-5%), however, it is important to consider the reason why herds chose to enroll in BVDCEP and be tested. Upon completing the evaluation of the operation risk assessments we will have a better idea, however, there were a number of herds that enrolled in the program because they recently had a test-positive animal or their veterinarian suspected they may have BVD in the herd and encouraged them to test the whole herd. That being said,

at least 2 of the 6 test-positive herds were fairly confident that their herd was clean and were enrolled in the program to “prove what they already knew” and perhaps gain some market advantage. It is interesting to note that the two herds that had a high prevalence of BVD-PI calves were not routinely vaccinating for BVD.

The economic impact data are currently being collected so that we can provide an estimate of the cost of having a BVD-PI calf in a Washington herd and the potential benefit of participation in the project.

The BVDCEP will continue through June of 2009 and we will continue to enroll herds and provide subsidize testing until the funding comes to an end. However, for this pilot project to be a success we need to enroll more herds and we also need a commitment from cattle producers and feeders to move this project to a program that will continue long into the future and achieve the goals of BVD control and eradication.

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Frustrated chickens?

An interesting thing occurred the other day in the office at Vet Med Extension. My co-worker received a phone call from a hobby farm chicken producer. Her question took us both by surprise because we have been dealing with mainly cattle health issues, but when asked about chickens eating their own eggs, we did some digging and found out some interesting information.

What to do when your chickens eat their eggs?

Hens eating their own eggs is a habit that is formed over time and is extremely difficult to break—some say it is impossible to break. As you can imagine, this can cost a producer quite a bit of money over a period of time. Many believe it is much easier to prevent egg eating than to try and rid the hen of the habit all at once. It most often begins with accidental egg breakage, however, chickens can learn to break eggs themselves.



Causes

Egg eating occurs primarily in flocks that are kept on the floor (i.e., not in cages).¹ Many factors can contribute to egg eating.

- ⇒ Overcrowded hens
- ⇒ Light intensity too bright
- ⇒ Inadequate nesting
- ⇒ Improper nest construction

- ⇒ Insufficient nest litter
- ⇒ Failure to house pullets (female chickens under 1yr of age) before heavy egg production begins
- ⇒ Failure to provide nests on range
- ⇒ Failure to train pullets to lay in nests

Do not throw cracked or broken eggs on the floor of the coop because this will encourage egg eating!

Pullets should be trained to use nests when they begin laying or when they are moved to the laying house. Sometimes it's easier to train the pullets if you provide roosts during the growing period. If there is a deficiency of calcium and/or vitamin D, this could also cause egg eating. These deficiencies also can cause poor shell quality and broken eggs. Flocks receiving a commercial layer ration rarely have egg eating problems.

Researchers from the University of Florida say when a small flock owner mixes a commercial feed with scratch (i.e., cracked grains), they are diluting the previously complete diet...under such circumstances, deficiencies may occur.



Prevention is Key

Although egg eating can be from the outside, (i.e., predators such as snakes, skunks, rats, weasels, and others), check to see if your hens have dried yolk on their beaks and

sides of their heads. You may also see egg eating hens scouting the nests for freshly laid eggs to consume.² It is crucial that if you catch an egg eater that you remove her from the flock at once because this bad habit will multiply the longer it is allowed to continue. If one starts, others will follow soon after! Try following these simple precautionary steps:

- ⇒ Reduce traffic in nesting area
- ⇒ Provide ample area for hens to lay: 12" x 12" nest for every 4-5 hens
- ⇒ Always locate nests at least 2 ft off the ground and at least 4 ft away from the roosts
- ⇒ Keep 2" of clean, dry nesting material in the nests at all times
- ⇒ Have enough nests
- ⇒ Remove all broody hens (hens that wish to sit on their eggs to hatch them) from nesting area
- ⇒ Provide proper nutrition (oyster shells)
- ⇒ Keep stress minimized
- ⇒ Dim lighting especially near nesting areas
- ⇒ Gather eggs frequently; three or more times daily
- ⇒ Feed liquid milk for a few days
- ⇒ Use used golf balls in the nests
- ⇒ Beak trim the hens doing the eating if you can find them—**do this as a last resort!**

Most researchers echo that prevention is the only proven treatment. Collecting eggs often and early in the day can help reduce or prevent egg eating. Most hens lay eggs before 10am, so the longer you keep the eggs in the barn, the more likely they can be broken or eaten.

Reference List

- (1) Jacob JP, Mather FB, Wilson HR. Egg eating by chickens. *University of Florida, Institute of Food and Agricultural Sciences, August 1997.*
- (2) Clauer PJ. Prevention of egg eating. *Virginia Tech, Virginia Cooperative Extension—Small Flock Factsheet, No. 33.*

By: Mr. Brandon Freitas, MS, Veterinary Medicine Extension, WSU bfreitas@vetmed.wsu.edu

Weight Loss in a Suffolk Ewe – a Case Report

A four-year old Suffolk ewe was presented to the Veterinary Teaching Hospital at the end of July with a complaint of weight loss and depression. The owner noted that the ewe had been losing body condition for the past month and that within the last few days she was having difficulty getting up and was seen mostly lying down while



other sheep were active. At the day of the clinic visit, the owner had to physically help the ewe stand, which they attributed to weakness.

The ewe had lambed 4 months earlier and successfully raised and weaned a set of twin lambs. It was at the time of weaning that the owner first noticed the ewe was thin when compared to others in the flock. The owner practiced routine body condition scoring (BCS) of the ewes at the time of weaning and would separate thin ewes from the main flock to provide an increased plane of nutrition and care prior to assessment for fall breeding. At weaning, the flock-average BCS ranged between 3.0 and 3.5. (<http://extension.oregonstate.edu/catalog/html/ec/ec1433/>) The ewe had a BCS of 2.0 one month prior to presentation to the veterinary clinic. The owner had administered a de-wormer to the flock at the time of weaning, part of their routine flock health program. This ewe, along with two

others that had each raised triplets, were placed in a small pasture where they were offered a grained-based supplement. The two other ewes regained body condition but the presenting ewe continued to lose weight.

Historically, the flock owner had similarly-appearing ewes of this age with diagnoses that included abscesses (caseous lymphadenitis/CL), other chronic infections such as mastitis, weight loss due to lameness, and dental issues. The flock was enrolled in the state Scrapie control program and all ewes and rams had been genotyped. This ewe was RR at codon 171 and was considered resistant to scrapie. The dam of this ewe had been born in the flock but had been culled two years previously due to mastitis. Records on her sire were not available.

When presented to the clinic, the ewe was able to stand only with assistance. She was assigned a 1.5 BCS, was bright and alert and would briefly nibble on alfalfa leaves when placed near her. Her temperature was within normal limits and a scant amount of feces was noted in the rectum. Closer examination of the feces revealed smaller than normal pellet size and fecal flotation revealed no parasite eggs. Her mucous membranes (gums) were moist and pink and her lungs and heart were considered normal. No external abscesses were found and her teeth were considered within normal limits for her age.

Examination of her abdomen revealed moderate distention on both sides that was especially evident ventrally (below) but with some bloating on the upper left side. Her rumen motility was increased at 3-4 dorsal sac contractions/minute noted in the upper left flank area. Deep palpation of the rumen to assess the nature of the feed contents indicated the lack of the normal layering that would be expected and instead of a fibrous mat, the contents were more fluid in both the upper and lower parts of the rumen.

In contrast to the fluid nature of the left lower abdomen and the area of the ventral sac of the rumen, the distended right lower area of the abdomen was much firmer. There was an area on the right side of the abdominal midline where a firm structure (4 X 16 inches) could be identified through the abdominal wall in the area where one would expect the normally, unpalpable abomasum to be located. The abdominal distention, palpation of a “mass” in the right ventral abdominal area and scant, small feces were consistent with a tentative diagnosis of *abomasal emptying defect* or *abomasal impaction*. To confirm the diagnosis, additional diagnostic procedures were used, including diagnostic ultrasound and rumen chloride analysis.

Transabdominal ultrasound showed that the abomasum was engorged with feed materials, consistent with an abnormal accumulation of feed within it. A sample of rumen fluid was obtained by passing an oral tube into the sheep’s rumen and found to have 48 mEq/dl of chloride, three times normal levels (15 mEq/dl). The elevated rumen chloride was consistent with refluxing of chloride

(from the HCl acid normally produced in the abomasum or true stomach) from the abomasum back up to the rumen and is conclusive evidence of an obstruction or failure of abomasal contents to normally move into the small intestine. Based on history, physical findings and lab work, a diagnosis of “abomasal emptying defect” was made. After consultation with the owner and due to a grave prognosis and physical state of the ewe, the ewe was humanely euthanatized and submitted to the Washington Animal Disease Diagnostic Laboratory (WADDL) for autopsy. The results of the autopsy were consistent with the clinical diagnosis of “abomasal emptying defect”.

Abomasal emptying defect is a condition of unknown cause that occurs predominantly in both sexes of Suffolk sheep but has also been documented in Hampshire, Dorset and Texel sheep and recently described in Toggenburg goats. The disease usually occurs sporadically in individual animals but has been documented in multiple animals over a limited period in several flocks. Affected sheep are usually at least 2 years or older. As noted in this case, owners usually report unexplained and progressive weight loss in an animal that is not responsive to multiple de-wormings and are provided additional nutritional and supportive care. Affected animals often have a chronic bloated appearance on both sides despite a poor appetite and weight losses. Manure output is low and the fecal pellets are smaller and firmer although some sheep will pass scant, loose feces.

Diagnosis of an abomasal emptying defect is based on history, physical examination and specific imaging and lab analysis. If the condition is detected early, medical therapy utilizing specific drugs that enhance abomasal emptying can temporarily prolong the animals life, however, the condition is irreversible and the animal will eventually die or should be euthanatized.

Although there is no known specific cause of this condition in sheep, recently published articles suggest that the disease may, in part, be the result of degeneration of specific neurons (nerve cells) that are associated with normal abomasal motility (movement of feed through). The reason for this degeneration is unknown. Similar events in horses have been linked to botulism toxins. However, there may be a genetic link. Until there is more information about the cause or causes of abomasal emptying defect, it may be good management to cull affected and related animals from the breeding flock.

By: Dr. Steve Parish, College of Veterinary Medicine, WSU
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What’s New at WADDL?

ANIMAL MEDICAL DIAGNOSTIC LABORATORIES AVAILABLE AT WSU

Here at the College of Veterinary Medicine there is an array of diagnostic laboratories available for veterinarians through the Washington Animal Disease Diagnostic Laboratory (WADDL). The WADDL mission is to



“Provide accurate, state-of-the-art, timely, and cost-effective diagnostic services, consultation, disease surveillance and outreach in order to safeguard animal health, the

food supply and public health and to contribute to the academic mission of the University and College of Veterinary Medicine through discovery, scholarly activity, and education.”

WADDL is the only fully accredited, full service animal disease diagnostic laboratory in Washington State. Faculty in the Departments of Veterinary Microbiology and Pathology and Clinical Medicine and Surgery staff the laboratories and provide expertise for consultation in appropriate laboratory testing and interpretation of laboratory test results. WADDL has 3 primary facilities: a primary full service laboratory in Pullman, WA, an Aquatic Health laboratory in Pullman, WA, and an Avian Health and Food Safety Laboratory branch in western Washington (Puyallup, WA). The laboratories are accredited by the American Association of Veterinary Laboratory Diagnosticians (AAVLD) and WADDL is one of 12 founding members of the National Animal Health Laboratory Network (funded through USDA/APHIS) and one of the 9 veterinary diagnostic laboratories that serves as a reference lab in the Laboratory Response Network for Bioterrorism (funded through the Centers for Disease Control and Prevention).

WADDL prefers to work through a veterinarian so the practitioner can evaluate a client’s problems, identify those problems requiring laboratory assistance, and aid the client in interpretation of laboratory test results in order to optimize patient treatment. The best method of shipment to WADDL is personal delivery by the owner or veterinarian, but can also be done by shipping the sample through the United States Postal Service or through various courier services such as Federal Express or United Parcel Service. Results from the examinations, tests, and analyses are then reported to the practitioner by hard copy (mail), FAX, or on-line web access. Laboratory diagnostic tests serve as an *aid* to diagnosis and should be interpreted in light of the patient history and current clinical signs with the expert assistance of a veterinarian.

The laboratories that WADDL offers on the Pullman campus include:

- ✦ Abortion Diagnosis
- ✦ Aquatic Health
- ✦ Bacteriology
- ✦ Immunodiagnostic Serology
- ✦ Immunohistochemistry
- ✦ Molecular Diagnostics

- ✦ Mycology
- ✦ Parasitology
- ✦ Pathology: necropsy service & surgical biopsy service
- ✦ Toxicology including full nutritional panels
- ✦ Virology

Avian Health and Diagnostics is located at the WSU-Puyallup campus. Phone: 253-445-4537

http://www.vetmed.wsu.edu/depts_waddl/avian.asp

By visiting the WADDL website,

http://www.vetmed.wsu.edu/depts_waddl/, you'll find additional information about each testing laboratory and their function, how to submit a sample, the fees involved in each test, and on line accession forms that need to accompany the samples.



Sheep and Goat Biosecurity Profiles—Principles of Small Ruminant Biosecurity

Over the past few years the concepts of biosecurity have been applied to sheep and goats with increasing regularity. Initially the application of tests to certify an animal free of particular infectious diseases was targeted towards one disease, such as ovine progressive pneumonia (OPP) virus in sheep or caprine arthritis encephalitis (CAE) virus in goats. More current strategies have given biosecurity a broader approach, so that an animal can now be screened for several infectious agents in addition to a physical exam provided by the veterinarian. The reasons for this broader attack have been varied, but basically come down to the fact that animal producers want assurances that the animals they purchase, breed, show, etc are as free of infectious diseases as possible. The other factors that allow for a broader approach to biosecurity include: the availability of a wider array of laboratory tests and the ability to have these tests run at a reasonable price.

WADDL has been proactive in offering biosecurity profiles for sheep and goats for several years. The profiles offered are listed in Table 1. Since some infectious agents can cross species, one will note that the profiles appear similar. For sheep, the profile includes: OPP virus; Caseous lymphadenitis (CL); and Johne's disease. There is an assay to test for *Brucella ovis* in rams. For goats, the profile includes: CAE virus; CL; *Brucella melitensis*; and Johne's disease.

Table 1. Biosecurity Profiles for Small Ruminants

Sheep	Goats
Ovine progressive pneumonia (OPP) virus	Caprine arthritis encephalitis (CAE) virus
<i>Corynebacterium pseudotuberculosis</i> *	<i>C. pseudotuberculosis</i>
<i>Brucella ovis</i> (males only)	<i>Brucella melitensis</i> ***
<i>Mycobacterium paratuberculosis</i> **	<i>M. paratuberculosis</i>

*Commonly referred to as Caseous Lymphadenitis (CL)

**Johne's Disease

*** The test uses cross-reacting *Brucella abortus*

Small ruminant lentiviruses (SRLV) incorporates OPP virus and CAE virus, since both viruses are closely related, they are capable of interspecies spread (goat → sheep and vice versa), and control measures are similar. Ingestion of infected colostrum is the primary route of OPP and CAE virus transmission. There may be other sources of virus spread such as aerosolized respiratory secretions (OPP virus) and instruments contaminated with infected milk and/or blood (CAE virus). Initial infection causes the lamb/kid to seroconvert (become antibody positive). Although the viral infection may not cause immediate disease, the animal remains infected for life and potentially infections by the mechanisms noted above. It should be mentioned that young lambs/kids may test antibody positive during the first 6 months of life and that this may be due to passively acquired maternal antibody.

Caseous lymphadenitis (CL) - This is a bacterial infection caused by *Corynebacterium pseudotuberculosis* (formerly known as *C. ovis*). The bacteria can persist in the environment for several days to several months. Once the bacteria enters the animals body, the immune response is generated resulting in antibodies. Some animals do not clear the infection and as a result abscesses develop either internally or externally. Skin abscesses serve as a source of the bacteria for other animals when the abscess ruptures. Other sources of the bacteria are respiratory secretions – coughing, which releases the bacteria from lung abscesses. Contaminated milk, feces, and urine are other potential sources of infection if abscesses are formed internally.

***Brucella* sp. infections** - Brucellosis is an infectious bacterial disease of goats characterized by abortion and weak kids. In sheep, Brucellosis rarely causes abortion, but it can cause epididymitis in rams. The occurrence of Brucellosis in goats has historically been very low in North America, but recent outbreaks have been reported in Texas and Colorado. In goats, infection occurs by way of contaminated feed or water with the bacteria becoming localized in the udder, uterus, testes, spleen, and lymph nodes. Goats may abort during the final trimester. In sheep, infection can be transmitted orally from ram to ram, or ram to ewe, but not ewe to ewe. Infected rams become infertile, or if they remain fertile, will transmit the bacteria in their semen.

Johne's disease - Johne's disease has been recently added to the small ruminant biosecurity profiles due to the availability of a validated test for detecting infection. This is

a bacterial infection that causes chronic wasting and diarrheal disease. Transmission of the bacteria primarily occurs by the fecal-oral route with young animals more susceptible to infection than adults. The bacteria can be spread by way of infected milk and contaminated feces. After the animal is infected it will either clear the bacteria or develop a chronic infection, which localizes in the ileal regions of the small intestine. Although infected animals may remain asymptomatic for years, there is a gradual granulomatous thickening of the intestine resulting in a malabsorptive diarrhea and weight loss. Sheep and goats respond differently to the Johne's disease bacterium. Sheep tend to develop antibodies in the later stages of disease, while antibodies may be detected earlier in goats.

Samples of choice - The biosecurity profiles are run on serum samples collected in red top tubes. It is best to have a veterinarian work with owners in order to obtain the optimum samples and assist with interpreting the test results. The profiles measure antibodies to the respective agents mentioned and may not detect animals that are in early stages of infection.

Who to contact for further information - Contact the consulting microbiologist or pathologist at **WADDL (509) 335-9696** (www.vetmed.wsu.edu/depts_waddl) to inquire further about the tests listed for the biosecurity profiles. Contact your local veterinarian for advice on how to control these infections on the farm/ranch, and for questions on interpretation of results.

By: Dr. Jim Evermann, Department of Veterinary Clinical Sciences and WADDL, jfe@vetmed.wsu.edu

Additional Readings:

- Hirsh DC et al. Veterinary Microbiology 2nd ed, Blackwell Publishing, Ames, Iowa 2004
- Pugh DG. Sheep and Goat Medicine 1st ed W.B. Saunders Co., Philadelphia, PA 2002
- Harwood D. Diseases of dairy goats. In Practice (Vet Record), May: 248-259, 2004
- Baird G. Current perspectives on caseous lymphadenitis. In Practice (Vet Record), Feb: 63-68, 2003.
- De Andres, D et al. Diagnostic tests for small ruminant lentiviruses. Vet Microbial 107: 49-62, 2005
- Kimberling CV, et al. Ovine progressive pneumonia: Control and Eradication. OPP Concerned Sheep Breeders Society, April 2005
- Herrmann LM, et al. Competitive inhibition enzyme-linked immunosorbent assay for detection of serum antibodies to caprine arthritis-encephalitis virus: Diagnostic tool for successful eradication. Clin Diag Lab, Immunol. 10: 267-271, 2003

WSDA Corner

TB or Not TB: That is the Question

At the risk of sounding trite about a serious but centuries old problem, State and Federal animal health officials have been anxiously asking this very question all too often the past few years. Tuberculosis, caused by *Mycobacterium bovis* is a very old disease with evidence of a TB-like disease dating back to the time of the Egyptian Pyramids.



More recent history with TB points toward recognition of the connection between TB in cattle and TB in slaughter house workers in Upton Sinclair's early 20th century novel "The Jungle". This, at least in part, spawned the TB eradication efforts of the USDA. After over a century of efforts and billions of dollars, TB has been reduced to very low levels but has not been completely eradicated from livestock. Currently, it is making a re-emergence as a threat to

livestock industries.



Tuberculosis lesions.

livestock industries. Although the disease never really completely disappeared, many states dropped their testing requirements in the 70's and 80's to facilitate commerce. A single infected deer in Michigan was found in 1975 and thought to be an insignificant event at the time. The disease smoldered in white-tail deer as they increased in numbers so that in many areas they outgrew the habitat that could support them. Since 1998, Michigan's Lower Peninsula has had significant issues with TB in both beef and dairy herds. Forty-two herds have been depopulated (one herd twice) and the battle rages between livestock owners and deer hunters as to the best control measures, similar to the controversy over brucellosis in buffalo and elk in the greater Yellowstone area.

Minnesota depopulated 13 herds and found the disease in 24 white tailed deer. The strain was typed and resembled one found in a Mexican feed lot steer (probably spent a summer on the rodeo circuit or was backgrounded in Minnesota). Minnesota was downgraded to MA (Modified Accredited, second lowest classification) in April 2008. They made significant efforts to decrease the deer population and the state legislature provided funds to facilitate a voluntary buyout of herds in the control zone. However, once the TB-free status is lost it takes painstaking and agonizingly slow efforts to regain the coveted "free" status.

USDA's Animal Plant Health Inspection Service classifies states or zones within states according to its level of occurrence of bovine TB. There are five classification designations: accredited free; modified accredited advanced; modified accredited, accredited preparatory and non-accredited. Restrictions on the interstate movement of cattle become less stringent as a state approaches or achieves accredited free status.

California and New Mexico are both in the process of being downgraded to Modified Accredited Advanced. California had an outbreak of TB in 2002 and then regained their TB-free status in 2004. Currently, three dairy herds in California have been identified TB-positive. One herd was detected on slaughter surveillance and the other two have been found through the epidemiological investigation. Two

very different strains are present in the three herds but neither of the strains are the same as the 2002-2004 outbreak. Hundreds of thousands of California dairy cattle will undergo bovine tuberculosis testing between August and December of this year. Nationally, between the years 2000 and 2008, 71 newly affected herds were detected in the U.S.; 28 were detected between 2005 and now.

In Washington, we have had two positive cases in feedlot animals originating from Canada. Fortunately, the feedlot had excellent records and none of the animals entered other herds. The Canadian animals were verified to have been kept separate from resident cattle. This has not

affected WA TB status, but it has heightened our awareness to this disease.

Our first line of detection of TB in WA is our herd testing program and the private, accredited veterinarian's efforts to become proficient at testing protocols.



Caudal (tail) fold TB test.

The USDA standard expected for the Caudal Fold screening test response rate is a minimum of one percent positive for private practitioners. WSDA and USDA are making serious efforts to train and educate private practitioners in the proper testing protocols necessary to meet that standard. WSDA has implemented new and more stringent rules for high risk cattle from other countries (Canada and Mexico) especially recreational cattle and cattle that will enter breeding herds. We intend to establish owner-funded holding facilities to accommodate animals that may come into the state for people that make their living buying and selling cattle but have not yet met WA import requirements. Last but not least, we have received funding to hire an animal health investigator to follow-up on reported import violations.

In addition to state and national regulatory efforts, we need livestock industry and veterinary practitioner support to maintain our TB-free status. Recent conversations with the New Mexico state veterinarian revealed that TB will cost the NM beef cattle industry (a \$1.5 billion industry) \$4-6 million in testing expense alone. This cost does not take into account the loss of the value of cattle from a non-free state and does not consider the impact on their state's dairy industry.

Producers need to be aware of import regulations from all states if they import cattle for any purpose and NEVER shortcut those regulations. And, BioSecurity is a popular buzz word right now and sometimes the definition gets a little fuzzy, but basic BioSecurity can be summed up in one

word: **COMMON SENSE**. Don't mix newly arriving cattle with your resident cattle, find a place where you can separate them and observe them closely for a reasonable amount of time (2-3 weeks). Feed and handle them last and even consider, depending on the disease risk having dedicated clothing and personnel to care for them until you, the manager of those cattle, can decide if they indeed are healthy. Working together we can all keep Washington's breeding herds and feedlots free of not just TB but other economically damaging diseases as well.

For WSDA information on Animal Health issues and requirements or ask a question, go to:

<http://agr.wa.gov/FoodAnimal/AnimalHealth/default.htm>

By: Dr. Paul Kohrs, WSDA Assistant State Veterinarian, pkohrs@agr.wa.gov

Continuing Education Opportunities WSMVMA 97th Annual Veterinary Conference

October 3-5, 2008, Spokane Convention Center, Spokane, WA . Registration open August 4, 2008.

<http://www.wsvma.org>

Producer Education Meetings

2008 WA State Sheep Producers (WSSP) Convention is going to be hosted by the Whitman County sheep producers in Pullman, **October 31 – November 2, 2008**.

<http://www.wssp.org>

Academy of Dairy Veterinary Consultants

The **Academy of Dairy Veterinary Consultants (ADVC)** is a group of dairy veterinarians who meet twice a year to discuss current issues in dairy herd health and dairy performance. Founded in California in the early '80s, the group has expanded to practitioners primarily in the West but members come from states as far away as Massachusetts.

<http://www.vetmed.wsu.edu/orgADVC/>

SAVE THE DATE! The Fall 2008 Academy meeting will be held **October 24-25, 2008** in **Ventura, CA**. The topic is: **"DEVELOPING THE STANDARDS FOR CALF-REARING VETERINARY PRACTICE AND CONSULTATION"**. For ADVC Membership and registration, contact Vet Med Extension at: (509) 335-8221 or email us at: VetExtension@vetmed.wsu.edu

Risk Communication Training

Veterinary Medicine Extension at WSU is offering, in conjunction with UC Davis and the National Center for Foreign Animal and Zoonotic Disease Defense, a 1-day program on **Risk Communication for Animal Health Events** on 2 different days in 2 locations this Fall. This program might be of particular interest to WA Department of Agriculture staff, Extension and veterinary faculty and administrators, the reserve veterinary corps, and veterinarians who deal with livestock or avian species. You can "click" on the underlined titles below to visit the conference website and find the meeting agenda. There is no cost to participants, but we will be limiting the seating to 30 per site. To reserve your place, please go to the online site to

register or contact Susan Butts, our conference manager. **7 clock hours of continuing education credit will be available to veterinarians.**

www.regonline.com/63351_640669J

Susan Butts, Conference Manager, (509) 335-4097 (Direct)
sbutts@wsu.edu

September 17 – 8:30 am to 4:50 pm; WSU Puyallup Research & Extension Center; Puyallup, WA
[Risk Communication for Animal Health](#)

September 18 – 8:30 am to 4:50 pm; TRAC Center; Pasco, WA
[Risk Communication for Animal Health](#)

Recall of Vaccine

Inervet/Schering-Plough Animal Health has recalled Jencine 4 serials numbered **226178 through 226192** and Jencine 4 + Lepto-5 (same serials) because of contamination with a strain of BVD virus. The contamination occurred in a growth medium used in the manufacturing of the vaccine. Only the mentioned products have been found contaminated. The company is asking veterinarians to remove the product and have cattle owners return the product to them. **The Technical Services number is: 1-800-521-5767.** The company has more information at: <http://www.spah.com>

What is Wrong with These Pictures?

Send your answers to us to see if you figured it out!! You may get a prize!
Email us at: VetExtension@vetmed.wsu.edu

Image 1



Image 2



Image 3



Send Newsletter Comments to the Editor:
VetExtension@vetmed.wsu.edu

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