

*ag animal health*  
**VETERINARY MEDICINE EXTENSION**  
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**From the Editor** - Winter - time to feed more to beef cows and to dairy calves. They have higher maintenance energy costs and may suffer some consequences to not getting enough groceries. We have one article on grain consumption in calves and one on feeding beef cows in winter.

Just new and live is a reformatted set of materials all about dairy CALVES. Called, *CALFSCIENCE*, you can find work we have done, online courses and Extension articles about modern calf rearing at: <http://vetextension.wsu.edu/calfscience/>

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

## Pre-weaned Calves: How Much Starter Grain Should a Dairy Calf be Eating?

by Dale A. Moore, Extension Veterinarian, WSU

Dairy farms put fresh starter grain out for pre-weaned calves within the first week of life, primarily to get them used to solid food and start developing their rumens for weaning. But, how much grain does a calf really eat (and when) and what might inhibit them from consuming more? We just published a factsheet that looks at and answers these questions. The major findings were:

(1) Calves that are limit-fed milk or milk replacer (2 quarts twice daily) will start consuming between 0.5 to 1.5 cups (0.25 to 0.75 lb) of starter grain by the second week of life. Calves on this regimen can be consuming over 2.5 to 3 cups (1.25 lb to 1.5 lb) of



starter by 4 weeks of age but need to increase this to over 2 lb of starter grain to consider weaning.

(2) Monitoring grain consumption can give dairy farmers a way to evaluate the nutrients calves are actually consuming.

(3) There are many considerations when evaluating calf starter consumption in pre-weaned dairy calves. The nutrients calves get from their milk or milk replacer, weather, housing, and disease may all play a role in how much starter they will consume on a daily basis.

(4) Measurable starter consumption does not typically commence until about 20 days of age, even in calves limit-fed milk or milk replacer. However, initiating rumen development that leads to weaning requires a period of about 3 weeks. Therefore, providing fresh starter grain daily by day 3 of life will result in calves becoming more accustomed to it and, along with fresh water availability, encourages intake to meet the farm's goals for calf health and growth.

For more detailed information, go to the WSU factsheet website:

[Pre-weaned Calves: How Much Starter Grain Should a Dairy Calf be Eating?](#)

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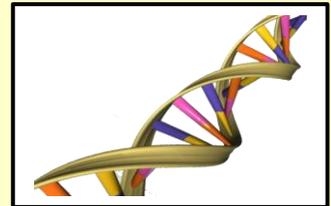
## Genomics and the Pre-weaned Dairy Calf

by Dale A. Moore<sup>1</sup>, Joe Dalton<sup>2</sup>, Albert DeVries<sup>3</sup>

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Genomics on many dairy farms starts with testing the pre-weaned calf. Some dairy farmers test the calf at birth, when they are placing ear-tags. Some producers might wait until the calf is over the critical period for illness or mortality, after the first month of life, to avoid testing calves that developed pneumonia (which will hurt her future production performance and survivability) or calves that might be lost to mortality. It can take about 18 business days to get the genomic testing results done so testing at that time period before weaning might work for most farms. Unless the pre-weaning facilities are overcrowded, you can wait until weaning to make decisions on what to do with the calves you tested.

What kinds of decisions will you have to make? It all depends on what you want from your herd. Genomic testing can lead to herd profit potential but there is no cookie-cutter approach. You need to develop a plan based on your herd goals. Are your goals:

- To sell surplus heifers?
- More total milk production?
- More milk components?
- Better reproduction?
- Better health and survivability?
- Efficient grazing?
- Cheese production?

It is vital that you and your management team set the goals you want to reach with your herd. The first place to start is to look at where you are now. Your herd records, along with advice from your herd veterinarian and breeding company, and your milk market opportunities can all help you set

goals for the herd. If you do not yet have good herd records, you might want to set that as your first goal.

The next step is to pick the available indices on the commercial genomic testing platforms. Are you interested in Net Merit Dollars? Cheese Merit? Fluid Merit? Grazing Merit? Although some producers have developed their own indices, there are more data behind the standard indices, making them more reliable. Work with the testing company technical services person to help you and once you have decided which traits are most important to your herd, you can test the calves.

What you get back from testing is a spreadsheet of the predicted transmitting abilities and their reliabilities from which you can rank your heifer calves by the index most important to you. You can rank on several indices but recognize it becomes more complicated. Once you have your ranking, you need to have a plan or strategy for what to do with your heifers. Are you going to:

- Sell heifers not meeting farm-established cutoff?
- Breed bottom-end replacements to a beef sire?
- Use top end for sexed semen?
- Use top-end for ovum pick-up (OPU), in vitro fertilization (IVF) or embryo transfer (ET)?
- Use middle-end for embryo recipients?
- Send the bottom end to a feedlot?

Without a concrete plan of what you will do with the heifers, and sticking to that plan, you will not realize the herd improvements you were looking for. With more and more information about genomic tested animals available, economists are getting closer to helping you decide what kind of a herd portfolio is most economical. Until we have those tested economic tools, working with your herd records, using appropriate indices, following your plan, and monitoring your herd's performance is the best way to make herd improvement using genomic testing.

#### Resources:

- A good primer on available genetic indices is: *Understanding Genetics and the Sire Summaries* from the Holstein Foundation ([http://www.holsteinfoundation.org/pdf\\_doc/workbooks/Gen\\_Sire\\_WKBK.pdf](http://www.holsteinfoundation.org/pdf_doc/workbooks/Gen_Sire_WKBK.pdf))
  - The Holstein Association USA website has information on genetic evaluations of bulls at: [http://www.holsteinusa.com/genetic\\_evaluations/GenUpdateMain.html](http://www.holsteinusa.com/genetic_evaluations/GenUpdateMain.html)
  - The US Jersey Association has a Genetics Center at: <https://www.usjersey.com/AJCA-NAJ-JMS/AJCA/GeneticsCenter.aspx>
  - eXtension has a set of dairy cattle genetics factsheets at: <http://articles.extension.org/pages/15694/dairy-cattle-genetics>
  - For videos and factsheets, you can also visit our Genomics of Fertility Website at: <http://vetextension.wsu.edu/research-projects/dairygenomics/outreach/>
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## Beef: The Influence of Winter Nutrition on Beef Cattle Productivity

by Craig McConnel, Extension Veterinarian, WSU

Last winter's seemingly relentless cold and wet weather proved challenging for many livestock producers, and may have been associated with an uptick in Weak Calf Syndrome that [WSU has been researching](#). One of the outcomes from this research has been a call for ranchers to improve their documentation of nutritional inputs including forage testing and quantities fed. Such measures would allow for a more robust assessment of potentially influential factors when faced with poor outcomes such as weak calves.

As we head into this winter, it is worth considering current research into cow and calf nutrition and how it might be applied to your operation. An article published in November of this year by Prezotto et al. within the *Journal of Animal Science* (J. Anim. Sci. 2017.95:5137-5144) explored the influence of limit-feeding and time of day availability to growing calves during cold weather. Their project was developed on the back of previous research suggesting that limit-feeding can improve growth efficiency through improvements in digestion, and that feeding cattle in the evening can improve growth performance in cold climates. The study was conducted through North Dakota State University and the Northern AgResearch Center in Havre, MT from November through February. Contrary to their expectations, Prezotto actually found that calves fed a corn silage-based backgrounding diet ad libitum had greater feed efficiencies than those that were limit-fed. However, for those calves that were limit fed at night (between 6 p.m. and 6 a.m. the next day), rather than during the day, there was an increase in average daily gain and feed efficiency. It may be that calves fed during the night increase their heat production thereby helping to maintain body temperature when temperatures are lower. This extra heat could be generated from a combination of the heat of fermentation, the heat increment of feeding, or physical activity that may ultimately reduce maintenance energy requirements.

Other research has focused on nutritionally supplementing spring calving beef cows during late gestation. Although protein supplementation does not necessarily improve subsequent cow

reproductive performance, there is evidence that supplementation can increase progeny weaning body weights and heifer fertility. These increases may be due to fetal programming whereby in utero stimuli influence postnatal growth and physiology. Along those lines, a study from the University of Nebraska by Larson et al. (J. Anim. Sci. 2009. 87:1147-1155) indicated that late gestation nutrition of the dam affects calf birth weight and early weight gains, and those differences persist through weaning and slaughter. They evaluated the impact of protein supplementation (0.45 kg/d of 28% crude protein cubes) during the last trimester for cows that were winter-grazed on either dormant Sandhills' range or corn residue. Their study demonstrated that steer progeny from supplemented cows had greater marbling scores and a higher proportion graded USDA Choice or greater than steers from dams without protein supplementation. Fetal programming may explain these differences as fetal growth progresses rapidly during the last trimester of gestation, and added nutrition during that period may alter the site of nutrient deposition. Regardless of the underlying physiology, protein supplementation of dams increased the value of calves at weaning and of steers at slaughter irrespective of winter grazing management.

A parallel study (Funston et al, J. Anim. Sci. 2010. 88:4094-4101) to the one above explored the impact on heifer progeny when supplementing dams on winter range or corn residue with 0.40 kg/d of 31% crude protein (dry matter basis). They found that heifer pubertal status and pregnancy rates were modified by dam nutrition, providing evidence of a fetal programming effect on reproduction. Heifers from dams with protein supplementation during late gestation tended to be younger at puberty than heifers from unsupplemented dams. Additionally, there was a trend for heifers from unsupplemented dams to have decreased pregnancy rates during a 45-day breeding season. That said, dam protein supplementation increased the cost of development per pregnant heifer through reduced feed efficiency and a greater cost per kg of gain.

All in all, as we enter the heart of winter it is worth considering your nutritional management plan. Documenting what and how much you feed may prove worthwhile if challenges such as Weak Calf Syndrome arise that require retrospective investigation. Furthermore, in light of the evidence for fetal programming to influence both steer and heifer productivity, this may be a good time to assess whether your current nutritional strategy provides the best possible outcomes for both you and your cattle.

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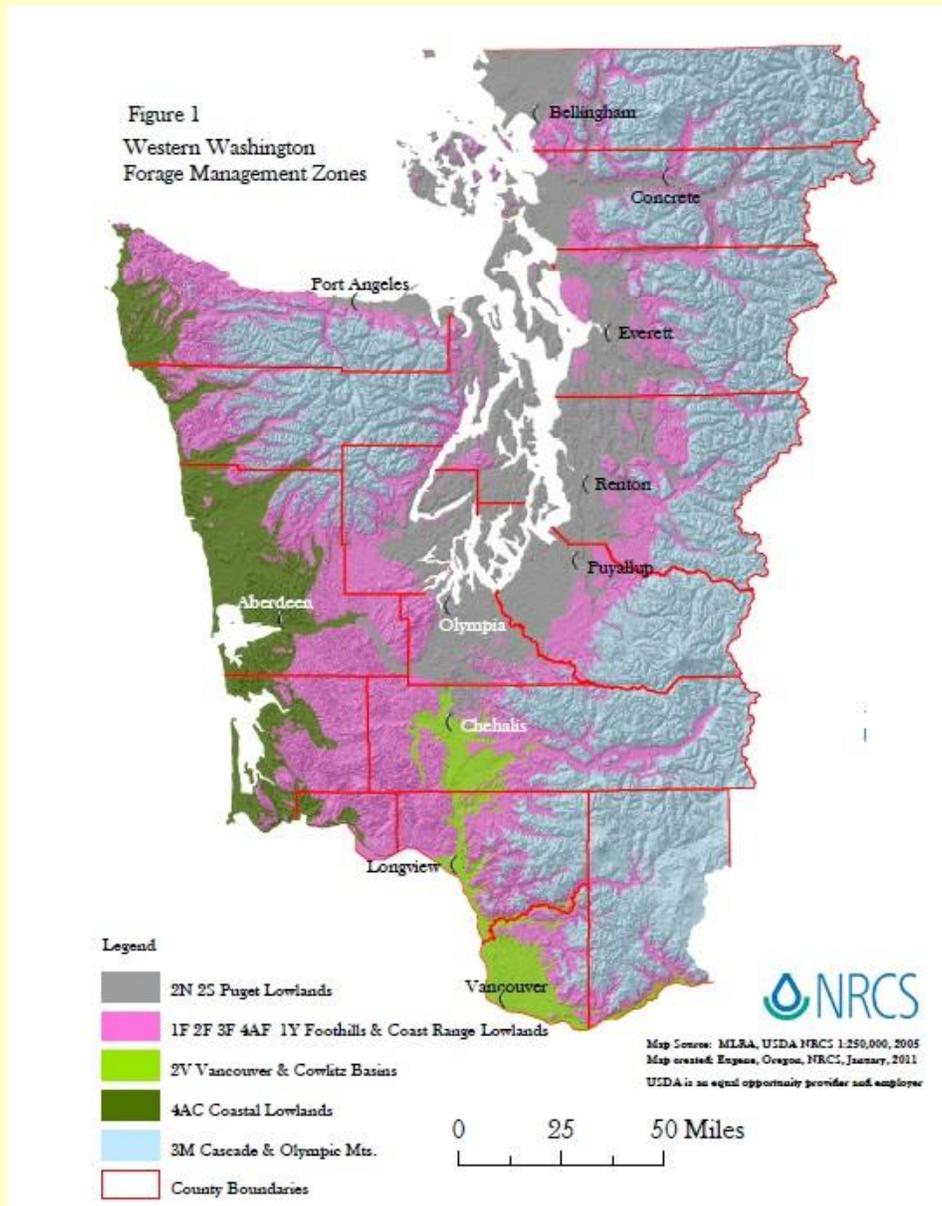
## **Western Washington and Oregon Pasture Management Calendar Debuts**

**by Dr. Susan Kerr, WSU NW Regional Livestock and Dairy Extension Specialist**

A new Extension publication, "The Western Oregon and Washington Pasture Calendar (PMW699)," was created to provide pasture managers and their advisors with a scientific basis for pasture management decisions and the timing of critical actions. A team of Extension educators and NRCS staff recently conducted a series of train-the-trainer workshops throughout western Oregon and Washington to teach fellow professionals and livestock managers how to use this new educational tool. Publication of the Calendar and support for the workshop series were provided by a western regional USDA Sustainable Agriculture Research and Education grant.

## Pasture Calendar Contents

The Pasture Calendar starts with the basics: grass terminology, factors controlling perennial forage growth, and plant growth cycles. Maps of Forage Management Zones are included (Figure 1).



The western Oregon and Washington calendars are divided into 24 management periods consisting of the first and second half of each month (Fig. 2). For each management zone or resource area, a color-coded table indicates what typically happens with grasses during a certain period. These plant growth periods include:

- Semi-dormancy
- Steady regrowth
- Declining regrowth
- Very slow growth
- Increasing growth
- Rapid growth—cool soils
- Rapid growth—warming soils
- Slowing growth
- Steady growth
- Slow growth
- Dormancy

### Pasture Calendar - Western Washington

Month	Portion of Month	Vancouver and Cowlitz Basins		Puget Lowlands		Foothills & Coast Range Lowlands	Coastal Lowlands	Your Farm
		Droughty to adequate	Optimal	Droughty to adequate	Optimal	all	all	
Soil Moisture Status during growing season:		Droughty to adequate	Optimal	Droughty to adequate	Optimal	all	all	
MLRA or Common Resource Area:		2.3, 2.4	2.1, 2.2, 2.3, 2.3	2.6 - 2.8, 2.10 - 2.13		1.1, 1.2, 1.3, 1.5, 2.5, 4a.3, 4a.5, 3.1	4a.1, 4a.2	
Forage Mgmt Zone:		2V	2V	2N, 2S	2N, 2S	1F, 2F, 3F, 4AF	4AC	
September **	1st 1/2	1	1	1	2a	2a	2a	
September **	2nd 1/2	1	1	1/2a	2a	2a	2a	
October	1st 1/2	2a	2a	2a	2a	2b	2a	
October	2nd 1/2	2b	2b	2b	2b	2b	2b	
November	1st 1/2	2b	2b	2b	2b	3	2b	
November	2nd 1/2	3	3	3	3	3	2b	
December	1st 1/2	3	3	3	3	4	3	
December	2nd 1/2	4	4	4	4	4	3	
January	1st 1/2	4	4	4	4	4	4	
January	2nd 1/2	4	4	4	4	4	5	
February	1st 1/2	5	5	4	4	4	5	
February	2nd 1/2	5	5	5	5	4	5	
March	1st 1/2	6a	5	5	5	5	6a	
March	2nd 1/2	6a	6a	6a	6a	5	6a	
April	1st 1/2	6a	6a	6a	6a	6a	6a	
April	2nd 1/2	6b	6b	6b	6b	6a	6b	
May	1st 1/2	6b	6b	6b	6b	6b	6b	
May	2nd 1/2	6b	6b	6b	6b	6b	6b	
June	1st 1/2	7	7	7	7	6b	6b	
June	2nd 1/2	7/8	7/8	7	7	7	7	
July	1st 1/2	9	9	8	8	7	7	
July **	2nd 1/2	10	9	9	8	8	8	
August **	1st 1/2	10	10	10	9	8	8	
August **	2nd 1/2	10	10	10	9	8	8	

\*\* Dependent on soil moisture and precipitation. Water will maintain growth or break dormancy.

Description of Grassland Growth Period		
Period	Title	Brief Description
1	Semi-dormancy	Recovering from summer dormancy, root growth
2a	Steady regrowth	New green sprigs with much brown, root growth
2b	Steady regrowth	Looks mostly green with little brown, root growth
3	Declining regrowth	Slowing plant top & root growth, tops may yellow
4	Very slow growth	Plants semi-dormant, maintenance growth
5	Increasing growth	Plant uses reserves to increase growth of shoots & roots
6a	Rapid growth - cool soils	Plant uses reserves as in 5, above, but at a faster rate
6b	Rapid growth - warming soils	Tops & roots show rapid growth, quality declines w/o harvest
7	Slowing growth	Top & root growth slows, managed harvest maintains quality
8	Steady growth	Less top growth, root shedding begins
9	Slow growth	Rapid root shedding, drought/heat may start dormancy
10	Dormancy	Dormancy w/o irrigation, stubble mgmt critical for regrowth

Figure 2. Western Washington Pasture Calendar with descriptions of grass growth periods.

The Pasture Calendar includes extensive appendices and references. Appendices are:

- How Pasture Plants Grow
- Pasture Clipping
- Sacrifice Areas
- Buffer Strips
- Irrigation
- Laminitis
- The Nitrogen Cycle
- Nitrates in Forages
- Nutrient Excesses/Deficiencies
- Alternative Forage Crops
- Endophyte Toxins in Forage

### Calendar Highlights

The Pasture Calendar emphasizes and explains critical pasture management practices, such as:

- Performing soil tests and addressing fertility issues
- Selecting a forage species and variety well suited to local growing conditions

- Leaving at least three inches of grass stubble at all times
- Rotating pastures to let them rest and regrow to grazing height (> eight inches) before regrazing
- Grazing or mowing grasses to keep them in vegetative phase and vigorous
- Monitoring livestock body condition
- Establishing sacrifice areas for livestock confinement during critical periods.

### Fall Is All!

The vital importance of fall pasture management is stressed throughout the Pasture Calendar. In early fall (typically September), grass plants generate new roots to replace the ones shed during the “summer slump.” It takes energy for plants to generate these roots, and roots in turn are needed for plants to obtain water and nutrients from soil. *Most importantly, next season’s growing points are being established—overgrazing during this period will cause delayed and reduced pasture growth the following spring.*

### Protect the Lower 3”

Grasses store their sugar for regrowth in the lowest three inches of above-ground growth, not in their roots as previously believed. This means anytime pasture grasses or grass hayfields are grazed or mowed to less than three inches tall, the plants lose their energy reserves and *regrowth will be delayed by up to six weeks* (Fig. 3). If this mismanagement occurs month after month, plant vigor is affected and desirable pasture plants die; bare soil and weed incursions result. Expensive pasture renovation is then needed but will be pointless unless pasture management practices are changed.



Figure 3. Dr. Steve Fransen demonstrating root health of simulated healthy fall pasture grass (lower hand) vs. simulated overgrazed pasture (upper hand).

### Sacrifice Areas, Save Plants

Anytime livestock have the potential to graze pastures below three inches, they should be removed from pastures, confined to a sacrifice area, and fed stored forage such as hay or haylage. The need for a sacrifice area could arise during muddy winter months, the pasture summer slump, or if there is not enough pasture for the livestock under management. Conservation District funding may be available to help develop sacrifice areas, which also help protect soil and water quality.

### Where to Get the Pasture Calendar

This 50-page, full color publication will soon be available for free downloading at <http://pubs.wsu.edu> (search for PNW699).

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## Give Her a Shot Doc! Not without Diagnostics

by Amber J Itle MS, VMD, WSDA Field Veterinarian/Interim Assistant State Veterinarian, Kevin Snekvik, DVM, PhD, WADDL Director of Operations, Tim Baszler, DVM, PhD, WADDL Executive Director

“Give her a shot Doc.” In rural practice, I’ve heard this request so many times.

The “shot” usually is in reference to a suggestion to inject antibiotics. When livestock get sick, we often look for the quick fix, the magic bullet to add to the feed, or that “shot” that will make the problem go away. Although veterinarians are trained to use diagnostics to determine the best course of treatment, often we skip this step due to owners’ unwillingness to pay, the time it takes to collect and submit samples, or we may decide to rely on recent experiential successes in order to make a diagnosis and choose one treatment course over another.

With the genesis of the One Health Initiative in recent years, the implementation of the FDA’s Veterinary Feed Directive (VFD), and the intersection of public health and antibiotic resistance, an emerging paradigm shift is changing the way we think about disease and antibiotic use.

Seventy-five percent of human emerging diseases are zoonotic, meaning they are transmitted between humans and animals. Laboratory diagnostics are imperative to recommend appropriate treatments for animal and public health alike.

Should you, “Give her a shot Doc”? You decide: YES or NO

Case 1: Doc, I have a group of recently weaned dairy heifers with diarrhea.

Case 2: Doc, I have a sheep with ulcers and blisters on the lips.

Case 3: Doc, my horse is breathing hard and is pale.

Case 4: Doc, I have a group of pigs with vesicles on their snouts.

Case 5: Doc, my herd of cows have sudden onset lameness.

The challenge with all of these cases is that many diseases can present clinically indistinguishable and cannot be differentiated without diagnostics. For example, Case 1 could be due to gastritis (feed change), parasites (coccidia), a viral infection (Bovine Viral Diarrhea) or a bacterial (*Salmonella*) infection.

Cases 2, 4 and 5 could all be different presentations of Foot and Mouth Disease, but could also be attributed to more common diseases such as ORF or Contagious Ecthyma (Case 2) Seneca Valley Virus (Case 4) or Hairy Heel warts (Case 5). Case 3 could be heaves or Equine Infectious Anemia (Coggins). There is no way to determine the proper course of action without laboratory diagnostics, at least initially. Each of these diagnoses requires a different response.

There are several components to getting reliable diagnostic results: choosing the right laboratory, collecting the right sample from the animal with the right technique, storing the sample in the right container at the right temperature and shipping it the right way.

### How do I get it “Right”?

**1. How do I choose the right lab?** While many veterinarians ask this question, what they really want to know is how to choose a laboratory that will provide timely, high quality testing results from a broad testing menu, together with readily available expertise to help interpret those results in order to make the best clinical treatment decisions.

Fundamental to high quality testing is laboratory accreditation. Accreditation is a voluntary, third party-reviewed process by a certifying body providing formal recognition of laboratory competence and quality.

The desired outcomes of this process are assurance of credible laboratory results for clients and the expectation of continual improvement of the accredited laboratory’s processes. In North

America, the most common accreditation program for animal health testing laboratories is the Association of Veterinary Laboratory Diagnosticians (AAVLD) Accreditation Program.

Also fundamental to high quality laboratory testing is specialists to provide guidance on test result interpretation and insight into the significance of test results to the clinical syndrome identified. What is the point of obtaining fast test results without subject matter experts to provide test interpretation? Also advice is critical to ensure optimal testing before testing begins—such as sampling advice, choice of test method, and optimal shipping.

Given the complexities of modern veterinary medicine, and in particular veterinary diagnostic medicine, it's important that as a veterinarian you are armed with a reliable, high quality result backed up by the expertise needed to navigate the complexities of your cases.

**2. How do I know if the laboratory I use is accredited?** Accredited laboratories have official certificates from the accrediting body stating the scope and time span of accreditation (often clearly stated on the home page of the laboratory website). Alternatively ask your laboratory the next time you are talking to lab staff to provide an accreditation certificate.

**3. What kind of quality assurance / quality control measures are taken in an accredited laboratory?** Accredited laboratories must have a fully functional Quality-Management System (QMS), a combination of organizational structure, resources, people, documents and activities designed to ensure a consistent product and services that meet the needs of a laboratories clients.

Laboratory quality management systems based upon international standards (such as the AAVLD Accreditation Program) require activities such as: control of documents and records; control of supplies; control and validation of tests; control of measuring equipment; competency of personnel; internal audits; control of non-conforming work; measurement of client satisfaction; corrective and preventive actions; and a philosophy of continual improvement.

**4. What laboratory does the WA State Veterinarian's Office typically use?** WSDA's veterinarians rely on the Washington Animal Disease Diagnostic Laboratory (WADDL) in the College of Veterinary Medicine at Washington State University for official laboratory support.

This includes diagnosing animal diseases (including foreign animal infectious diseases), performing regulatory testing (brucellosis, Coggin's testing, avian influenza, etc.), and testing for zoonotic diseases like West Nile virus and Q fever. WADDL is an AAVLD accredited laboratory that serves as a state, regional and national reference laboratory for veterinarians.

WADDL is a full-service laboratory that also provides the State Veterinarian with alerts of reportable diseases. As an AAVLD Accredited laboratory, WADDL has comprehensive accreditation for all laboratory disciplines and laboratory tests used for regulatory testing as well as routine non-regulatory testing.

**5. What role does WADDL play in Foreign Animal Disease diagnosis?**

As the only Level 1 laboratory in the USDA-National Animal Health Laboratory Network (NAHLN) in the Pacific Northwest, WADDL provides a first alert for foreign animal diseases (FAD) in our region.

Foreign animal diseases such as foot and mouth disease, avian influenza (bird flu), and bovine spongiform encephalopathy can economically devastate animal industries. Without quick action by animal health regulatory officials, based upon fast and reliable laboratory test results, animal disease incidents can quickly be regional or even national outbreaks that can cripple interstate and

international trade. WADDL can provide such actionable results within hours of receiving foreign animal disease investigation samples. This greatly facilitates early containment, response and recovery.

**6. How can I contact WADDL about testing?** The easiest way is visit the WADDL homepage at <http://waddl.vetmed.wsu.edu/>. The lab can also be reached at (509) 335-9696 from 8am to 5pm Monday through Friday and Saturdays from 8am to noon. When you call you will directly connect with one of their receptionists (real people without a phone tree!). There is also a 24/7 emergency service that can be reached after hours at the same telephone number. Alternatively, you can email WADDL at [waddl@vetmed.wsu.edu](mailto:waddl@vetmed.wsu.edu) and your question will be forwarded to the correct individual to provide you an answer.

**7. How do I find what tests WADDL performs, the test costs, and the correct sample and tube/container to collect the sample in, all at one location?** The WADDL Web Test Search Tool of course. And did you know that WADDL has some of the most competitive test prices for Washington veterinarians/residents? Find out test cost and other test information using the WADDL Web Test Search Tool at: <http://waddl.vetmed.wsu.edu/search-tests>

**8. What information do I submit with samples?** The WADDL accession, or submission, form is located online as a fillable PDF document that can be printed when completed. The accession form is located at the following link: [http://waddl.vetmed.wsu.edu/docs/librariesprovider10/forms/accession-forms/general-waddl-accession-form.pdf?sfvrsn=a3e8c638\\_2](http://waddl.vetmed.wsu.edu/docs/librariesprovider10/forms/accession-forms/general-waddl-accession-form.pdf?sfvrsn=a3e8c638_2)

**9. You want email notification for secure online results and the ability to make online payments? WADDL has that.** Veterinarians need results quickly, which is why WADDL has email notification as soon as results are posted to its password-protected website. Results can be printed or transferred as PDF documents for your case file. This is the quickest and best method for maintaining client confidentiality. Following submission of your first sample, sign up at the following link: <https://w3.vetmed.wsu.edu/waddl/reports/index.php>

Likewise, payments can be made quickly online at this website: <https://w3.vetmed.wsu.edu/waddl/payments/index.php>

**10. Why should I do diagnostics?** It's the right thing to do. Treating without a laboratory confirmation will likely cost you more in the long run if you are using ineffective therapies or antimicrobials, or making any unnecessary feed or management changes.

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## **Trichomoniasis Can be a Very Formidable Foe!**

**by Ben Smith, DVM, Eastern Regional Field Veterinarian, WSDA**

An interesting case of Trichomoniasis was discovered in dairy bulls and reminds us to be vigilant against this profit-robbing organism. Trichomonad, or trich for short, is flagellated protozoa with three hairs on the head end (hence the tri-) and long tail on the other. It can bring expensive reproductive losses in herds. Most commonly a problem in beef herds, it can also be a problem in dairies that use clean up bulls. A typical scenario is a poor preg check that may involve a large number of open cows or late calvers. Subsequent work up by the private vet usually involves bull testing where the culprit is discovered by preputial scraping and laboratory testing. New DNA testing at the lab can easily discover the organism.

Cows that abort will usually breed back after clearing the organism. Unfortunately, there are also cases of cows that never clear and become persistently infected. There are not many of these animals, but they are a real problem for propagation of the disease. The animals don't show any outward signs of disease. Bulls carry it on the penis and sheath and in older bulls, it can survive for long periods of time.

In this case the bulls were leased and used for a time, then sent to another state. That state required the bulls to be tested for entry. Testing revealed a positive and more were discovered in that bull group. Cows were bred by artificial insemination (AI) one or two times, but were given one more chance with the bull to conceive. The bulls were rotated regularly through the breeding pen, but only a few were in the pen at any one time.

The dairy made the decision to cull all the bulls in this group, and per Washington State Department of Agriculture rules, sent them to slaughter. Another group of bulls that were completely separate from the first group had also been rotated through the cow pen. Also due to Washington rules, all bulls need to test negative twice before removal of the quarantine. Low and behold, some of these were positive. The leasing company elected to send all of this group to slaughter, too. Some were quite expensive animals but they made that decision on perception and speed to remove the quarantine. The dairy and consulting veterinarian moved to AI completely as a resolution.

Not typically thought of as dairy disease, it can cause people to scratch their heads to discover a source. Biosecurity practices to help from introducing this calf thief, include:

- Don't keep open cows.
- Don't buy open cows at the market.
- Buy virgin or DNA-tested bulls and cull regularly.
- Know your area and heed the old adage "good fences make good neighbors".
- Don't share bulls.

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## WSU Ag Animal Faculty Research Updates

(1) Kasimanickam RK, Hall JB, Estill CT, Kastelic JP, Joseph C, Abdel Aziz RL, Nak D. Flunixin meglumine improves pregnancy rate in embryo recipient beef cows with an excitable temperament. *Theriogenology*. 2017;107:70-77.

Objectives were to determine effects of: 1) handling temperament and administration of flunixin meglumine, an inhibitor of prostaglandin F2a (PGF2a) synthesis, given at the time of embryo transfer, on pregnancy rates in beef cattle embryo transfer recipients; 2) handling temperament and flunixin meglumine on peripheral concentrations of progesterone, cortisol, substance-P, prostaglandin F metabolites (PGFM, (13,14-dihydro-15-keto-PGF2a) and isoprostane 8-epi PGF2a; and 3) flunixin meglumine treatment on proportion of non-pregnant recipient cows returning to estrus within an expected interval. Angus cross beef cows (n = 710) at 7 locations were assigned a body condition score (BCS: 1, emaciated; 9, obese) and a temperament score [0, calm, slow chute exit; walk (n = 352), 1, excited, fast chute exit; jump, trot or run (n = 358)] and were synchronized with Select-Synch with a controlled internal drug release (CIDR) protocol. Estrus detection aids were applied at CIDR removal and cows were observed thrice daily for estrus until 72 h. Recipient cows that expressed estrus and had a corpus luteum received a frozen-thawed embryo on Day 7 after estrus. At the time of transfer, recipient cows were randomly allocated to receive 10 mL of flunixin meglumine im, immediately after transfer (n = 365) or served as an untreated control (n = 345). In a subset of cows (n = 80), ovarian ultrasonography was performed on the day of embryo

transfer to determine corpus luteum volume and blood samples were collected twice, at the time of embryo transfer and 7 d later. All cows received estrus detection aids again on Day 14 (7 d after embryo transfer) and were observed for estrus twice daily until Day 24. Accounting for treatment ( $P > 0.1$ ), embryo transfer difficulty score ( $P < 0.1$ ), temperament by treatment interaction ( $P < 0.05$ ), recipient cows with calm temperament had a higher pregnancy rate compared to those with an excited temperament [59.4 (209/352) vs 51.7% (185/358)]. The pregnancy rate for excitable cows without flunixin meglumine was lower (46.3% 81/175) compared to excitable cows that did received flunixin meglumine [56.8% (104/183)], and calm cows that did [59.3% (108/182)] or did not [59.4% (104/170)] receive flunixin meglumine. Proportions of non-pregnant recipient cows returning to estrus on Days 18-24 were not different between flunixin meglumine and control groups, 87.6% (134/153) and 84.0% (137/163), respectively ( $P > 0.1$ ). At the time of embryo transfer and 7 d later, there were moderate to strong correlations among circulating concentrations of progesterone, cortisol, substance-P, PGFM and isoprostane 8-epi PGF2a. Among excitable cows, progesterone concentrations were lower and cortisol, substance-P, PGFM and isoprostane 8-epi PGF2a concentrations were greater for cows in the control group compared to cows that received flunixin meglumine. In conclusion, administration of flunixin meglumine improved pregnancy rates in excitable recipient cows following embryo transfer without affecting the proportion of non-pregnant cows returning to estrus.

(2) Mandel C, Adams-Progar A, Sischo WM, Moore DA. Predictors of time to dairy calf bucket training. J Dairy Sci. 2017;100:9769-9774.

The time required to adequately bucket-train a dairy calf to drink its milk allotment is unknown. Additionally, factors that could predict calves who are slow to learn have not been identified. A prospective observational study was conducted to describe timing of bucket training and possible calf birth and colostrum quality factors that might predict calves requiring extra time to train. On one dairy farm, 1,235 calves were enrolled at birth in a prospective cohort study. Calving ease score, calf presentation at birth, twinning, calf sex, and dam parity were recorded by farm personnel. An as-fed colostrum sample for each calf was collected and evaluated for total solids, total plate bacterial count, and coliform bacterial count. Calf serum total protein values were obtained by d 2 to 3 of life. Calves were observed before the morning milk feeding for attitude/posture, and after feeding for assistance needed to drink milk from their bucket. Attitude/posture was significantly associated with whether a calf required assistance or not. Almost 60% ( $n = 724$ ) of calves consumed their morning milk allotment (2 L) after d 3 of life without assistance. Significant factors associated with the odds of requiring assistance with drinking after 3 d of age included calf sex, being born a twin, and the week the calf was enrolled. Knowing how long it takes to train a calf to drink from a bucket could be useful in allocating the time or labor required to successfully train calves.

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## WSDA Corner

by Dr. Brian Joseph, State Veterinarian



### WSDA's New Compliance Program Manager - John Price

John Price is the new Animal Services Division Compliance Program Manager, joining our team in November. John replaces David Bangart who accepted a position with another state agency in May.

John retired from the Thurston County Sheriff's Office at the rank of Lieutenant in 2015 and was most recently employed by the Thurston County Superior Court as security director. John brings with him extensive experience and skills in both investigation and enforcement as well as management. He's served in positions that include detective, field training officer, K-9 supervisor,

civil division commander, SWAT operator, defensive tactics instructor, and community outreach coordinator. John is eager to get out in the field and meet with our stakeholders and learn how he can support our industry. Please don't hesitate to call him if you have questions.

The Animal Services Division Compliance team is comprised of Program Manager John Price, Investigator Bryant Blake and Investigator Rick Daugherty. Compliance team members can be reached at:

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## Continuing Education

### Veterinarians

**CVM Spring Conference**, April 13-15, 2018. WSU Pullman. 1 ½ days (11 Hours) of continuing education for large and small animal practitioners and technicians. SAVE THE DATE!

### Producers

**2018 Pacific Northwest Animal Nutrition Conference**, January 16-17, 2018. Grove Hotel, Boise ID. <http://www.pnwanc.org/>

**Country Living Expo and Winter Cattlemen's Winterschool**, January 27, 2018. Stanwood High School, Stanwood WA. <http://extension.wsu.edu/skagit/countrylivingexpo/>

**Washington State Swine Information Day**, February 9, 2018 from 8:30am – 5:30pm. Pillar Rock Grill, Moses Lake WA. For details and registration visit: <http://extension.wsu.edu/grant-adams/wp-content/uploads/sites/39/2017/12/2018WASwineInfoDayRegistration.pdf>

**Washington State Shearing School**, April 2-7, 2018. For more information visit: <http://extension.wsu.edu/grant-adams/livestockanimal-science/washington-state-shearing-school/>

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

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