Thirteen teams registered for this competition. The written exam had questions about bull management, pregnancy problems, estrus synchronization, hormone manipulation, reproductive diseases, and obstetrics. The top four teams, based on the average exam score per team, were selected to participate in the practical portion of the competition. Teams included Auburn, Colorado, North Carolina, and Washington. Sarah, Sam, and Craig participated in the practical examination consisting of transrectal palpation of 5 pregnant tracts, and demonstration and explanation of retraction to identify early pregnancies (<40 days). Dr. Ahmed Tibary, Dr. Ram Kasimanickam, and Dr. Jacobo Rodriguez guided students’ preparation for this competition by sending reading material and allowing them to participate in herd reproductive examinations and clinic cases. Students received a plaque and each was awarded a $75 gift card. It has been many years since WSU won this competition, so Well Done! Go Cougs!
Dr. Allen joined the Ag Animal Health Team here at the College of Veterinary Medicine just a month ago. He is boarded in Internal Medicine and just completed a PhD studying Johne’s Disease in cattle. Dr. Allen brings many talents to the job where he will be conducting research, teaching clinical medicine to veterinary students, lecturing, and providing outreach for small ruminants, swine, and cattle. Welcome!

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**Recent Research Findings – WSU College of Veterinary Medicine**

The role of animal movement, including off-farm rearing of heifers, in the interherd transmission of multidrug-resistant Salmonella. Adhikari B, Besser TE, Gay JM, Fox LK, Davis MA, Cobbold RN, Berg AC, Hancock DD. *J Dairy Science*. 2009; Sep:92(9):4229–38

Fifty-nine commercial dairy farms were sampled 7 times over 15–21 months to determine the role of animal movement, including off-farm rearing of heifers, in the interherd transmission of multidrug-resistant (MDR) Salmonella spp. Farm management data were collected by on-site inspections and questionnaires on herd management practices before and after the study...

The number of newly introduced MDR Salmonella strains acquired by ... 56% (33/59) of herds ranged from 1 to 8. Logistic regression models indicated that off-farm heifer raising, including contract heifer raising where heifers commingle with cattle from other farms [commingled heifers, odds ratio (OR) = 8.9, 95% confidence interval (CI): 2.4, 32.80], and herd size per 100-animal increment (herd size, OR = 1.04, 95% CI, 1.01, 1.05) were significantly associated with the introduction of new MDR Salmonella strains. The negative binomial regression similarly revealed that commingled heifers [relative risk (RR) = 2.3, 95% CI: 1.1, 4.7], herd size per 100 animals (RR = 1.02, 95% CI, 1.01, 1.03), and a history of clinical salmonellosis diagnosed before the study (RR = 2.5, 95% CI, 1.3, 5.0) were significantly associated with the number of new MDR Salmonella strains that were introduced. Factors not associated with the introduction of new MDR Salmonella strains were housing of heifers and cows in the same close-up pen, a common hospital–maternity pen, and the number of purchased cattle. This study highlights the role of animal movement in the interherd transmission of MDR Salmonella spp.


The objective was to compare reproductive performance of Angus–cross beef cows synchronized with GnRH, a progesterone-based intravaginal insert (Controlled Internal Drug Release, CIDR) for 5–d, and one dose of either dinoprost (PGF) or cloprostenol (CLP, a PGF analogue) or two doses of PGF on the day of CIDR withdrawal. All cows (N=830) at six locations received 100 microg of GnRH and a CIDR on Day 0. Within farm, cows were randomly
allocated to receive 25mg of PGF at the time of CIDR insert removal on Day 5 (1xPGF; N=277), two 25mg doses of PGF, the first given on Day 5 at the time of CIDR removal and the second 7h later (2xPGF; N=282), or 500microg of CLP at the time of CIDR removal on Day 5 (1xCLP; N=271). All cows were given 100microg of GnRH on Day 8 (72h after CIDR removal) and concurrently inseminated (5-d CO-Synch+CIDR). Cows were fitted with a pressure-sensitive estrus detection device at the time of CIDR withdrawal. Timed-AI pregnancy rates were greater (P<0.0001) in the 2xPGF (69.0%) than the 1xPGF (52.0%) and 1xCLP (54.3%) treatments. However, breeding-season pregnancy rates were not different among treatments (87.0% for 1xPGF, 92.9% for 2xPGF and 87.5% for 1xCLP; P>0.1). In conclusion, cows that received two doses of PGF on the day of CIDR removal in a 5-d CO-Synch+CIDR synchronization protocol had excellent timed-AI pregnancy rates that were greater than in cows receiving a single treatment with either PGF or CLP.

### Iodine Deficiency Still a Problem in Sheep and Goats

We recently received reports of losses due to iodine deficiency in sheep and goats leading to visible goiter, stillborns, hair/wool loss, and weak lambs and kids. Although there are other factors that can affect thyroid development, iodine deficiency is the most common cause of goiter in the PNW, but is easy to prevent. Most owners may not be providing an adequate source of iodine. To address this: we are rerunning a pertinent article from Spring, 2008:

**Swollen necks in kid goats**

We recently investigated a herd problem that involved the death of kid goats at 1–2 weeks of age. Many of the kids were born with a symmetrical swelling in the upper neck area. The swelling was confirmed in one kid that died at one day of age to be due to enlarged thyroid glands or goiter (see image). (Knife points to enlarged thyroid glands of a goat kid.) Goiter is the result of either an iodine deficiency or the presence of goiterogens (compounds that interfere with dietary iodine uptake such as those found in the seeds of kale and other *Brassica spp.*). Often adults in an iodine deficient herd will be normal, though reproductive parameters may decline. However kids will be born with goiter and are typically either stillborn or very weakborn and die shortly after birth. An important differential to consider when presented with ventral cervical swelling in kid goats is thymic enlargement. This condition has been described as “milk neck” and is believed to be a benign enlargement of the thymus associated with milk feeding. Kids with thymic enlargement are otherwise normal, in contrast to those born with goiter. Prevention of goiter involves provision of iodine in a mineral mix or iodized white salt (NaCl). Weekly application of 1ml of 7% tincture of iodine (hard to get these days) during gestation was adequate to prevent goiter in nutritionally deficient goats. Dabbing tincture of iodine in the inguinal area of affected lambs and kids has been advocated, though its efficacy is questionable.

*By John Wenz, DVM, MS, FDIU*
Introduction: Outbreaks of MCF in cattle (caused by Ovine Herpesvirus 2, OvHV-2) are unusual, particularly those associated with livestock exhibitions. However, a recent MCF outbreak reported from Western Washington saw an unusually large number of cattle infected by OvHV-2 after participating in the Puyallup Fair held during September, 2008. This outbreak occurred after an annual exhibition that had historically co-housed cattle and sheep for many years. The monetary loss exceeded $20,000 and affected both FFA and 4H communities in the state. One question from this outbreak was the role that “stressed” lambs (those transported to the fair) had on the amount of virus shedding. The objective of this project was to determine if fair-related stress conditions increase shedding of OvHV-2 in adolescent lambs, which might contribute to high exposure rates and unexpected MCF fatalities in Western Washington.

Methods: Between January–September, 2009, 100 adolescent sheep were identified and used to define OvHV-2 shedding (frequency and intensity). Samples were taken from four groups of sheep, ranging from 4 – 10 months of age (herein described as adolescent) (Table 1). All sheep samples were obtained at various fairs across Washington, after receiving exhibitor consent. Nasal secretion samples were collected for a minimum of two consecutive days from each animal to estimate virus shedding frequency and intensity, and one blood sample was collected to determine OvHV-2 infection status. Plasma samples were assayed by cELISA for MCF viral antibody. OvHV-2 DNA levels in sheep nasal secretions were measured by real-time PCR. The OvHV-2 DNA copy numbers in nasal secretions of sheep at fairs were compared with previously published data describing sheep shedding frequency and intensity under normal conditions. Values were compared using Chi–square and Student’s T–tests.

Results: Mean prevalence of OvHV-2 infection was about 65% (Table 1). Variation of infection rates among different groups could be a result of flock density on individual farms. From 254 nasal swab samples from 107 lambs, fair lambs demonstrated higher shedding frequency than lambs at normal conditions: 26 shedding episodes; about one shedding episode per 9.8 days, significantly different compared to one shedding episode per 52.8 days in lambs under normal barn conditions (Table 2). However, mean levels of viral DNA in nasal secretions were not different between sheep at fairs and normal barns (Table 2).

<table>
<thead>
<tr>
<th>Source (Fairs)</th>
<th>Number</th>
<th>Age (months)</th>
<th>% lambs infecteda</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sumner</td>
<td>12</td>
<td>5</td>
<td>100</td>
</tr>
<tr>
<td>Puyallup (spring)</td>
<td>24</td>
<td>6 – 9</td>
<td>88</td>
</tr>
<tr>
<td>Moses Lake</td>
<td>35</td>
<td>4 – 8</td>
<td>42.86</td>
</tr>
<tr>
<td>Puyallup (fall)</td>
<td>36</td>
<td>6 – 9</td>
<td>77.78</td>
</tr>
<tr>
<td>Total</td>
<td>107</td>
<td></td>
<td>65.42</td>
</tr>
</tbody>
</table>

*Shedding of Ovine Herpesvirus 2 from Sheep at Fairs in Washington*

Becca Humphries and Kelsey Oliver -- Sumner High School
Based on the presence of MCF viral antibody in plasma; if an animal is antibody-negative, it is further confirmed by OvHV-2 nested PCR for the presence of OvHV-2 DNA in peripheral blood leukocytes.

Table 2. OvHV-2 shedding in adolescent sheep at fairs versus at normal barns

<table>
<thead>
<tr>
<th>Groups</th>
<th>Shedding frequency&lt;br&gt;Total sample days</th>
<th>Total shedding days</th>
<th>Days/shedding event</th>
<th>Shedding intensity&lt;br&gt;OvHV-2 DNA copies/2 g nasal secretion DNA</th>
<th>No. samples</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>at fairs</td>
<td>254</td>
<td>26</td>
<td>9.8</td>
<td>75</td>
<td>6.2 x 10^7</td>
<td>3.2 x 10^4</td>
<td></td>
</tr>
<tr>
<td>at normal barns c</td>
<td>3062</td>
<td>58</td>
<td>52.8</td>
<td>56</td>
<td>1.4 x 10^7</td>
<td>6 x 10^6</td>
<td></td>
</tr>
</tbody>
</table>

a Significant difference in the shedding frequency between the adolescent sheep at fairs and at normal barns (p-value < 0.0001).
b No significant difference in shedding intensity between the adolescent sheep at fairs and at normal barns (p-value = 0.271).
c Previously published data (Li, et al., 2004, JCM, 42:5558-5564).

Conclusions: There was no significant difference in the shedding intensity of lambs under stressed conditions and lambs under normal conditions. However, shedding frequency in fair lambs was significantly higher than lambs under normal conditions. Therefore, we accept our hypothesis that fair-related stress conditions increase shedding of OvHV-2 in adolescent lambs. Our data suggests that stress is a factor in triggering the actual shedding event, which will increase the risk for transmission of the virus. This information can be used to improve biosecurity protocols at livestock exhibitions by encouraging separation of lambs and species susceptible to MCF, such as cattle. * Supervised by Mr. Greg Pile, Ag. Science Teacher of Sumner High School and Dr. Hong Li, DVM, PhD, Animal Disease Research Unit, USDA-ARS, WSU.

What’s New at WADDL? -- New Strategies for Johne’s Disease Testing

For many years the gold standard for detection of Mycobacterium avium spp paratuberculosis (MAP), the agent of Johne’s disease, has been culture either of feces or tissues such as ileal lymph node or rectal biopsies. Culture has well known limitations in sensitivity, especially in subclinically infected cattle, and turnaround time, positive results usually taking a minimum of ~8–9 weeks to be reported, and cultures being reported as negative after 13 weeks. Thus, serology currently plays a major role in the control strategies outlined by USDA or other published control programs.

Is PCR as good as or better than culture?

WADDL now recommends that MAP testing of feces be done by polymerase chain reaction (PCR) directly from feces rather than traditional culture. In the past, the PCR test was less sensitive than culture. However, PCR is now at least as sensitive as culture in our lab. A major advantage of the PCR test is that results will usually be available in a week or less, compared to months for culture.

Is PCR more expensive than culture?

A disadvantage of PCR is cost ($35 each for 1–3 samples, and $25 for each additional sample). Culture costs have been raised to $35 per sample to meet rising costs of the test materials and test procedures.
What if PCR is not recommended for use in recommended control programs?
Most published control strategies indicate culture, not PCR, as the method to detect MAP in feces. But with improvement of PCR test performance, PCR detection can now be used in lieu of culture without significant change in sensitivity and specificity when compared to culture. Keep in mind that the same interpretive problems associated with negative cultures will also apply to negative PCR tests.

What about testing in sheep?
Johne’s disease can be a problem in sheep. Culture testing in sheep is more problematic than cattle because the ovine strains are harder to grow and take longer – negative results are reported for sheep only after 6 months of culture. Therefore, the direct fecal PCR test has significant advantages over culture for identification of MAP in sheep.

Additional Information?
If there are questions about Johne’s Disease biology, sampling, testing and interpretation of results please contact: Dr. Lindsay Oaks  509–335–6044 loaks@vetmed.wsu.edu

WSDA Corner – State Veterinarian – Leonard E. Eldridge, DVM

Trich testing in Washington – Trichomonomas foetus (T. foetus) is a sexually transmitted organism (protozoan) that causes reduced fertility and abortions in cows. T. foetus is a major problem in beef cattle in many states, thus leading to a screening requirement before moving bulls into neighboring state pastures on pasture permits or for import or export in Washington. Although the standard test to define a negative bull has been, until recently, three consecutive T. foetus–scrapings, collected one week apart, from sexually rested bulls, the accuracy of the test is now recognized to be very low. In addition, microscopic examination of cultures is labor intensive and time consuming. The Washington State Department of Agriculture (WSDA) recognizes a standard Polymerase Chain Reaction (qPCR) test for diagnosing T. foetus infection, offered at the Washington Animal Disease Diagnostic Laboratory (WADDL). WSDA believes that the qPCR–based test can better detect T. foetus than culture. Similar observations have been reported from other diagnostic laboratories. Based on these observations, we strongly recommend the qPCR test over the traditional culture and microscopic examination test for T. foetus to cattle producers and herd veterinarians.

During cold weather, it is critical to collect the sample, inoculate the medium, and package the sample to prevent freezing or over-heating during shipment. Freezing or excessive heat will destroy the organism if present, which may not be detected by the test if numbers are low. Be sure the samples are shipped to WADDL by transportation that reaches the lab in the required 48–hour time period. Recently, there were cases where samples did not arrive to within 48 hours after collection and retesting was required. Do not plan to collect the samples on Friday or the day before a holiday.
WSDA to propose changes to Trichomoniasis rule in near future – When the rule for Trichomoniasis was written a couple of years back, the focus was to prevent infected bulls from entering the state, and to assist in developing a herd plan when the disease was identified in Washington. Today, when an infected herd is identified, cattlemen with adjacent fences are asking to be notified. I don’t blame them; however, additional rules will need to be written so that WSDA will be consistent in each case when additional infected herds are identified. One suggestion is to have WSDA identify any additional contact herds to an infected herd and require these herds to also test. The state of Oregon has this requirement and is a good practice for identifying and eliminating the disease. Another suggestion is to notify all possible contact herds and suggest they test; however, this becomes difficult because I don’t always know who might be involved, especially if an owner is reluctant to do so. Another suggestion is to inform the veterinarians in the area that there is an infected herd. We are currently working on amending Chapter 16–54 WAC, to include amendments to the Trichomoniasis section. As part of the rule making process, interested parties will be mailed the proposed language, and public hearings will be conducted. If you would like to be notified when the Animal Services Division proposes a change to their rules please contact Jodi Jones by e-mail at jjones@agr.wa.gov or by phone at (360) 902–1889. The current Trichomoniasis rule (WAC 16–54–086) is available on our website at http://agr.wa.gov/Lawsrules/.

WSDA to propose changes to Swine rule in near future -- Feral Swine are found in about one-half of the states with a national population nearly 3 million. Webster’s definition of feral is having escaped from domestication or cultivation and become wild. WSDA rule revision proposes to define feral swine as follows: “Feral swine” means animals included in any of the following categories:

1) Animals of the genus Sus that are free roaming on public or private lands and do not appear to be domesticated;
2) Swine from domesticated stocks that have escaped or been released or born into the wild state;
3) European wild hogs and their hybrid forms (also known as European wild boars or razorbacks), regardless of whether they are free roaming or kept in confinement; or
4) Animals of the family Tayassuidae such as peccaries and javelinas, regardless of whether they are free roaming or kept in confinement.

Feral Swine are hard to find, highly prolific and highly adaptable. Cold weather and snow does not affect the survivability. Seventy percent of the animals in each population must be destroyed each year to stabilize the population. The most effective control measures are shooting and trapping. Hunting does not reduce populations as hunters have a vested interest in maintaining a viable population. In Texas, the results of removal of animals were: snares–55%, aerial shooting–17%, traps–14% and hunting with dogs–6%. In Oklahoma, blood samples from feral swine indicate that all common diseases and parasites of swine are present at some level in most feral populations. One study indicated that 22% of all human swine brucellosis cases were found in hunters of these animals. Feral swine compete with a variety of and are considered to be the number two predator of sheep and goats. In areas where feral swine are active there is increased erosion and increased bacteria and silt in streams. In general their presence is detrimental to most native plant species and they are also quite carnivorous. Ecological damage to streams and stream–banks is also a big problem. One sow can have from 3 to 12 pigs and an Australian study showed that a healthy wild hog population can increase fivefold in just 12 months!! Control begins with awareness and cooperation between agencies and organizations both public and private. Recent information from the Washington State Department of Fish and Wildlife indicates there
were wild pigs on the Olympic peninsula; however, there has been no evidence the last decade. We are currently working on amending Chapter 16–80 WAC, to include creating a definition for feral swine. As part of the rule making process, interested parties will be mailed the proposed language, and public hearings will be conducted. If you would like to be notified when the Animal Services Division proposes a change to their rules please contact Jodi Jones by e-mail at jjones@agr.wa.gov or by phone at (360) 902–1889. The current swine rule (WAC 16–80) is available on our website at http://agr.wa.gov/Lawsrules/.

### Failure of Passive Transfer of Immunity in Dairy Calves

**Study to determine prevalence of failure of passive transfer and colostrum management practices on Washington State dairies.**

A recent national dairy study estimated the prevalence of failure of passive transfer (FPT) of immunity (from colostrum) on US dairy calves to be 19%; however, the prevalence in Washington State is unknown. From May to August, 2010, WSU will conduct a study to determine the prevalence of FPT and colostrum management practices on Washington State dairies. The goal is to identify ways to improve colostrum management. This study will also identify herds for a future study to determine the effectiveness of a specific colostrum management plan to reduce FPT. If you would like to participate in this study please contact Sandy Poisson (509–335–8225 spoisson@vetmed.wsu.edu) or Dr. John Wenz jrwenz@vetmed.wsu.edu 509–335–0773. We need to identify herds for participation and veterinarians to assist with sample and data collection.

### Beef Quality Assurance Highlights

**BioSecurity Practices for a Ranch or Feedlot**

- Vaccinate the herd against all endemic diseases.
- Screen animals for suspected disease problems.
- Isolate all sick animals into a designated hospital pen.
- Work younger or healthier animals first; then work older higher risk animals.
- Practice “all–in, all–out” animal movement in pens and pastures.
- Know the health history of incoming animals.
- Purchase feed from reputable sources.
- Keep records of all disease occurrences and treatments.
- Control access to your operation & post BioSecurity procedures.
- Place animal receiving and load–out facilities at the perimeter of the operation.
- Clean boots and change clothing between animal groups with different health status.
- Have your vet necropsy animals that die from unknown causes.
- Quarantine all newly acquired animals or reintroduced animals.
- Euthanize chronically sick animals & promptly dispose of dead animals.

For detailed information on ranch biosecurity, go to: [http://www.bqa.wsu.edu/states/wa/documents/BIOSECURITYBASICS.pdf](http://www.bqa.wsu.edu/states/wa/documents/BIOSECURITYBASICS.pdf)
Continuing Education

Veterinarians

**Veterinarian Online CE for Official Trich Testing**
To take the course and receive certification, go to:
http://vetextension.wsu.edu/programs/bovine/trich/index.htm

**Veterinarian Online CE for TB Testing Certification**
To take the course and receive certification, go to:
http://vetextension.wsu.edu/programs/bovine/tb/index.htm

Academy of Dairy Veterinary Consultants Spring Meeting

Producers

**Shearing School**

April 5-10, 2010. Located in Moses Lake, WA. For more information contact Sarah Smith at the WSU Grant-Adams Extension at (509) 754-2011 ext. 413

4-H Leaders

**Quality Assurance Volunteer Leaders Online Program**

http://vetextension.wsu.edu/programs/4-H/index.htm

Send newsletter comments to the Editor:

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