

# CEPTOR



Animal Health News

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*Due to the eight-week labour disruption in government offices this spring,  
we did not publish a March 2002 issue of CEPTOR.*

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## Veterinary Science Staffing Update

**Kathy Zurbrigg** is a Veterinary Technician and will be filling the Health Surveillance Specialist position for the next six months. You can reach Kathy at (519) 846-3418, [kathy.zurbrigg@omafra.gov.on.ca](mailto:kathy.zurbrigg@omafra.gov.on.ca)



This summer, we welcome the help of three very capable students. **Krista Kean** is assisting Tim Blackwell. **Jennifer Gardner** and **John Williamson** are working on research projects for Bob Wright and Neil Anderson respectively.

## Dairy Health Management - Treatment and Extra-label Drug Usage

*Ann Godkin, Veterinary Science, OMAF*

In May 2002, veterinary practitioner graduates of the Dairy Health Management Certificate program got together in Guelph for a continuing education meeting. There were frank discussions about treatment and extra-label drug usage. One speaker suggested that many on-label treatments for mastitis are unlikely to be successful.



Although single or double antibiotic treatments for bacterial infections are often discouraged, this is what labels, particularly those on the intra-mammary products, recommend. The speaker suggested that a new spreadsheet program could incorporate MIC (minimum inhibitory concentration) information into the therapeutic decision process. Unfortunately, if this suggestion were followed, many treatment protocols would need higher dosages for a longer period of time than is recommended on the label.

The use of medications in an extra-label manner in food animals is a contentious issue. There is a heightened awareness that the extra-label use of antibiotics is frequently behind excess antibiotic levels in raw milk. This is more costly to the dairy industry than can be re-couped by producer penalty dollars. The banning of extra-label drug use in lactating dairy cattle is being recommended by some in the industry.

*(continued on page 3)*

**One copy per clinic  
Please circulate to all practitioners.**

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*(continued from page 1)*

For veterinary practitioners, there are three risks with extra-label drug usage. The first risk is contamination of the milk or meat if an appropriate withdrawal time is not observed. The second risk is failure to cure the disease if medications are not used in an extra-label manner, leading to concerns about animal well-being and suffering. The third risk is that the producer will learn the “new” extra-label protocol by observation and may attempt to use it without veterinary supervision on another occasion. One producer might teach the technique to another, greatly lengthening the distance from the full veterinary supervision of the particular practice. Without veterinary supervision, there is no assessment of the appropriateness of the treatment for the particular animal or case.

Mastitis is a disease for which treatment is frequently considered. Cases of clinical mastitis on different farms or in different cows often appear similar even though the bacteria causing the infection may be different. A veterinarian, considering using a product in an extra-label manner, would take into account the farm history, lab results on current and previous cases, differences in the cows themselves (her age, her clinical signs, her suffering, the case severity, etc.) and the overall perspective of that case in that herd at that time.

Veterinarians are fully entitled to use medications in an extra-label fashion. They recognize that there should be no alternative labelled product available for treatment. They need a full VCPR (vet-client-patient-relationship) with the owner of the animals, they must provide written use and withdrawal instructions and they must take responsibility for providing all the information necessary to ensure good animal care and food safety.

Veterinarians can use medications in an extra-label manner to improve animal health, while at the same time protecting the food supply from contamination. There is more information readily available every day from sources like gFARAD, electronically searchable databases and new research about pharmacokinetics and diseases to continue to support veterinarians to do this.

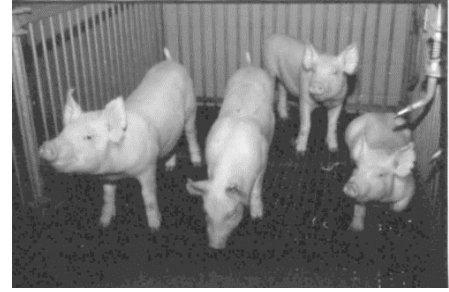
Producers need to be aware of the risk to the industry, both product quality and the potential loss of treatment privileges, when they use extra-label treatments without veterinary supervision. Livestock medicine courses must continue to emphasize the need for veterinary supervision of all extra-label medication use. In this way, animal health, welfare and food safety will be optimized.



## Swine Herd Health; Dairy and Small Animal Practitioners Teach us a Lesson

*Tim Blackwell, Veterinary Science, OMAF*

Veterinarians use their diagnostic skills and experience to determine when a re-check is needed following treatment of severe disease in an individual cow, dog or cat. "I'd better see her again tomorrow," is the oft-repeated phrase. Too often, however, we fail to apply the same approach in herd medicine.



When we are called to a severe outbreak of diarrhea in a farrowing room or widespread respiratory disease in a finishing barn, we often make a tentative diagnosis, collect samples for laboratory submission, and prescribe a first line of treatment pending results from the laboratory. However we seldom say "I better check in here again in the morning." Sometimes we do not contact the farm again for several days or more, until the laboratory results arrive on our desk.

When we do contact the owner, we may be surprised to find that, despite a failure of our initial therapy, the producer has not contacted us in the intervening days. It can be quite disturbing to see how little improvement has resulted since we prescribed our initial course of therapy. The line "I'll call when I get the lab results, let me know if you have any questions or problems in the meantime," conveys a completely different message than, "I better check in here again tomorrow."

A herd of sick animals certainly deserves at least the same standard of care an individual cow or dog receives. Producers have come to accept this approach in swine herd health but perhaps they would prefer the individual animal model. Veterinarians may be missing an opportunity to improve their level of service and decrease animal suffering by not imitating the service model of our colleagues in individual animal medicine.

## Melting Snow Can Affect Biosecurity

*Tim Blackwell, Veterinary Science, OMAF*

A recent series of outbreaks of porcine reproductive and respiratory syndrome (PRRS) in Minnesota has stimulated some straightforward research on biosecurity in hog units, with an emphasis on the front door.

Dr. Scott Dee from the University of Minnesota presented his findings at the recent annual meeting of the American Association of Swine Veterinarians. He stepped onto snow that had been intentionally seeded with PRRS virus and then drove 40 km to a simulated pig farm. On arrival, he removed his snow-covered boots and set them in the experimental entry area. After a few minutes, the snow had melted and he then placed a styrofoam container, a lunch box, a cardboard box and a toolbox one at a time on the pool of water, which had formed from the melted snow.

From all four surfaces he recovered PRRS virus using cell culture techniques. This simple experiment was designed to show that even in strict "shower in and shower out" swine farms, placing a box on the floor while you remove your shoes may be all that is needed to transfer

disease into a swine unit.

Cross-contamination at entryways in swine farms is often overlooked as a source of potential disease introduction. Dr. Dee suggests that, as a minimum requirement, a rack or shelf in the entrance vestibule should be standard on all swine farms. This shelf would provide an obvious place to set packages and other items carried into the units so that they are kept off the floor while employees, visitors, or delivery personnel are removing winter shoes and boots. That puddle of water at the barn entrance may be more of a threat than it appears.



## **Common Concerns in the CQA Validation Process**

*Dr. Tom Sanderson, Hanover, Ontario*

The Canadian Pork Council's Quality Assurance Program (CQA) has been administered in Ontario by Ontario Pork for almost three years. During this period of time, most of Ontario's producers have joined the parade and enrolled in the program. Many have already been re-validated in the so-called 'Partial' version that involves a review of records on the part of the validator with no on-farm visit.

A steady improvement in record keeping by producers has been noted during this period and producers and validators are more aware of the need to use antibiotics and other medications in an appropriate manner. A couple of medication recording errors still occur with enough frequency, however, to be of concern.

An error in withdrawal time for OXY LA (Citadel) which occurred in the first issue of the CQA Swine Medication Appendixes continues to confuse a number of people. Please note that the label withdrawal time on this product at 1 cc/10 kg is 28 days.

The many brands of Procaine Penicillin G, with their varied dosages and withdrawal times, continue to confuse many involved in the program. For example: a product such as Pen Pro (APA, 5-day withdrawal) will be approved by the validator on the Medication and Vaccine Usage Plan at the label dose and, shortly thereafter, the producer will switch to a product such as Pro Pen LA (which has a label withdrawal of 10 days) but continue to observe the 5-day withdrawal time for the original product. One recent set of validation forms had no less than four different brands of Procaine Penicillin G and two brands of Benzathine/Procaine LA Penicillin listed on the Medication and Vaccine Usage Plan. This multiplicity of brands in the medicine cabinet will only add to the risk of a mistake being made in calculating withdrawal times.

Since many producers feel the need to use more than the label dose with Penicillin products, a number of validators/herd veterinarians now recommend an extended withdrawal time on all penicillin products, regardless of the brand, i.e.,:

- 15 days for all Procaine Penicillin G products,
- 21 – 28 days for all Benzathine/Procaine Penicillin products.

**The bottom line is, to be CQA certified, producers can only use medications off-label with the approval of their herd veterinarian.** The veterinarian's signature on the herd's Medication and Vaccine Usage Plan provides this approval. The producer's signature on this form indicates his agreement to comply with these directions. Both signatures are required on this form if any product is used off-label.

Divergence from these approved dosages and withdrawal times, as indicated on the producer's Treatment Records, is a serious concern and can cause loss of validation at the time of the

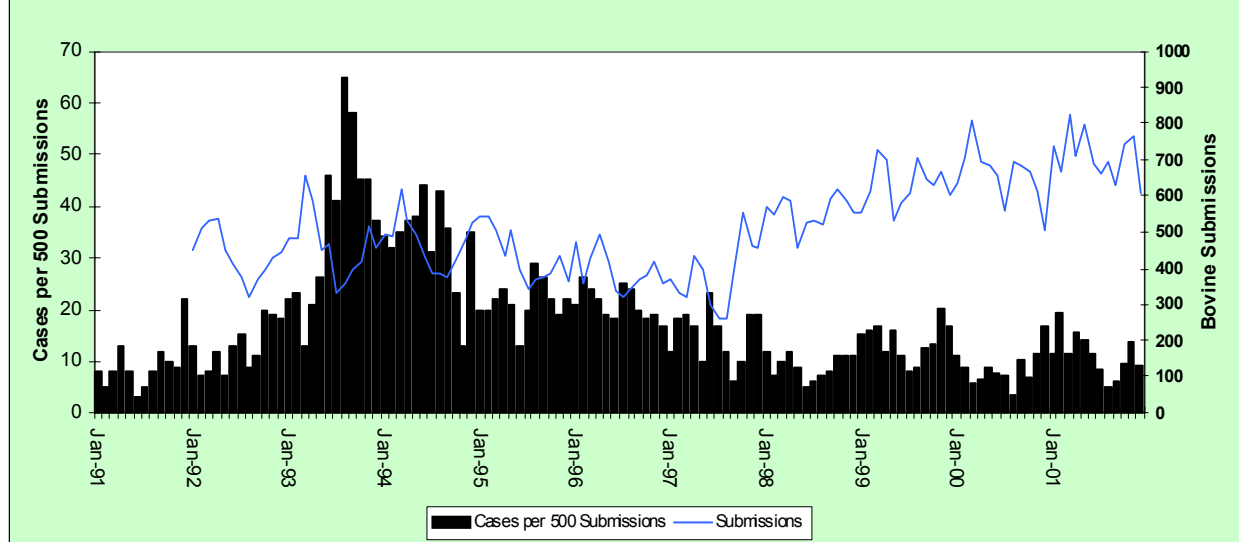
producer's next record review.

## BVD Report 2001

Paul Innes, Veterinary Science, OMAF

The Animal Health Laboratory (AHL), University of Guelph, diagnosed 203 cases of Bovine Viral Diarrhea virus in 2001 through virus isolation, acute and convalescent serology and histopathology. This is an increase over the 136 cases seen last year, but is similar to 1999 figures. The case total tends to reflect the number of farms affected, as very few had multiple cases diagnosed through the AHL. **Figure 1** shows the cumulative cases relative to bovine submissions since 1991.

**Figure 1: BVD cases relative to bovine submissions to the AHL, 1991-2001**  
BVD Cases and AHL Bovine Submissions



Thirty-two percent of the cases originated from eastern Ontario (defined by K postal code), which is consistent with previous years (range 28-34%). This is also consistent with the proportion of bovine submissions to the AHL from eastern Ontario (30%). **Figure 2** shows the monthly cases since 1998 by region (K denoting eastern Ontario and G denoting all other regions combined).

The percentage of cases attributable to beef herds in 2001 was also similar to that of previous years (27.6% compared to 26.8% in 2000). Age information was provided for 69% of cases, an improvement over previous years. There was an increase in cases involving calves under six months over the winter and spring compared to the same time period in recent years, although the number of cases is still much lower than was seen in 1993-95. This relative increase did not persist throughout 2001.

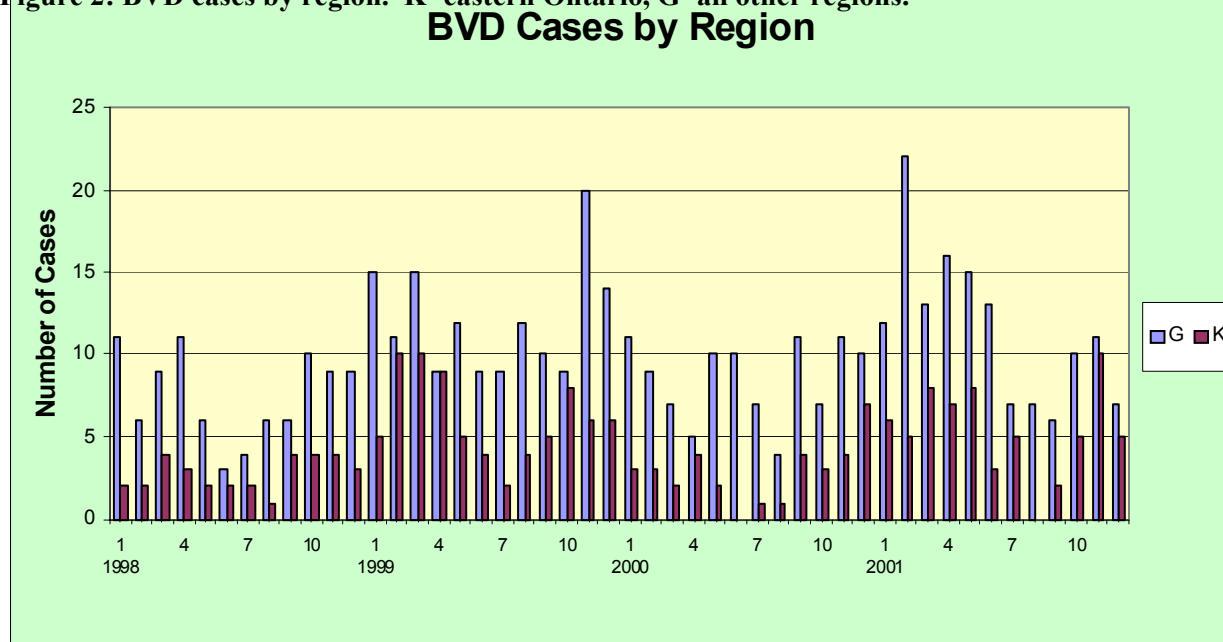
Of the affected farms, most reported low morbidity and mortality. Those with high mortality often imported calves from multiple sources and had other significant disease etiologies diagnosed in addition to BVD, such as salmonellosis.

The level of BVD can be kept low only if a high proportion of cattle herds in Ontario continues to be properly vaccinated for BVD. The addition of cattle 24 months of age or younger may pose an increased risk of introducing the disease in susceptible herds. Recommending the following

biosecurity measures to clients will help:

- Quarantine herd additions.
- Seek out vaccine history of purchased cattle - if in doubt, re-vaccinate.
- Consider BVD testing herd additions and their offspring.
- Review the use of BVD vaccine in herd programs with your clients.

Figure 2: BVD cases by region. K=eastern Ontario, G=all other regions.



Data courtesy of the Animal Health Laboratory, University of Guelph

## Recognizing the Gross Lesions of *Mycoplasma bovis* in Feedlot Beef Calves

Jeff L. Caswell and Mihai Gagea, Department of Pathobiology, Ontario Veterinary College, University of Guelph

*Mycoplasma bovis* is an increasingly recognized cause of chronic pneumonia and polysynovitis in feedlot beef cattle in Ontario. These calves have often had prolonged antibiotic therapy for non-responsive or relapsing respiratory disease, which is indistinguishable from shipping fever in the early stages. Calves may be lame and have swelling of one or more joints, and many calves exhibit both respiratory disease and lameness. These cases are intriguing, because *M. bovis* infection has been recognized for many years in pneumonic as well as clinically healthy calves, and the reasons for the apparently increasing prevalence of the disease are currently under investigation.

The gross appearance of *M. bovis* pneumonia and arthritis may include one or more of the following:

1. **The distinctive lung lesion.** The cranioventral lung is reddened and firm or hard, scant fibrin or fibrous tags may cover pleural surfaces, and bronchial lymph nodes are enlarged and diffusely white. Within this consolidated lung, there are

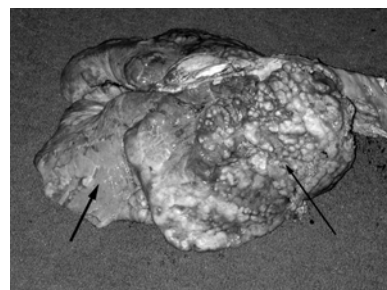
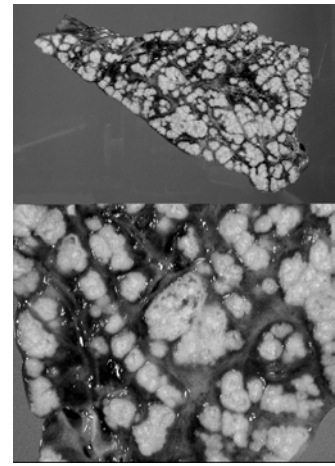


Figure 1. The cranioventral 65% of the lung is consolidated and contains numerous raised white foci of necrosis (thin arrow). The dorsocaudal lung (thick arrow) is more normal.

many raised, white-yellow, sharply demarcated foci of caseous necrosis. Dry, crumbly or cheesy exudate may be expressed from a cross-section of lung. These foci of necrosis are often 2-10 mm diameter, but occasionally enlarge to many centimeters diameter.

2. **Lung abscesses.** As these lesions become older, they may often contain fluid pus rather than dry caseous exudate, presumably due to secondary or concurrent bacterial infection. At this stage, it may be impossible to distinguish the lesions of *M. bovis* from the lung abscesses that occur as a chronic sequel to shipping fever pneumonia.
3. **Sequestrum formation.** Similarly, sequestra occasionally develop from the lesions of *M. bovis*. A sequestrum consists of a 5-30 cm diameter mass of friable, firm, necrotic lung tissue that is easily separated from an outer fibrous capsule. Sequestra may persist for the life of the calf and provide a source for recurrent infection of the remaining lung tissue. Sequestra caused by *M. bovis* appear identical to those caused by *Mannheimia haemolytica* (formerly *Pasteurella haemolytica*) or *Haemophilus somnus*, unless the small foci of caseous necrosis typical of *Mycoplasma* infection are present in the consolidated lung adjacent to the sequestrum.
4. **Joint lesions** are present in one or more joints - usually the carpus, elbow, stifle, or hock - of many calves with *M. bovis* pneumonia, and the lesions may vary considerably within the same animal. Acute lesions consist of fluid and fibrin in joint cavities and tendon sheaths, and the synovium is red and thickened. Purulent or fibrinopurulent exudate may be present in more established lesions. Foci of caseous necrosis, similar to those described in the lung, are present in the synovium or capsule of chronically affected joints. Other joints have minimal lesions in the articular cavity, but extensive edema and foci of caseous necrosis in the peri-articular soft tissues.



**Figure 2. A cut section of lung reveals numerous coalescing white foci of caseous necrosis, which have a dry crumbly texture.**

**Multifocal necrosis in pneumonic lung tissue: how do lesions of *Mycoplasma bovis* differ from those of shipping fever (*Mannheimia haemolytica* or *Hemophilus somnus*)?**

	<i>Mycoplasma bovis</i>	<i>Mannheimia haemolytica</i> or <i>Hemophilus somnus</i>
Shape	• Circular	• Irregularly shaped
Colour	• White-yellow throughout	• White rim, with pale red centre
Content	• Crumbly texture (caseous necrosis)	• Tissue-like texture (coagulation necrosis)
Size	• 2 mm, up to many centimetres	• Usually greater than 5 - 10 mm diameter

A variety of techniques are available to confirm the tentative diagnosis of *M. bovis*. This agent can be readily isolated from lung at the Animal Health Laboratory, but may be difficult to isolate from arthritic joints. Immunohistochemistry is useful to demonstrate localization of mycoplasmal antigen within the characteristic histologic lesions, and this test can be used on formalin-fixed tissues. It is critical to realize that many calves without apparent pneumonia may carry *M. bovis*. Thus, the diagnosis rests on identifying both the infection with this agent AND the presence of the characteristic gross and/or histologic lesions. Seroconversion occurs in many healthy calves in the first month after entering feedlots, making this test of dubious significance.



## **Livestock Medicines Certification: Part of the Dairy Quality Assurance Program**

*Debbie Brander, Farm Policies and Programs,  
Dairy Farmers of Ontario*



Following changes to regulations, all licensed milk producers will be required to have taken a livestock medicine course by April 2003, to meet Grade A requirements in Ontario.

A livestock medicines certificate is one component of the Dairy Quality Assurance program that is being introduced to all Ontario dairy producers. Producers will receive a certificate after successfully completing a course. Each licensed operation must have at least one certified employee or owner. A certificate is valid for five years from the date of course completion.

Livestock Medicine courses teach the safe use and handling of livestock medicines. Producers completing the course will be able to:

- 1) develop a team (farmer, vet, employee) approach to handling livestock medicines;
- 2) read, understand and follow the livestock medicines' label directions; and
- 3) improve farm livestock medicines' management systems.

Producers can sign up for courses that have been tentatively scheduled by contacting Ridgetown College at 1-877-480-9992. Veterinarians can initiate and organize a course. These are also scheduled through Ridgetown College. Courses must have a minimum of 20 participants and no more than 25.

The cost of the one-day course is \$50 in 2001-2002. This price is currently reduced, by \$50, through subsidization from the Agricultural Adaptation Council. The course fee may need to be increased in 2002-2003.

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## **Websites of Interest**

Clinical Infectious Diseases (a series of articles explaining the issues around antimicrobial resistance and agriculture) <http://www.journals.uchicago.edu/CID/journal/contents/v34nS3.html>

United States Department of Agriculture (great information on BSE, including the assessment of likelihood of it coming into US by Harvard) <http://www.aphis.usda.gov/oa/bse/>

Canadian Dairy Information Centre (good information about the Canadian dairy industry) <http://www.dairyinfo.agr.ca/index.html>

Grymer/Sterner Toggle Suture (A 'how to' site for bovine practitioners considering toggle repairs of LDAs) <http://www.ldatogglesuture.com/>

Canadian Animal Health Institute [http://www.cahi-icsa.ca/english/resources\\_members.htm](http://www.cahi-icsa.ca/english/resources_members.htm)

Equine World Wide Web Sites <http://www.erc.on.ca/links.htm#Directories>

Government of Canada [http://canada.gc.ca/main\\_e.html](http://canada.gc.ca/main_e.html)

Health Canada Drug Product Database <http://www.hc-sc.gc.ca/hpb/drugs-dpd/>

Canadian Food Inspection Agency <http://www.inspection.gc.ca/>

Currency Exchange Rates <http://www.oanda.com/convert/fxhistory>

Canada Post - Postal Code Lookup <http://www.mailposte.ca/personal/tools/pcl/bin/default-e.asp>

Canada 411 - Phone Directory <http://canada411.sympatico.ca/>

## Electric Cow Trainers and Feeding

Neil Anderson, *Veterinary Science, OMAF*

Individual cows in tiestall barns frustrate producers' attempts to properly place electric cow trainers for cow and stall cleanliness. Some producers rise to the challenge by mounting several wires around the cow. (Ewen, an avid observer of such things, claims five wires as his record, but has no photos for verification.) Others blame genetics and cow stupidity for an inability to train cows. Nonetheless, Gary says it's simply feeding. We can learn from his observations.

Look carefully and you will see a large arc in the spine of a urinating cow. Because of this normal behaviour and posture, it's easy to correctly position a trainer for a urinating cow.

However, it's more difficult to position a trainer for a defecating cow because her posture and the arc in her spine vary with feeds and feeding husbandry. Generally, a diet of dry hay and some corn silage leads to firm manure - and an arc in the spine during defecation. A diet high in haylage or grain produces more liquid manure - and less arc in the spine during defecation. As fecal consistency approaches diarrhea, there may be no arc in the spine and very slight elevation of the tail. For a within barn comparison, watch dry cows on a dry cow diet and milk cows fed for peak production.



**Producers with the new "freedom" tiestalls (high tierails, long chains, and open fronts) find the electric trainer must be positioned more rearward than it would have been in their old stanchion, comfort, or low tierail stalls.**

**Diet and consistency of manure are also important to cow and stall cleanliness in freestall barns. Look at the dry cow group and the high production group for a comparison.**

Because diet alters behaviour and posture when cows defecate, Gary advises us to call a nutritionist to remedy cow trainer problems on some farms. The cure may be simple - reduce the haylage and increase the corn silage, feed some dry hay, or decrease the amount of grain. Feed for firmer manure, regain the arced posture for defecation, and your cow trainer, cow and stall cleanliness woes may be solved. Remember to reposition the trainers about two inches above the cow.

## Milk Lost before Lameness Diagnosis

Neil Anderson, *Veterinary Science, OMAF*

What we don't see hurts - lameness is an example. Green and co-workers in the UK found substantial milk losses occur prior to the diagnosis of lameness in cattle (International Lameness Symposium, Orlando, FL. January 2002).

Clinically lame cows produced less milk for up to five months before being diagnosed lame or treated, and for two months after the treatment. The total mean reduction in milk yield per 305-day lactation was 140 kg (95% CI 50-230 kg). Milk yield returned to normal two months after treatment.

The findings reinforce the importance of early identification of clinical lameness and the urgency of techniques to improve upon a very subjective diagnosis.

## Lost Dollars Due to Lameness in Dairy Cows

Jocelyn Jansen, Veterinary Science, OMAF



Researchers at Cornell University investigated the effect of lameness on milk production in dairy cows<sup>(1)</sup>. Lameness data were collected on two New York dairy farms for 1.5 years. The herds were mainly Holstein cows, housed in freestall barns and parlour milked two or three times daily. Milk weights were recorded daily. In herd A, lameness cases were diagnosed and treated by farm personnel. In herd B, lameness was defined as a foot lesion, identified by a hoof trimmer at a monthly visit or a diagnosis and treatment by farm employees between hoof trimming dates. Milk production for lame cows was compared to cows in the same herd, lactation group, stage of lactation and season of calving, that were not lame.

In both herds, milk production decreased significantly for lame cows. In herd A, for all lame cows, milk production decreased by an average of 1.5 kg/day in the second week after being diagnosed lame in comparison to non-lame herd mates. Production losses were greater in cows in second or greater lactation compared to cows in their first lactation. The drop in milk production was also more severe for cows that had severe lameness (-2.8 kg/day). The degree of drop in milk production was found to be greater, and to last longer, for cows with abscesses or sole ulcers than for cows having foot rot, foot warts or when no lesions could be seen. From the herd data it was calculated that a third lactation cow that became lame at 100 DIM, and continued to milk another 200 days, would lose 372 kg of milk production compared to a similar cow that was not lame. At \$0.55 per litre, this lack of production cost the producer \$205.00 in lost milk sales alone.

In herd B, milk production decreased by an average of 0.8 kg/day for all cows in the second week after being diagnosed as lame. This decrease was smaller than that observed in herd A. In first lactation cows, lameness did not have an effect on milk production. Production in older cows was affected. The decrease in milk production for cows diagnosed lame by employees between hoof trimming visits was -4.7 kg/day. In contrast to herd A, foot rot tended to have a longer and larger effect on milk production than abscesses and sole ulcers in herd B.

The differences between herds in lost milk production may have occurred because of differences in identifying and treating lame cows, or may have been due to differences in the specific causes of lameness and the frequency in which they occurred. Regardless of the differences, both herds experienced a decrease in milk production in spite of treatment of lame cows with typical therapies.

Not all farms will have losses identical to the ones found in this study. However, the information from these two herds emphasizes the economic importance of lameness in a dairy herd. Lameness occurs due to management choices. Making changes to management practices and facility design that cause lameness will save your dairy clients' money.

1. Warnick LD, Janssen D, Guard CL and Grohn YT. The effect of lameness on milk production in dairy cows. *Journal of Dairy Science* 2001; 84:1988-1997.

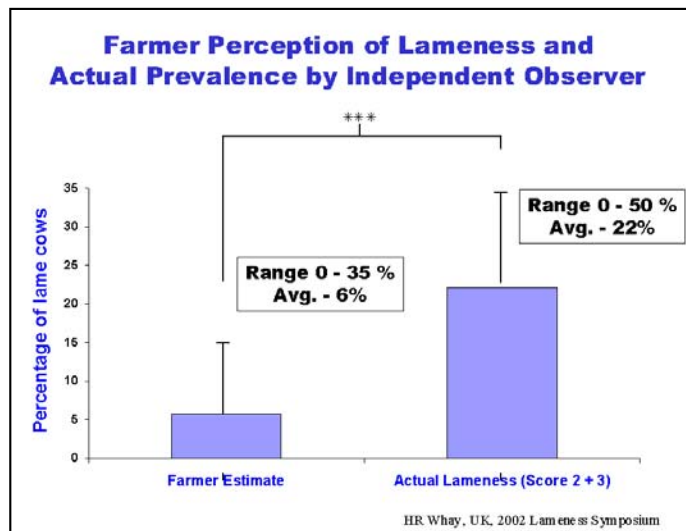
## Farmer Perception of Lameness Prevalence

Neil Anderson, Veterinary Science, OMAF

Sometimes we miss things by not looking - and sometimes by not knowing. With lameness in dairy cattle, under-perception is a concern. A lack of recognition could mean lame cows do not receive treatment or herds do not receive preventive measures. The issues also include workplace health and safety and animal welfare.

In the United Kingdom, H. R. Whay found dairy farmers underestimate the prevalence of lame cows by 16% (International Lameness Symposium, Orlando, FL, January 2002). Twenty-

eight of her 53 study herds were members of the RSPCA Freedom Foods scheme. Average herd size was 120 (range 34-38) and 6,386 cows were in the study.



A trained observer scored the cows and reported an average clinical lameness of 22% (range 0-50%). However, farmers estimated an average lameness prevalence of 6% (range 0-35%). One producer correctly estimated and another overestimated lameness prevalence.

According to Whay, under-perception of lameness stems from a lack of knowledge or training. She also recognized that some farmers could be desensitized from being constantly surrounded by lame cows. She also concedes that some farmers could have been reluctant to admit how much lameness existed in their herds.

**Writer's Note:** Other research reports from the UK and the USA also show underestimation of lameness by farmers. Recognition of the problem is the first step in managing lameness. Producers should be looking for the training.

## Cow Tracks and Floor Choices

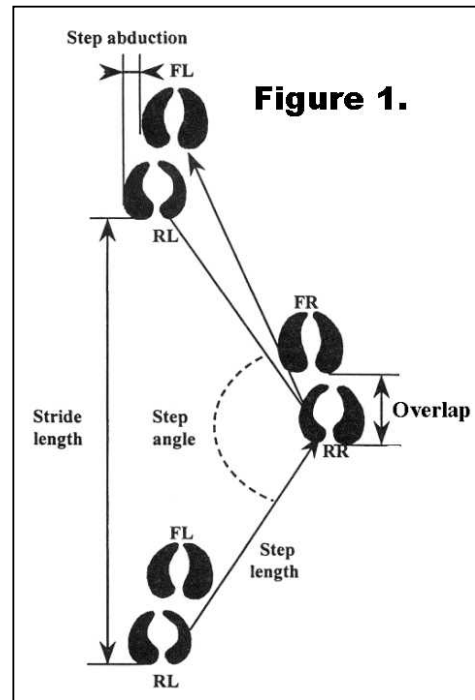
Neil Anderson, Veterinary Science, OMAF

Evgenij Telezhenko, Christer Bergsten, and Thomas Manske, a Swedish research team, should get the prize for elegant, inexpensive, and practical research. With tape measure, broom, and a pail of whitewash, they studied the effect of floors on cow behaviour, locomotion and comfort - information needed to wisely choose a barn floor. Telezhenko's poster at the International Lameness Symposium (Orlando, FL, January 2002) inspired my request for more information. His reply was speedy and thorough, including photographs, and a sincere wish that his findings would be useful for cow comfort in Ontario dairy barns.

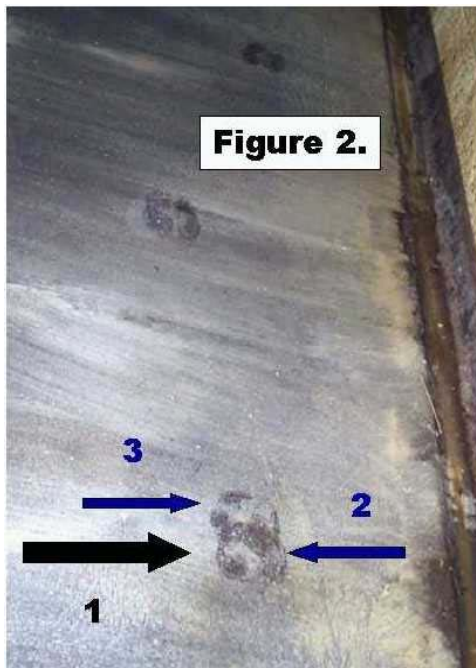
Telezhenko drew **Figure 1** to show the anatomy of a cow trackway. It does not represent a normal trackway - the one you may be familiar with for cows walking on pasture where the rear foot falls into the position vacated by the front foot on the same side. However, the diagram

shows the components and measurements used to describe or study trackways.

In the diagram, **hoof imprints** are designated as: Front - F, Rear - R, Left - L, Right - R. **Stride Length** is the distance between the two consecutive imprints of the same rear foot. **Step Length** is the distance between two consecutive imprints of the rear legs. **Step asymmetry** is the length difference between two consecutive steps (calculated trait, not in the figure). **Step Angle** is the angle between the lines connecting three consecutive imprints of the rear limbs. **Step Abduction** is the distance between the lateral edges of front hoof imprint and the next placement of the same side hind hoof. The trait value is positive if the rear hoof is laterally of the front hoof. **Overlap** is the distance between the front hoof imprint and the next placement of the same side hind hoof. The trait has a negative value if the imprint of the front hoof is ahead of the rear hoof and positive value when the rear imprint is ahead of the front hoof. **Diagonal Support** is the distance between the diagonally located imprints of front and rear limbs during their stance phase.



At a walk on solid concrete (**Figure 2.**), Telezhenko found the rear imprint covers the front one by half (arrow 1). The lateral rear (arrow 2) and medial front (arrow 3) claws made the wider imprints.



At a walk on a slippery, slatted floor (**Figure 3**), Telezhenko found an alteration of gait and locomotion. Notice the negative overlap - the rear foot does not step into the place of the front foot. There is abduction of the rear feet - the cow placed her rear feet outside the track of the

front feet. In doing so, the researchers believe the weight increases on the sole of the outer claw and predisposes it to sole lesions. In addition, the step angle is smaller, there is step asymmetry, and the steps are shorter (73 cm) on slatted floors than solid floors (80 cm). The stride length was shorter (139 cm) on slatted floors than on solid floors (153 cm).

Cows also adjusted their gait for balance on slatted floors, but Telezhenko believes the change was uncomfortable, and may be the reason for reduced walking. Cows also adjusted walking speed with a shorter stride and he speculated that cows use more energy to walk on uncomfortable floors.

For his next project, Telezhenko is studying rubber flooring and locomotion. A barn floor should give cows the freedom to exhibit normal walking behaviour. By carefully choosing the floor, you could benefit from speed and ease of cattle movements into and out of parlors. Your cows could benefit from foot health and comfort while walking.

## **Rubber Floors in Slatted Floor Barns**

*Neil Anderson, Veterinary Science, OMAF*

Lameness, a major economic and welfare problem in dairy cattle, is directly associated with the flooring in loose housing barns. In Germany, B. Benz and her colleagues studied the effects of slatted floor barns with and without rubber surfaces (Kraiburg KSL mats). Using two farms, each with 60 cows, she found an advantage for comfort, behaviour and foot health with rubber on the slats.

After installing the yielding rubber mats, Benz found fewer claw lesions. She noted no difference in horn growth between the yielding and concrete slatted floors. Benz also observed more frequent caudal licking behaviour on yielding floors - the cattle could stand on three legs and groom themselves more than twice without slipping. The cows quickly adapted to removal of the mats by reducing the caudal licking behaviour. In her presentation at the International Lameness Conference (Orlando, FL, January, 2002), Benz concluded that caudal licking behaviour is a very good indicator of floor slipperiness and the behaviour is important for hygiene between the leg and udder. She also noted that step length on yielding floors (80 cm) was comparable to pasture and differs from concrete (60 cm). Moreover, walking speed was faster on the yielding floors.

Rubber floors solve two problems - slip resistance and hardness. The economic and ethical issues of lameness in confinement dairy facilities also could favour the use of rubber flooring.

**SUMMER**



## Slope Concrete to Alley Centers

Neil Anderson, Veterinary Science, OMAF

At Armstrong Manor Farms, cleanliness, health, comfort and welfare are important. That's why they insisted on four features for their dairy barn floors - darby finish, slope, groove, and scrape.

During construction, their floors were sloped towards the center of the alleys as well as the length of the barn. The objective was to eliminate pooling of urine or waste in walkways and, especially, at the curb of the stalls. With a 1-inch slope, urine runs to the center of the alley and then follows the track of the scraper cable to the manure pit at the center of the barn. The alley scraper is in action about eight times per 24-hour period. Cows kick some sawdust into the alley - this also helps to keep tails and cows exceptionally clean.



The concrete contractor finished the floor with a darby finish by removing the scree marks with a wooden float. Vern Foley, Grandview Concrete Grooving, Arthur, Ontario, completed the job by cutting grooves after the concrete cured. The grooves are on 4-inch centres and are 3/8-inch deep and 1/2-inch wide.

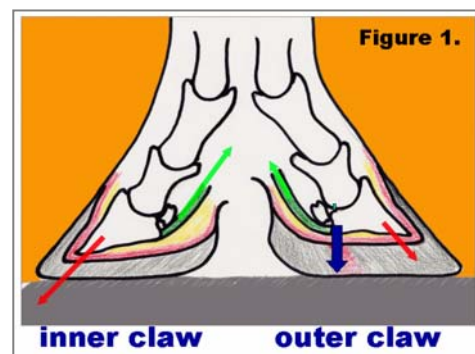
Cows show normal mounting and standing for heat with very good footing on the floor. The number of cows being treated for foot diseases has decreased by more than 50% since moving into the new barn. The dryness of the floor and the cleanliness of the feet are major factors in the improvement of foot health. Armstrongs got what they wanted. They are very pleased with the results. For foot cleanliness and health, and cow comfort and welfare, consider darby finish, slope, groove and scrape for your dairy barn floors.

## Heel-less Claw Trimming - a Tip from Japan

Neil Anderson, Veterinary Science, OMAF

Hiroyuki Manabe ended his presentation at the International Lameness Symposium (Orlando, FL, January 2002) with an apology for his English. "But give me a hoof knife, and watch me talk" was his request. And justifiably so. As Japan's Champion Claw Trimmer, two years running, Hiroyuki cannot compete again. Nonetheless, he continues to trim and teach. Two decades ago, Hiroyuki worked with Holstein cattle in Ontario. When asked to share a tip and his illustrations, he willingly agreed, asking that I extend his best regards to Ontario producers, hoof trimmers, and veterinarians, along with his wish that this tip is useful to you and your cows.

Hiroyuki's tip concerns trimming the claws of a foot affected with a sole ulcer. He perfected a **heel-less trimming method** that maintains the toe triangle on the



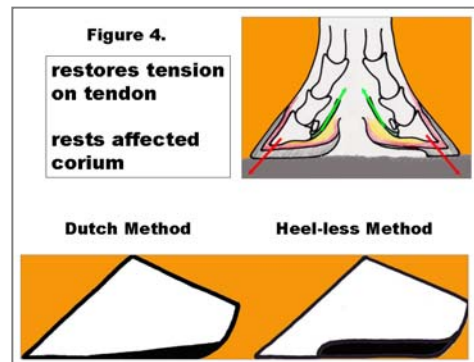
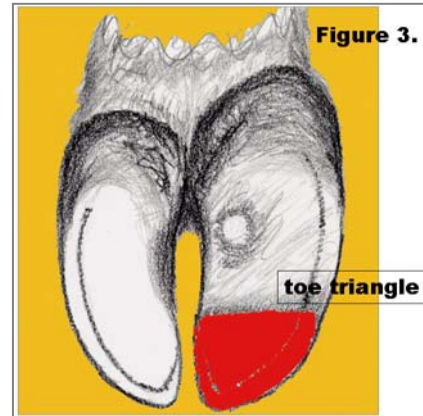
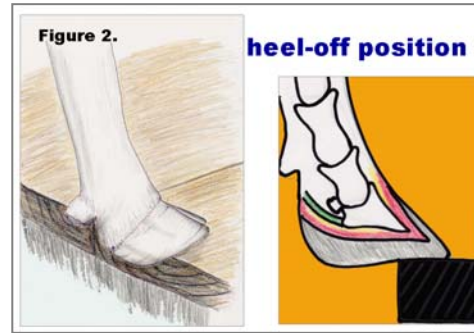
affected claw, keeping it flat and at the same height as the inner claw. However, he trims the affected claw to attain a sharp transition off the toe. He preserves a very thin layer of sole over the corium in the heel area.

Through study, observation, and consultation, Hiroyuki recognized that the overgrowth of the outer claw on the hind foot affects the function of the deep digital flexor tendon. When this happens, he believes the deep digital flexor tendon relaxes and allows the posterior aspect of the pedal bone to bear more weight. A contusion occurs and the ulcer develops at the typical site. **Figure 1.**

Moreover, he observed that cows with sole ulcers stood with their toe on the curb of a stall - in a heel-off position. They were bearing weight on the toe. **Figure 2.** He deduced that the toe triangle could provide an adequate weight-bearing surface for a lame cow with a sole ulcer. **Figure 3.**

Furthermore, he concluded that the heel-less method has advantages over the Dutch method of trimming. He claims that his method allows weight bearing on the toe of the affected claw, restores tension on the deep digital flexor tendon and thus, function, and rests the affected corium. **Figure 4.**

Hiroyuki illustrated the heel-less trimming method with excellent photographs that showed remarkable healing within 5 to 7 days of trimming. However, it was his video that proved what he advocated. The hobbly cow that entered his trimming table, took a few hesitant steps, then marched briskly away with little sign of lameness she had before meeting Japan's Champion Claw Trimmer. In Hiroyuki's hands, it's a champion idea. He hopes it will be for you too.



## Bedding for Dairy Cows: More Science than Art

*Ann Godkin, Veterinary Science, OMAF*

Managing bedding for dairy cows is an art, but science is making in-roads. Clean, comfortable cows have less environmental mastitis, a problem that continues to plague most herds. But knowing how to get and keep bedding clean and comfortable is not simple, nor the same from farm to farm. The type of bedding used is important, as are other factors, such as the frequency of changing the bedding, the barn ventilation and the climatic conditions. The relative importance of each is slowly being defined. Ultimately, the goal is to understand which factors we can efficiently manipulate, under a given set of circumstances, to meet the cow's needs for cleanliness, comfort and minimal exposure to high levels of mastitis-causing bacteria.



Russ Bey and colleagues from Minnesota reported on some practical bedding research at the National Mastitis Council Annual Meeting in February 2002. The paper is in the 2002 Proceedings. These researchers are proving that the number of bacteria in the cow bedding affects the numbers contacting the teat ends and, in turn, the risk of udder infections. And, there are ways producers can control the number of bacteria in bedding.

Some findings in their research to date have been:

- Hardwood shavings, like oak, allowed more bacterial growth than softwoods, like pine and cedar.
- Fine bedding materials absorbed and held water better than sand. Sand allows water to seep away from the bedding surface and the cows teats.
- Finer particles of bedding increased the rate of bacterial growth. This was true for straw, sunflower hulls, aspen sawdust and hardwood shavings.
- Bedding that looked, felt and smelled “clean” had bacteria counts nearly as high as fresh manure. It was impossible to estimate the bacterial load of bedding by looking.
- Bacteria grew at the same rate in bedding in winter, even when the ambient temperatures were below freezing, as they did at other times. Bedding temperatures in an occupied stall remained relatively constant, at about 28 to 30° C. Bacterial growth in bedding still occurred at a high rate, even in cold months.
- Bedding stored in the front of the cow stalls became contaminated with bacteria by contact with the cow’s front feet. The longer the bedding was stored in the front of the stalls, the greater the bacterial numbers were. Pulling this bedding back every two to three days to bed the backs of the stalls, put bedding with an already high bacteria count under the cow’s udder and teats. Adding new bedding to the stall backs at least every two days (the minimum frequency) was recommended. More frequent additions of bedding are needed in some barns with more humid environments due to inadequate ventilation, and during warm humid conditions.
- Tilling up sand bedding brought high bacteria count sand to the surface and in contact with the cow’s udder and teats. The researchers recommended adding new sand to the surface without disturbing the underlying layers. Old contaminated sand should be removed from the stalls once weekly.



There is more to be learned about how bedding management, bedding types, barn environment and climate impact on bacterial multiplication and teat end contamination. This research provides some baseline data but really points us towards a lot more questions that need solving.

For now, the researchers remind us that bedding needs to come from a clean source, be changed regularly and frequently and that cleanliness cannot be assessed visually. Excellent stall hygiene is still essential for mastitis prevention, no matter how “clean” the cows look!



*Animals are such agreeable friends - they ask no questions, they pass no criticisms.*

**- George Eliot, British author**

*Ours is the age which is proud of machines that think and suspicious of men who try to.*

**- Howard Mumford Jones**

## **Producers See Additional Benefits to Preventing and Controlling Johne's Disease**

*Jocelyn Jansen, Veterinary Science, OMAF*

A number of workshops entitled 'Raising Johne's-Free Calves' have been held across the province this winter. The workshops provided producers with information on Johne's Disease (cause, clinical signs, transmission, zoonotic potential, testing) with an emphasis on prevention and control. Though the meetings were tailored to dairy producers, the interest and concern of beef producers was also noted.

Most producers attending the workshops left with a better understanding of Johne's Disease. Many also realized that the prevention and control practices mentioned were ways to improve overall calf health in their herds. Improving the cleanliness of the maternity area, paying more attention to the quality and quantity of colostrum fed and a general reminder to "clean up their acts," were benefits noted by producers.

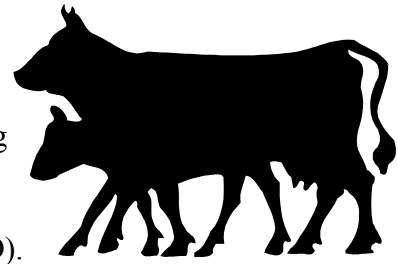
Although most dairy and beef herds in Ontario do not have Johne's, the disease provides an opportunity for veterinarians to discuss ways of improving calf health and general herd health through improved calf management practices and general biosecurity principles when purchasing herd additions.

For more information on Johne's disease workshops or organizing a meeting, please call Jocelyn Jansen at (519) 846-3414.

## **PLDC Beef Cow-Calf Project - Fall 2002**

*Jocelyn Jansen, Veterinary Science, OMAF*

This fall, the beef industry, represented by the Production Limiting Disease Committee (PLDC), is conducting a national beef cow-calf assessment of four endemic diseases: Neosporosis, Johne's Disease, Bovine Leukosis (EBL) and Bovine Viral Diarrhea (BVD). It complements previous dairy studies. This is the first national assessment of the prevalence of any of these diseases in beef herds across Canada since EBL was studied in 1978.



**PLDC -BEEF 2002**

The study group will include 60 herds in each of BC, Alberta, Saskatchewan and Ontario, and 100 herds in the Atlantic Region. Quebec and Manitoba have already completed their data collections. Large animal veterinarians will be asked to collect blood samples from local beef cow-calf herds. Randomly selected producers will receive a questionnaire in the mail inviting their participation. They will be asked to give your name, as their veterinarian. Producers are required to provide management parameters and then arrange a herd health visit with you to collect the samples at fall round-up time. The study involves testing 30 mature cows (>2 yrs old) and 10 calves from each herd. The PLDC will provide veterinarians with bleeding and shipping supplies. You, as the "veterinarian in practice" (VIP), are critical to the success of this national effort. In appreciation for the assistance of veterinarians, PLDC is offering payment of \$100 per herd tested or a chance to win a provincial prize. Each producer who agrees to participate will receive the confidential test results on their herd, which has a value of \$1000.

The PLDC was established in 1997 with support from more than two dozen organizations within industry, provincial Departments of Agriculture and the Canadian Food Inspection Agency (CFIA). Its targets are subclinical diseases (Neospora abortion, Johne's Disease, EBL and BVD) that resist treatment. Little is known about the level of disease in Canadian herds or the management risk factors that contribute to persistence in beef herds. We do know that healthy looking animals could be carriers and spread infection throughout the herd, reducing productivity through abortion, immunosuppression, diarrhea and lack of thriftiness.

Drs. John Campbell and Cheryl Waldner, veterinary epidemiologists at the Western College of Veterinary Medicine (WCVM), have designed a producer management questionnaire to accompany the serological data.

This scientific survey will determine the prevalence of disease at the herd level. Armed with this information, WCVM researchers will evaluate management risk factors and develop preventive measures specifically for beef herds, working towards a Canadian Cattle Health Assurance Program. Updates on the project and findings gained from this study will be reported on a regular basis at both the provincial and national levels.

Please join us in this effort, if called upon, to determine valid prevalence estimates of these infectious diseases at the herd level in Canadian beef cattle.

This project is supported by grants from: The Beef Cattle Research Council (Canadian Cattlemen's Association), Canadian Food Inspection Agency, Agriculture and Agri-Food Canada, WCVM, University of Guelph and all provincial governments.

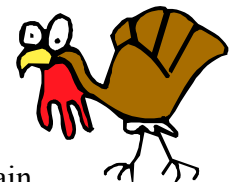
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Website: [www.CAHNet.org](http://www.CAHNet.org)

## Avian Influenza Virus Outbreak - USA

*Paul Innes, Veterinary Science, OMAF*



The United States has been experiencing an outbreak of a low pathogenicity strain Avian Influenza (AI) virus since March. So far, the outbreak has been limited to Virginia, North Carolina and West Virginia, but it has led to the destruction of five million birds and the quarantine of over 180 farms. The USDA is leading the eradication efforts. The source of the outbreak remains uncertain, but wild bird markets in the northeast are strongly suspected.

The low pathogenicity strains of AI virus are not on the OIE list of reportable diseases, are not a public health or food safety risk, and cause only mild disease in poultry. They are still of concern, however, because of their ability to mutate into the more serious highly pathogenic strains. The presence of low pathogenicity strains also results in trade barriers to poultry and poultry products from the affected country.

The Canadian Food Inspection Agency (CFIA) currently prohibits imports from areas affected by high pathogenicity AI virus, but not the low pathogenicity strains. There is presently no change in import/export policy or regulations impacting the flow of poultry and poultry products between the US and Ontario, but this may change, depending on the situation in the US. The USDA is controlling the movement of poultry in the areas affected by the current outbreak, and any export to Canada must be accompanied by a veterinary attestation of health status.

For current information regarding import/export policy, contact the CFIA - Ontario Region at (519) 837-9400.



## West Nile Virus Alert

*Paul Innes, Veterinary Science, OMAF*

2001 saw the spread of West Nile Virus (WNV) southward and westward in the United States, and into Ontario for the first time. The virus was found in 128 dead birds and nine mosquito pools across southern Ontario, from Durham Region to Windsor-Essex. WNV has also been discovered in overwintering mosquitoes in the Windsor area, possibly indicating that it has or is becoming established in this province. Therefore, veterinarians in Ontario are reminded to include WNV infection as a possible etiology of neurologic disease in horses, especially those with a history of travel to the US. **Rabies should be ruled out first, taking the usual precautions and steps.** If rabies is unlikely or tests are negative, further diagnostic tests to rule out WNV may be warranted. Consult the Canadian Food Inspection Agency (CFIA) or the Animal Health Laboratory at the University of Guelph regarding testing protocol and laboratory diagnosis of WNV.



**Although most infected mammals do not become ill, a few individuals of certain species, especially horses, may develop encephalitis due to WNV.** Clinical signs will resemble other encephalitides, but in the early stages may be clinically indistinguishable from rabies. (More information on clinical signs in domestic animals can be found on the CFIA website listed below). There were more than 700 equine clinical cases due to infection with West Nile Virus in the U.S. last year, mostly in Florida, Georgia and the eastern seaboard. Approximately 30% of reported clinical cases die or are euthanised. In addition to the general precautions to prevent exposure to arboviruses (see **CEPTOR** September 2001), **a killed vaccine is now available.** The CFIA has given conditional approval for the importation and sale of the vaccine produced by Fort Dodge Animal Health. It is available in Canada upon request through Ayerst Laboratories in Guelph. For further information about this vaccine, call Ayerst at 1-800-265-7200.

The risk to dogs and cats is uncertain. No cases of WNV in dogs have been reported in the US, even in areas of high virus activity. There are some reports of cats with clinical neurologic disease showing evidence of exposure to WNV, but an etiologic link has not been made.

It is not certain to what extent WNV will be a problem in Ontario this year. It is usually first detected through the testing of wild bird mortalities. Although WNV can cause fatal illness in many species of birds, crows and related species are particularly susceptible to WNV infection, and are, therefore, good sentinels for the presence of the virus. In 2001, surveillance of wild birds for WNV infection was limited to crows and blue jays in most areas. This year, only crows will be tested for the virus (crows and ravens in Northern Ontario).

Veterinarians and their staff may be contacted by members of the public for advice on where to report a dead bird, or may have birds dropped off at the clinic. **The public is advised not to handle dead birds, but to call and report the finding to the local health unit.** Depending on the public health official's advice, dead crows can be submitted through the health unit to the Canadian Cooperative Wildlife Health Centre at the University of Guelph. Tissues will be harvested and sent to the National Centre for Foreign Animal Diseases laboratory in Winnipeg.

Questions regarding human infection should be directed to your local Public Health Unit or Health Canada. For questions about WNV in domestic animals and available diagnostic tests, contact the CFIA. Surveillance and testing protocols may change as the season progresses, so consult the appropriate resource for the most up-to-date information.

*Adapted from material prepared by the Ontario Ministry of Health and Long Term Care, and Dr. Ian Barker of the Canadian Cooperative Wildlife Health Centre, University of Guelph.*

## Further Information on West Nile Virus

### **General information:**

List of Public Health Units: [www.gov.on.ca/health/english/contact/phu/phu\\_mn.html](http://www.gov.on.ca/health/english/contact/phu/phu_mn.html)  
INFOline: 1-800-268-1154

Health Canada: [www.hc-sc.gc.ca/pphb-dgspssp/wnv-vwn/index.html](http://www.hc-sc.gc.ca/pphb-dgspssp/wnv-vwn/index.html)

### **Disease in domestic animals, laboratory diagnosis and regulatory issues:**

Canadian Food Inspection Agency: [www.inspection.gc.ca/english/ppc/science/surv/wnvstrate.shtml](http://www.inspection.gc.ca/english/ppc/science/surv/wnvstrate.shtml)  
Ontario Area Office (519) 837-9400

Animal Health Laboratory,  
Dr. Grant Maxie (519) 824-4120 ext. 4544

### **Disease in domestic animals, non-regulatory:**

Veterinary Science, OMAF,  
Dr. Paul Innes (519) 846-3407

### **Disease in wildlife and wild bird surveillance:**

Canadian Cooperative Wildlife Health Centre: [wildlife.usask.ca](http://wildlife.usask.ca)  
(519) 823-8800 ext. 4662

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## Resources

The Dairy Farmers of Ontario offers a **free** subscription to the *Ontario Milk Producer* magazine to large animal veterinarians in Ontario and across Canada. The magazine provides information on quota dynamics, milk marketing and dairy farm management. It is an excellent resource for veterinarians in dairy practice. To sign up for a subscription, contact Judith Hemming, Assistant Editor, Ontario Milk Producer. (905) 821-8970 ext. 277 or [jhemming@milk.org](mailto:jhemming@milk.org)

**Colour Atlas of Beef Inspection.** George Branov, DVM. The atlas is a guide for meat and veterinary inspectors in the field. For further information, contact George Branov at 198 Bellehaven Drive, Waterloo, Ontario, N2J 3L2. (519) 747-2391

## Continuing Education

- July 8 - 9, 2002 National Mastitis Council Regional Meeting. Syracuse, New York. July 8 - Preconference Workshops, July 9 - General Sessions. Full program posted at [www.nmconline.org](http://www.nmconline.org)
- July 21 - 25, 2002 Joint Annual Meeting of the American Dairy Science Association and the American Society of Animal Science. Quebec City, Quebec. [www.adsa.org](http://www.adsa.org)
- July 28 - 31, 2002 American Society of Ag Engineers Annual International Meeting. Chicago, Illinois.
- Aug. 12 - 15, 2002 Advanced Dairy Nutrition and Management. Cornell University, New York. Contact Robin Huizinga (607) 255-4478 or [dmconf@cornell.edu](mailto:dmconf@cornell.edu)
- Aug. 19 - 23, 2002 World Buiatrics Congress. Hannover, Germany. Home page at <http://www.wbc2002.de>
- September, 2002 Dairy Management - Online course offered by the University of Illinois Topics include: phase feeding; dry and transition cow; amino acids and protein; forage production and utilization; mineral, additives and vitamins; energy, fats and ketosis; BST, 3 x and top herds; feed bunk management and behavior and cow health and vaccination. A CD-ROM will be available to each enrolled student to facilitate access to the instructional material. On-line synchronous review sessions will be held Mondays, September - November, 2002, 7:00 p.m. - 8:00 p.m. Contact Mike Hutjens at 1-800-252-1360 ext. 3-2929 or [hutjensm@uiuc.edu](mailto:hutjensm@uiuc.edu)
- Sept. 12 - 13 or Oct. 24 - 25, 2002 Bovine Reproductive Ultrasound for Veterinarians. Marshfield, Wisconsin. Contact Paul Fricke ([fricke@calshp.cals.wisc.edu](mailto:fricke@calshp.cals.wisc.edu)) or Jill Colloton ([colloton@dwave.net](mailto:colloton@dwave.net)).
- Sept. 26 - 28, 2002 Annual Meeting of the American Association of Bovine Practitioners. Madison, Wisconsin. Program now available at [www.aabp.org](http://www.aabp.org)
- Oct. 24, 2002 Fall meeting of the Ontario Association of Bovine Practitioners.
- Nov. 7 - 9, 2002 8<sup>th</sup> Great Lakes Dairy Sheep Symposium. Cornell University, New York. Contact Michael Thonney (607) 255-2851, [mlt2@cornell.edu](mailto:mlt2@cornell.edu)
- Jan. 26 - 29, 2003 Annual meeting of the National Mastitis Council. Fort Worth, Texas. [www.nmconline.org](http://www.nmconline.org)
- Jan. 29 - 31, 2003 Fifth International Dairy Housing Conference. Fort Worth, Texas.

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Tel: (519) 846-3409 Fax: (519) 846-8101 Email: [ann.godkin@omafra.gov.on.ca](mailto:ann.godkin@omafra.gov.on.ca)

Topics for future issues include: .....

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**Deadline for next issue: September 6, 2002**



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