CEPTOR

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Distribution of CEPTOR

Thanks to the College of Veterinarians of Ontario for their assistance in updating our mailing list.

CEPTOR is distributed to all food animal, poultry and equine veterinarians in Ontario, industry professionals and regulatory agencies.

We will be sending one copy to each veterinary clinic. The circulation list below is for your use, to ensure that each veterinarian in your practice has the opportunity to see CEPTOR.

If you feel that your clinic requires additional copies or if your address is incorrect, please return the feedback form.

One copy per clinic
Please circulate to all practitioners.

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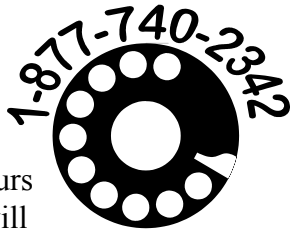
Canadian Food Inspection Agency: Foreign Animal Disease Emergency Contact Number



As a pilot project in Ontario, veterinarians, who suspect that animals are affected with any foreign animal disease, can report their suspicions 24 hours a day, 7 days a week, by dialing **1-877-740-2342**. An answering service will record relevant contact information from the caller and relay the information to a Canadian Food Inspection Agency (CFIA) inspector. The intent is to provide a 15 to 30 minute return call response time. The usage and outcomes of calls will be evaluated at a future date and a decision made about the continuation or expansion of the service to a national perspective.

This number does **NOT** replace the existing 1-877-277-0677 which provides callers with Foot and Mouth Disease information.

Any questions concerning this new number may be addressed to Dr. Jim Clark.

Dr. Jim Clark, CFIA
Tel: (519) 837-9400, Ext. 2128
Fax: (519) 837-9773
E mail: clarkj@inspection.gc.ca

Paul Innes

Raccoon Rabies in Ontario

Raccoon rabies continues to appear in Ontario. The second quarter Rabies Reporter newsletter from the Ontario Ministry of Natural Resources reports that the number of reported cases is the same in the first 6 months of 2001 as in 2000. However, the cases are concentrated in a very small area. During April to June 2001, all but 3 of 28 cases have been in a 35 by 25-km area in the Athens vicinity. In one case near Brockville, the raccoon had been in a fight with dogs.

The Rabies Unit has been active in trying to contain the outbreak. To date, about 2200 raccoons and skunks were removed from an area within 5 km of active cases. Removing all raccoons has proven difficult as raccoon populations are apparently high this year. Trap-Vaccinate-Release (TVR) along the St. Lawrence has vaccinated 3500 raccoons and 273 skunks this year. Because the raccoon rabies outbreak in eastern Ontario appears to be moving slowly westwards, areas north to Big Rideau and west to Newboro will be added to the TVR activities of the raccoon rabies team.

Ann Godkin

Chronic Wasting Disease in Cervids

Chronic Wasting Disease (CWD) of cervids is a transmissible spongiform encephalopathy (TSE). CWD was declared a reportable disease under the federal Health of Animals Act earlier this year.
CWD has been recognized in the mid-western USA since the late 1960's. It is endemic in free-ranging Rocky Mountain elk, mule deer, white-tailed deer and black-tailed deer in northern Colorado, southern Wyoming, and southwestern Nebraska. Cases have also occurred in captive deer in South Dakota, Nebraska, Oklahoma and Montana. A case of CWD in a mule deer occurred at the Metro Toronto Zoo in the 1970's. Recently, CWD has been found in 34 elk farms in Saskatchewan and in two free-roaming mule deer in Saskatchewan.

The discovery of CWD in deer in Saskatchewan has spurred the development of CWD surveillance programs for both farmed and free-roaming deer. Additionally, the Canadian Food Inspection Agency (CFIA) and the Canadian Cervid Council (CCC), are currently drafting a voluntary CWD certification program for deer farms. The *Healthy Futures for Ontario Agriculture* program of the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) is supporting a surveillance project for CWD in Ontario. This project is a cooperative effort between the CCC, OMAFRA-Veterinary Science, the Animal Health Laboratory (AHL)-University of Guelph and CFIA. Veterinary practitioners are being called upon by deer farmers to collect samples as part of this project and the National Voluntary Chronic Wasting Disease (CWD) Certification Program.

Recognizing CWD clinically
The clinical signs of CWD include: emaciation (loss of body weight and body condition), abnormal behaviour or indifference to human activity, increased salivation, tremors, stumbling, incoordination, difficulty or inefficiency in chewing or swallowing, and increased drinking and urination. CWD and rabies are differentials whenever nervous signs and excessive salivation are seen. The clinical signs of CWD are usually less rapid in onset than those of rabies. Cervids that are injured during handling should also be submitted for testing since incoordination associated with CWD may have led to the injury.

Laboratory testing for CWD
The CWD agent is likely passed in saliva, feces and/or urine and transmitted via a fecal-oral route. Once ingested, the disease has a natural incubation period of 1.5 to 3 years before the onset of clinical signs. All cervids greater than 12 months of age that die should be tested for CWD.

CWD is diagnosed by post-mortem examination of the brain tissue for microscopic changes, immunohistochemistry (IHC) to look for protease-resistant prion protein (PrPres) and/or Western immunoblot tests. Microscopically, CWD is similar to other TSE's in that it causes degenerative changes in the brain with no inflammation or immune reaction. The dorsal motor nucleus of the vagus nerve, in the obex region of the brain stem, appears to be the first region affected. This may be due to the infectious agent traveling up the vagus nerve from the gastrointestinal tract.

Sample submissions
In Ontario, veterinarians can submit the whole carcass, head only, or obex area of the brainstem (part of the medulla oblongata) in formalin to the AHL for testing. The best sample is the obex, removed and placed in formalin within 12 hours of death. Once veterinarians acquire the skill to remove the obex, this will be the easiest sample to submit. Heads disarticulated from the rest of

the body can be delivered to the laboratory, where AHL staff will remove the obex.

Intact heads **cannot** be shipped by courier, and **must** be delivered in person to the AHL. Whole carcasses can also be brought to the AHL at Guelph or Kemptville, where samples can be collected. However, a disposal charge of $1.00 per kg will be levied on all cervid carcasses. Therefore, veterinarians should encourage their clients, who are requesting CWD testing, to remove the heads of cervids and bring them to the clinic for obex removal. The remaining carcass can remain on the farm for burial or composting.

Workshops
OMAFRA, in cooperation with the CFIA, the AHL and the CCC, is offering workshops to veterinarians on CWD. The workshop objectives are:

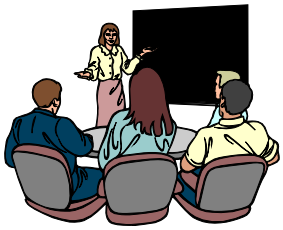
- To familiarize veterinarians with the clinical signs of CWD.
- To teach veterinarians the techniques for removing the obex section of the brain from an animal's skull.

The next workshop will be held on Tuesday, October 16, 2001, at the Animal Health Laboratory, Kemptville College, Kemptville. To register for this or future workshops, contact Ora Zondervan. (519) 846-0941, Fax (519) 846-8178, e-mail: ora.zondervan@omafra.gov.on.ca

For further information on the National Voluntary CWD Certification Program contact your local CFIA district office.

Bob Wright

Raising Johne's-Free Calves - Workshops for Veterinarians

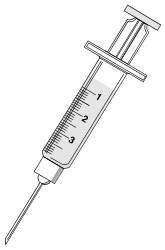


The OMAFRA Veterinary Science cattle group is developing a workshop for dairy producers entitled *Raising Johne's-Free Calves*. The intent is for these workshops to be offered through veterinarians at winter client meetings. We invite veterinary practitioners to preview and provide input into the workshops at an introductory meeting being offered in three locations in late fall.

The objectives of the workshops for producers will be: 1) to endorse and teach good calf-raising practices that reduce infection in dairy calves due to contagious/infectious bacterial diseases; 2) specifically, to describe and implement a practical calf-raising program that prevents post-calving infection of calves with Johne's disease; and 3) to endorse the formation of veterinary practitioner-dairy producer disease control teams. These workshops will be of interest to your dairy clients who wish to reduce the risk of Johne's disease in their herds, begin preparing their herds for certification for low prevalence Johne's disease status or who wish to enhance their ability to sell dairy animals from a herd with a known low prevalence of Johne's disease. Additionally, clients who wish to improve overall calf health by reducing infectious disease will also benefit.

The veterinary practitioner introductory workshops will cover the format and content that will be used in the producer workshops, specific Johne's disease information, and the use of risk

management forms to develop on-farm protocols. Input from practitioners is welcome. Lively discussions with fellow practitioners regarding Johne's management protocols will be part of the day.



Workshop dates and locations

November 29, 2001 - Woodstock OMAFRA Office

December 5, 2001 (tentative-depending on enrollment) - Trenton/Belleville area

December 6, 2001 - Kemptville College

There will be no charge for veterinarians to attend this introductory day.
Times will be from 10:00 a.m. to 2:00 p.m., with lunch provided.

To register, please contact Jocelyn Jansen at (519) 846-3414 before November 21, 2001.

Jocelyn Jansen

DHI's Return Over Feed (ROF) Clubs for 2001/2002

Last winter, Ontario DHI organized 18 ROF groups for 300 producers. Feed companies, dairy supply companies, or groups of keen producers sponsored the clubs. Interest was high as the process gave the participating producers a relevant comparison group (themselves and their neighbours, but anonymous) and provided easy-to-understand information about feed costs and the factors that affected those costs on the various farms.

Veterinarians can also sponsor these clubs for their clients. The ROF program runs for a period of 12 months. Meetings are held in months 1, 2 and 5 or 6. DHI provides the facilitator to handle the three meetings that are usually about 2.5 hours in length. Some clubs have added meetings or other speakers to this basic program.

Now is the time to plan continuing education for your dairy clients. Sponsoring and encouraging participation in a ROF club will provide an additional service for your clients, acquaint you with more of their nutritional and management practices, and give you the opportunity to learn too.

For more information about starting a club, contact

Bill Grexton, Manager Herd Management Services, DHI, (519) 824-2320 ext. 254
Ewen Ferguson, Herd Management Specialist, DHI, (705) 653-3335, or
Ann Godkin, (519) 846-3409.

Ann Godkin

The greatness of a nation and its moral progress can be judged by the way its animals are treated.

-Gandhi

Compounding Lincomycin/Spectinomycin as anInjectable Preparation

One medication frequently compounded and dispensed in swine production medicine is an injectable lincomycin/spectinomycin preparation (LS). This product is available in Canada as a sterile injectable solution for use in dogs and cats and in non-sterile 150-gram packages of soluble powder for use in drinking water for poultry and swine.

Under the Veterinarian Act, Regulation 1093, veterinarians licensed to practice in the province of Ontario are permitted to compound and dispense extra-label medications for use in animals.

Under Section 27 (3) of Regulation 1093, the dispensing veterinarian is required to mark clearly on the container:

1. The name, strength (concentration) and amount of the drug
2. Date of dispensing
3. The member's name and address
4. The identity of the animal or groups of animals for which the drug is dispensed
5. The owner's name
6. The prescribed directions for use, i.e. dosage, duration of treatment, route of administration and withdrawal time.

The non-sterile, 150-gm package of the soluble lincomycin/spectinomycin product for drinking water contains:

33.3	g	lincomycin hydrochloride
+66.7	g	spectinomycin sulphate
100	g	total active drug

When dissolved in 1 litre (1000 mL) of sterile distilled water, the resulting preparation yields 100 g of combined active drug or 100 mg per mL (33.3 mg of lincomycin hydrochloride and 66.7 mg of spectinomycin sulphate per mL).

Sterile, injectable LS is approved for use in swine in several pork producing countries including Denmark, Australia and Belgium. The dosage is 15 mg of active drug per kg of body weight.

From this information, we could assume that the weight of pig treated per mL of non-sterile compounded preparation is:

$$\frac{100 \text{ mg/mL}}{15 \text{ mg/kg}} = 6.66 \text{ kg of body weight per mL}$$

or

$$\frac{45 \text{ kg}}{6.6 \text{ kg}} = 6.8 \text{ mL per 45 kg (100 lbs) of body weight}$$

Based on completed medication inventory forms from herds enrolled in the Canadian Quality Assurance (CQA) program, the withdrawal time on the compounded product is commonly accepted by Canadian producers to be 14 days.

The sterile injectable preparation, which is approved for livestock use in several countries, has a concentration of:

50 mg	lincomycin hydrochloride/mL
100 mg	spectinomycin sulphate/mL

Minimum residue limits for livestock medicines vary from country to country. At 15 mg of active drug per kg of body weight, withdrawal times approved for use in swine are as follows:

14-Day Withdrawal	21-Day Withdrawal	30-Day Withdrawal
Czech Republic	Australia	Denmark
Italy	New Zealand	
Korea		
Belgium		
South Africa		
Austria		

Every licensed veterinarian in Ontario is permitted to compound this preparation. However, based on reports from swine farms enrolled in the CQA program, not all practices compound this preparation in the same manner. The 150-gm package is sometimes dissolved in one litre of sterile distilled water and sometimes dissolved in 500 mL of sterile distilled water. **Careful labeling is required to ensure that producers are aware of varying concentrations and any resulting affects on dosages and withdrawal times.**

Veterinarians are responsible for any problems associated with impurities caused by the compounding of non-sterile 150-gm packages of soluble powder.

With support from the federal government and a large number of veterinary and producer organizations, access to the gFARAD database should soon be available to Canadian veterinarians. This database will supply veterinarians with important information necessary to effectively treat food-producing animals with the most appropriate medications, while ensuring that meat and milk products are free of illegal residues.

The Bureau of Veterinary Drugs is currently conducting a review of drug usage in Canada's livestock sector as it relates to product use, dosages administered and withdrawal times observed. The results of this review may have significant implications for the veterinary profession, the livestock industry and our export markets. It is critical that, as veterinarians, we maintain the highest possible standards of drug compounding and medication dispensing to ensure treatment success and residue avoidance.

Tom Sanderson and Tim Blackwell

What Causes Ear Tip Necrosis in Swine?

Figure 1

Ear tip necrosis in pigs is as common as it is mysterious. Lesions vary from small scabs over the surface of the ear (**Figure 1**) to large necrotic lesions at the ear tip (**Figure 2**) or posterior edge of the pinna near the attachment to the head. Causes proposed for this syndrome include ergot poisoning, septicemia, ear biting, ear sucking, ear trauma secondary to *Sarcoptes scabei* infection, and primary or secondary bacterial infections with *Staphylococcus hyicus*, Streptococci spp., or a spirochete. Unfortunately, experimental reproduction of this syndrome has not been successful. Lesions occur sporadically and may affect up to 50 to 60% of pigs between 6 and 10 weeks of age during an outbreak. More commonly, ear necrosis is observed in 1 to 2 % of pigs. Lesions occur unilaterally or bilaterally, are seldom associated with poor performance and do not cause obvious discomfort to affected pigs. Lesions nearly always resolve spontaneously. Only the most severely affected pigs suffer any permanent damage or disfigurement to the ear. Commonly round to oval lesions are observed on the chest or flanks of pigs in the nursery or finishing areas when ear tip necrosis is observed in the nursery (**Figure 3**). The relationship between these two syndromes is unknown. Some swine workers have hypothesized that both lesions are the result of vices (ear sucking or biting and flank sucking or biting), but there are no data to support this hypothesis.

Figure 2

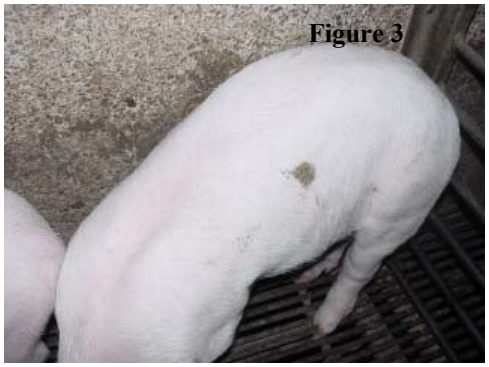


Figure 3

Recently, a nursery with chronic ear necrosis was monitored using 24-hour video surveillance. Very little fighting, ear biting, or navel and ear sucking were observed after the first week in the nursery and this behaviour was not considered to be of abnormal severity or duration. Although the majority of the ear biting and ear sucking occurred during the first week after weaning (around 18 days), lesions were not observed until pigs were 50 to 60 days of age. The video monitoring of this farm was unable to identify conclusively any relationship between ear trauma and the occurrence of these lesions. The cause of ear necrosis in pigs remains unknown. This syndrome warrants continued investigation and discussion.

Tim Blackwell and George Charbonneau

I am fond of pigs. Dogs look up to us. Cats look down. Pigs treat us as equals.
- Winston Churchill (1874-1965)

"Stop Sale" Order for Carbadox

Health Canada issued a "Stop Sale" order for the drug, carbadox, on August 10, 2001, pending a review of the product's safety. Carbadox is sold as a feed additive for pigs under the trade names Carbadox 22 or 55 premix (Bio Agri Mix) or Mecadox 22 and 55 (Phibro). All carbadox located at feed outlets is being recalled.

Carbadox was first introduced in the 1970's with a claim for the improvement of weight gain and feed efficiency in swine during periods of stress caused by weaning, castration, and handling, and for the prevention and control of swine dysentery. It could be fed to pigs up to 35 kg of body weight.

When used according to the label, a 35-day withdrawal time was required. Recently, it has been established that carbadox and two of its breakdown products, desoxycarbadox and hydrazine, are genotoxic carcinogens. Genotoxic carcinogens affect the body's DNA. No Allowable Daily Intake (ADI) has been established for humans.

While the Bureau of Veterinary Drugs is confident that the withdrawal period is sufficient for the elimination of residues, they are concerned that the drug can enter the food chain by accident. Based on information provided by the manufacturers, Health Canada has reassessed the human health risk from the use of carbadox in pigs. The potential risk is considered to be too great to allow the continued use of carbadox in animal feed, hence the "Stop Sale" order. Unless the manufacturers can present new data to indicate that the risk is minimal, this order will be made permanent.

Producers will need to find a replacement product or attempt to wean pigs on an additive-free ration by adjusting management practices at weaning. In either case, a veterinarian's advice is indicated. The choice of an alternative product will depend on the herd health status and the bacterial drug resistance patterns of that herd. The risk of accidental exposure of non-target animals should also be considered. For example, if the producer changes the weaner diet to include Aureo SP 250® G, he or she must ensure that the drug itself, or faeces from treated pigs, do not come in contact with market hogs. Such accidental exposure could cause a measurable residue at slaughter. Any pigs treated with sulphamethazine products, that die before the withdrawal time expires, will not be collected by deadstock services in Ontario.

Veterinarians should be aware of these recent changes. Veterinarians are best qualified to help producers maintain health and production within these changes in availability of antibiotics for use in feed.

John Martin

New Data on CIDR Use in Beef Heifers

Use of intra-vaginal progesterone releasing devices, (CIDR's), to synchronize heats in beef heifers for timed AI without heat detection, is being actively promoted by cattle breeding organizations in Ontario. Information available has suggested that the use of a protocol involving injection(s) of estradiol benzoate (EB) increases the conception rate. There are no EB products licensed for any use in cattle in Canada or the US. Withdrawal times for meat and milk are not available. EB for this usage is extra-label, meaning that, in spite of the scarcity of information, veterinary practitioners must take responsibility for providing suitable and accurate meat and milk withdrawal times to producers when they prescribe this product. This is a difficult situation given the limited availability of the necessary information.

Products containing GnRH are licensed for use in cattle in Canada, although not for this use. When used according to the label, the milk withholding time is 12 hours and the time until suitable for slaughter for human consumption is 7 days. These products could be used instead of the EB, particularly if research demonstrated the same conception rates could be achieved. This would still be an extra-label use, but providing suitable withdrawal times would be much easier.

Researchers in Guelph submitted the following abstract of their work to the Society of Theriogenology meeting in Vancouver in September. Their research is a direct comparison of two protocols - one with EB and the other with GnRH. Based on their results, there is little need to use EB because results are very good with GnRH.

Ann Godkin

COMPARISON OF TWO CIDR-B BASED OVULATION SYNCHRONIZATION PROTOCOLS FOLLOWED BY RE-SYNCHRONIZATION

A. T. Estrada[1], J. Walton[2], K. Bateman[1], B. Buckrell[1], W. H. Johnson[1]
Departments of Population Medicine[1] and Animal and Poultry Science[2]
University of Guelph, Guelph, Ontario Canada N1G 2W1

Programs that incorporate ovulation synchronization and fixed-time artificial insemination (FTAI) may increase the efficiency of beef reproductive management by yielding high conception rates without estrus detection. The objective of the study was to develop an efficient ovulation synchronization and FTAI protocol followed by a re-synchronization program.

The study herd consisted of crossbreed beef cows (n=150) and heifers (n=52) managed in spring and fall calving groups. Equal numbers of cows and heifers were randomly assigned to one of two treatment groups. The synchronization protocols are described in the following table.

Treatment	d 0	d 7	d 8	d 9
1	CIDR-B[1] + P4[2] + EB[3]	CIDR-B-out + PGF_2%[5]	EB[3]	FTAI
2	CIDR-B + GnRH[4]	CIDR-B-out + PGF_2%[5]		FTAI + GnRH[4]

[1]CIDR-B (Vetrepharm Canada Inc., London, ON); [2]Progesterone 100 mg; [3]Estradiol Benzoate l mg (Veterinary Pharmacy, Guelph, ON); [4]GnRH 100 Fg (Cystorelin, Merial Canada Inc.); [5]PGF_2% 25 mg (Lutalyse, Pharmacia & Upjohn, Orangeville, ON).

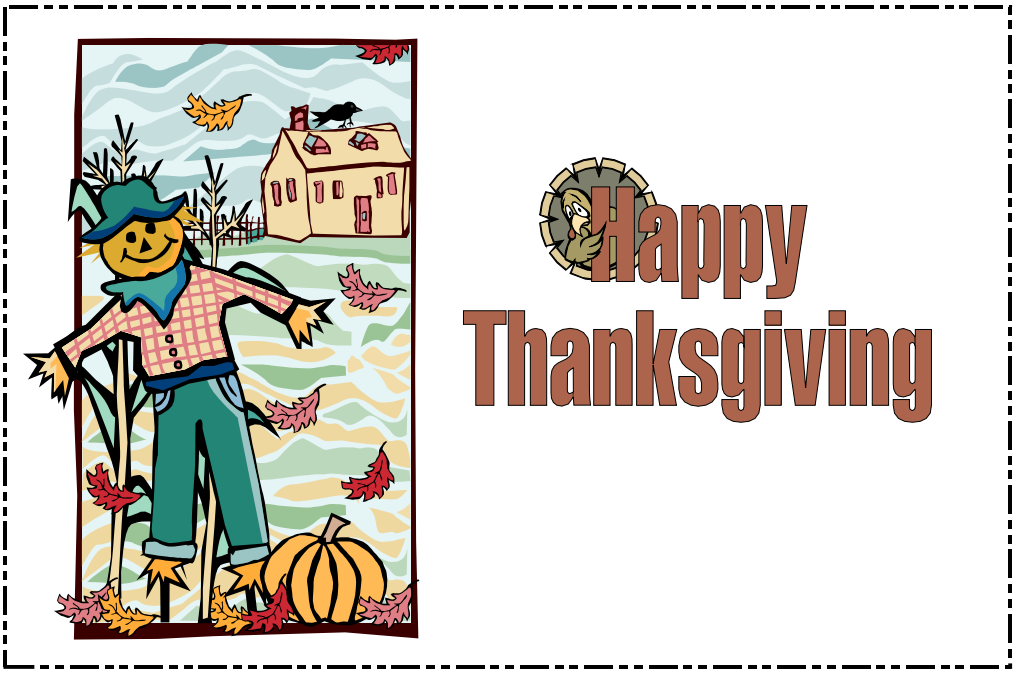
All animals were re-synchronized to facilitate rebreeding of those not conceiving to the FTAI. Previously used CIDR-Bs were re-inserted in all animals 12 days after FTAI (d 21) and removed 7 days later (d 28). Kamar devices were used to aid estrus detection. Estrus detection was performed for 30 minutes, 3 times daily for 5 days starting at d 28. Only animals showing estrus and an activated Kamar were rebred. Pregnancy diagnosis was determined by ultrasonography at d 56. Data were analyzed by chi-square test. The respective conception rates at FTAI are presented in the following table.

	Spring		Fall	
Treatment	Cows	Heifers	Cows	Heifers
1	59% (22/37)	64% (7/11)	61% (23/38)	81% (13/16)
2	70% (26/37)	64% (7/11)	61% (23/38)	50% (7/14)

Conception rates among treatment animals and season were not significantly different. Pregnancy rates following two inseminations in the spring and fall were not significantly different (83% (80/96) and 85% (90/106), respectively).

Results indicate that using EB+P4 or GnRH in combination with a CIDR-B are equally effective in synchronizing ovulation for fixed-time artificial insemination. The re-synchronization results indicate that it is possible to reuse the CIDR-B and achieve high pregnancy rates following two inseminations.

Keywords: CIDR-B, fixed-time, artificial insemination, re-synchronization, ovulation.



Maternal Antibodies and BVDV-Vaccine Protection

In the August 1, 2001, issue of the Journal of the American Veterinary Medical Association (JAVMA), Dr. John Ellis and his colleagues reported that a single dose of a modified-live virus (MLV) bovine viral diarrhea virus (BVDV) type I vaccine, given at 10 to 14 days of age, protected susceptible young calves from virulent BVDV type II infection for at least 4 months, but they also found that maternal antibody blocked the response.

For his challenge virus, Dr. Ellis used a BVDV type II isolate obtained from an Ontario calf that died with a "mucosal-like" disease syndrome during the BVDV epidemic in Ontario several years ago. Upon challenge at 4.5 months of age, seronegative unvaccinated calves, and seropositive calves that were vaccinated at 2 weeks of age, developed severe disease - and 4 calves in each of these groups had to be euthanized. After similar challenge, seronegative calves that were vaccinated at 2 weeks of age, and seronegative calves that were vaccinated at 4 months of age, developed only mild or no clinical signs of disease. The true duration of protective response was not determined in this blinded controlled challenge study.

Results of this study, writes Ellis, support current immunologic dogma (I. Tizard's *Veterinary Immunology: an introduction. 6th Edition. WB Saunders Co. 2000; 219-220)* to the extent that high concentrations of maternally derived BVDV-specific antibody apparently prevented the induction of protective immune responses in young calves that received a single dose of a MLV vaccine.

Writer's notes: The labels on most BVDV vaccines advise users that *animals vaccinated before 6 months of age should be revaccinated at 6 months of age.* Maternally derived BVDV-specific antibody may persist for 6 months or more. Observations from several BVD outbreak herds during the epidemic in the mid-1990s revealed significant mortality in unvaccinated calves in the age range of 6 - 18 months. On farms using an annual vaccination protocol, the cohort of unvaccinated calves at risk increases in number monthly until the (fall) vaccination date arrives. One clinical impression made during the BVDV outbreak was that properly vaccinated calves were protected with the vaccines available at the time. Several Ontario veterinary practitioners recommend vaccinating all eligible dairy calves during a monthly herd health visit. This vaccination protocol is an excellent way of reducing the risk of a BVD outbreak in dairy calves.

For the full paper, please refer to ***Effect of maternal antibodies on induction and persistence of vaccine-induced immune responses against bovine viral diarrhea virus type II in young calves.*** **John Ellis et al. JAVMA, August 1, 2001; Vol 219, No. 3: 351-356.**

Neil Anderson

When you reach for the stars, you may not get one, but you won't come up with a hand full of mud, either.

- Leo Burnett

Alberta Strain BHV-1 and IBR-Vaccine Protection

The April 2001 issue of The Canadian Journal of Veterinary Research (CJVR) confirmed the isolation and identification of a mutant strain of bovine herpesvirus-1 (BHV-1) recovered from outbreaks of infectious bovine rhinotracheitis (IBR) in vaccinated feedlot calves in Alberta a few months after entry to the feedlot.

The researchers also conducted a vaccination and challenge study using the conventional and mutant strains of virus. Following a single vaccination with modified live virus (MLV) IBR, bovine parainfluenzavirus-3, bovine viral diarrhea virus vaccine and Haemophilus somnus bacterin (BarVac3/Somnugen; Boehringer Ingelheim, Burlington, Ontario), 70% of their calves seroconverted, 70% developed a cellular immune response, and the mean titer of the vaccinated animals was significantly higher than that of the non-vaccinated animals. After a second immunization, all of the vaccinated calves showed a BHV-1 specific proliferative response.

Three months after the second vaccination, calves were either challenged with one of the mutant isolates or with a conventional challenge strain of BHV-1. Regardless of the type of virus used for challenge, vaccinated calves experienced significantly less weight loss and temperature rises, had lower nasal scores, and shed less virus than non-vaccinated animals.

The authors concluded that double vaccination of calves with MLV/bacterin approximately 30 days apart would protect calves against clinical disease caused by either the mutant virus or the conventional virus. According to label claims, current commercial vaccines containing the conventional virus are efficacious against the conventional challenge viruses with single vaccination. However, the researchers noted that more studies are needed to determine if single vaccination with these commercial vaccines will provide protection against the mutant virus.

Writer's notes: Van Drunen Little-van den Hurk showed us that double vaccination protected calves at challenge but the research does not show us if single vaccination will protect against the same challenge. Fully 30% of the calves did not show a cellular or serological response to a single vaccination. Our Ontario pre-vaccinated sale calves that have been vaccinated with a single vaccination protocol could contain a non-responsive (serological and cellular immune) cohort of calves. If these non-responsive calves are also not protected with a single vaccination, revaccination of calves upon entry to the feedlot could be a very good management practice. Calves vaccinated with a single vaccination upon entry to the feedlot may contain a cohort (about 30%) of calves that did not respond to the IBR vaccination.

For the full paper, please refer to ***Identification of a mutant bovine herpesvirus-1 (BHV-1) in post-arrival outbreaks of IBR in feedlot calves and protection with conventional vaccination.*** **S. van Drunen Little-van den Hurk et al. CJVR, April 2001; Vol 65, No. 2: 81-88.**

Neil Anderson

Failures are divided into two classes - those who thought and never did, and those who did and never thought.

- John Charles Salak

Salmonellosis in Dairy Herds – Case Reports

In the August 1st, 2001, JAVMA, there is an excellent paper describing in detail the epidemiology of Salmonella in three dairy herds. The authors were able to use extensive culturing and serology to describe the extent of infection in clinical and subclinical animals, as well as in the herd's environment, feed and among rodents, opossums, cats and birds.

The take-home messages for me were:

1. Each of the 3 herds had a large number and variety of serotypes isolated from subclinical cases, clinical cases and from the environment. Exposure to Salmonella on these farms was frequent, continuous, and from a variety of sources. None of these situations appeared to result from a point exposure.

2. Clusters of clinical cases of salmonellosis were precipitated by events which decreased the dry matter intake (DMI) of affected animals. In herd 2, an outbreak of metabolic disease in peri-parturient cows, due to a close-up ration formulation error, and a restriction in access to drinking water for the peri-parturient cows, was associated with clinical cases and mortalities among fresh cows. In herd 3, peri-parturient cows were again affected. Additionally, mortality among calves was high. Calves had received pooled colostrum of very low quality (low specific gravity), and colostrum and milk were contaminated with Salmonella.

3. In these 3 herds, green chop, as-fed feed, corn silage, oat hay, residual feed, whole cottonseed and the fat supplement in one herd's premix were all culture positive for Salmonella at some time. Any feed can become contaminated by Salmonella depending on growing, harvest and storage practices. Barn flush water, cow drinking water and crop irrigation water also yielded positive samples.

The authors cite the following risk factors for salmonellosis among herds and cows:

- Maintaining sick and peri-parturient cows in close contact (i.e. in the same box stall);
- Restriction of free access to drinking water;
- Concurrent disease such as abomasal displacements, retained fetal membranes, metritis, ketosis and lameness;
- Drop in DMI, by up to 15%, in the 4 to 5 days preceding even normal calvings;
- Nutritional stress due to high potassium forages that result in high cation pre-fresh rations;
- Subclinical gossypol toxicosis;
- Heat stress, as it decreases DMI in dairy cattle by as much as 25%; and lastly,
- Exposure to particularly virulent serotypes of salmonella.

The article is: ***Epidemiologic and biological characteristics of salmonellosis in three dairy herds.*** **Anderson RJ, JK House, BP Smith, H Kinde, RL Walker, BJ Vande Steeg and RE Breitmeyer. JAVMA, August 1, 2001; Vol 219, No.3: 310-322.**

Ann Godkin

Diagnosing Johne's Disease at the Herd Level

The advantages of fecal culture with less expense - that's what pooling samples could provide for testing herds for Johne's Disease status. Recent research in the Netherlands shows that a specific culturing method had a sensitivity of 73% for correctly classifying the herd as positive for Johne's when samples from individual cows were pooled in groups of 5.

The researchers collected samples from individual cows in eleven herds known to have a low prevalence of Johne's positive cows. In the laboratory, they pooled samples from 5 cows into one sample and cultured those along with the samples from all individual cows. They used modified Lowenstein-Jensen media and confirmed positive cultures using PCR. Full details on their culture procedures appear in their paper.

From results of 733 individual cow fecal samples, they classified 7 of the 11 herds positive with at least one cow with a positive fecal culture. Using the results of the 151 pooled culture samples, they classified 8 herds positive (had at least one positive pool). When herds were classified as positive or negative using both the test results combined (a positive on either technique was a positive herd), the pooling technique had a herd classification relative sensitivity of 73% and the individual culture technique sensitivity was 64%. Agreement between the two tests for herd detection was excellent (kappa = 0.79), indicating that the two tests were mostly positive for the same cows and cows within pools. Contamination was minimal – results from one pool sample and 5 individual cow samples were unusable.

The pooled culture technique performed well for this small survey of low prevalence Johne's Disease herds. The combination of pooled fecal samples and the specific culture techniques gave test sensitivity comparable to fecal culture of individual cows. Other research has shown fecal culture more accurate than serosurveys. The opportunity to classify a herd correctly and to avoid the problems inherent in misclassification appears to be similar to individual cow fecal culture when using their special techniques.

The diagnostic technique described in this research could be very useful for initial herd screening and less expensive for initial herd investigations, on-going herd monitoring, or checking cattle during herd expansions.

Culture of strategically pooled bovine fecal samples as a method to screen herds for paratuberculosis. Kalis CHJ, JW Hesselink, HW Barkema and MT Collins. J Vet Diagn Invest. 2000; 12: 547-551.

Ann Godkin

Free-stall Barns for Dairy Cows: Why Six-row Barns in Ontario?

Expansion and change in the dairy industry is one of several hot topics of conversation. Debate continues over the merits of six-row vs. four-row free-stall dairy barns. However, strong evidence in favour of the four-row barn is coming from formal research in a state with a dairy industry similar to our own.

Researchers in Wisconsin conducted a mail survey of Wisconsin dairy herds that had expanded by 50% (herds with 60 to 100 cows), or 40% (herds with > 100 cows) between 1994 and 1998. They analyzed completed surveys from 302 farms or 44% of those initially contacted. The areas of management and facility design covered are extensive. You can find the full report in the **Journal of Dairy Science 2001; Vol 84, no. 2: 528-541**. Of particular interest at this time of the year is the information that relates to ventilation, production and mastitis. The study results support the building of four-row barns for better production and cow health.

Respondents to the survey built four-row (39%), three-row (25%), six-row (23%) and two-row (7%) free-stall barns (FSB). Among herds with new FSBs, rolling herd average milk production was higher ($P<0.05$) for four-row barns than for 2, 3 or six-row barns. Herd average linear score was also significantly lower ($P<0.05$) in new four-row barns than in six-row barns. Supplemental cooling (fans and or sprinklers) appeared to increase milk production but decrease cow cleanliness with no difference relating to barn configuration.

Three and six-row barns (vs. 2 and four-row barns) result in increased heat stress because they are wider. A six-row barn has about 20% less building air space per cow than a four-row barn on a per-stall basis. Ventilation becomes a problem, particularly in hot wet weather, because there are more kg of cow flesh per unit of airflow. Air has farther to flow to traverse the width of the barn, as is proposed to occur in times of hot weather in naturally ventilated barns. Additionally, most six-row barns have a full row of stalls exposed to sunlight angling in through the sidewalls if oriented with the long axis running in a north-south direction. Throw in a couple of tower silos and a milk parlor to block natural airflow, and problems with bacterial multiplication and seasonal environmental mastitis rapidly occur.

Why would a six-row barn be considered given the cow productivity costs? Savings in labor and building costs are the most frequently cited reasons for building six-row barns in Ontario. In the study, the number of milking and dry cows per 50 hours of work, a measure of efficiency, were equal (47 +/- 2) between four and six-row barns, when only the subset of new FSBs was examined. Cost per stall of $1199 +/- 64, for four-row barns and $1206 +/- 68, for six-row barns was not significantly different.

The authors concluded that, among producers with new drive-through FSBs, those with four-row barns had higher milk production and lower average SCC than producers who built six-row barns. Our producers and cows in Ontario deserve the same advantages.

Barn configuration is not the only consideration – barn orientation, location and relationship to other buildings on the farmstead are important influences on air movement and equally hard to

change once the facility is built. Supplemental cooling is an example of a solution that creates additional problems in a barn that could have been designed differently.

The barns we are building now in Ontario must house our cows for the next decades. We will have to live with our mistakes. As advocates of animal health and producer viability, let's promote four-row barns.

Ann Godkin

Special Calf Sales

With fall approaching, it is a good time to remind beef producers about sale requirements for Special Calf Sales. Sales differ for vaccination, castration and dehorning requirements. Although pre-weaning is not a requirement at any of the Special Calf Sales, producers should wean calves 30 to 45 days prior to sale dates, to maximize post-weaning gains. Producers and veterinarians need to perform these tasks in the near future to meet the sale stipulations.

These sales provide a teachable moment to educate clients about vaccine storage and handling procedures. You can cover everything from picking up the vaccines at the clinic, refrigerator storage on-farm, handling vaccines chuteside, to proper techniques for neck injections. See the **Ceptor** Newsletters for July and December 2000 for more information.

In its position statement, the Ontario Association of Bovine Practitioners (OABP) has endorsed the use of a 4-way vaccine that includes the following viruses as a baseline protocol: IBR, BVD, PI3 and BRSV. The OABP also recognizes the potential benefits of vaccines for Pasteurella, Hemophilus and Blackleg for a more comprehensive and complete vaccination program for beef calves. Furthermore, the OABP endorses the humane castration and dehorning of calves at a young age so that, by sale time, all wounds are properly healed.

Special Calf Sales being offered this fall include: Eastern Ontario Stocker & Feeder Sales Association (October 20, Galetta), Keady Livestock Market (October 19 and 26, November 2 and 16, Tara), Peterborough-Victoria County Cattlemen's Association (November 7, Lindsay), and Simcoe-Dufferin Cow/Calf Club (November 13, Cookstown). For a complete list of all fall sales (vaccinated and regular), see the Ontario Beef Farmer Magazine (early fall 2001).

Jocelyn Jansen

Too often we enjoy the comfort of opinion without the discomfort of thought.

- John F. Kennedy

As part of their company HACCP protocol, ROTHSAY Recycles at Dundas, Ontario, will not accept animals treated with sulfamethazine (SMZ) within 14 days prior to dying. This table shows products containing SMZ sold in Ontario. Producers may have SMZ added to feeds or discontinued products on their farms. Look for additional information on product labels or in the Compendium of Veterinary Products, 7th Edition, 2001. CVP, Box 39, Hensall, ON N0M 1X0

Sulfamethazine

Product	Manufacturer	Species	Meat Withdrawal
2 Sulfamed	Medprodex	cattle, swine	10 d
3 - Sulvit	A.P.A.	cattle, sheep, swine	10 d
Aureo S®-700 Beef Cattle Vitamin Premix Crumbles	Alpharma	beef cattle	10 d
Aureo S®-700 G	Alpharma	beef cattle	10 d
Aureo SP 250® G	Alpharma	swine	10 d
Aureomix® 625 G	Alpharma	swine	10 d
Aureo-Sulfa-Vit	V-S Feed & Agri Supplies	beef cattle	10 d
CALFSPAN*	Pfizer	calves	28 d
Chlorosol-250	A.P.A.	swine	10 d
Chlor-S-700	Bio Agri Mix	beef cattle	10 d
Chlor 250	Bio Agri Mix	swine	10 d
CO-OP® Calf Scour Tablets	IPCO	calves	10 d
Enterolyte	Bimeda-MTC	calves	30 d
Neo Sulfa-E Bolus	P.V.U.	calves, horses, swine	14 - 30 d
Neorease	Bimeda-MTC	cattle, goats, sheep, swine	14 - 30 d
NeoSulf Plus	Citadel	calves	30 d
NEO-SULFALYTE* Boluses	Pfizer	calves, horses	30 d
Neutral Sulfa	P.V. L.	cattle, horses, swine	10 d
Powder 21	P.V.L.	cattle, swine	10 d
Scour Bolus Plus	A.P.A.	calves	30 d
Scour Treat	Citadel	cattle, calves, goats, sheep, swine, horses	14 - 30 d
S-M-T	P.V.U.	cattle, swine	10 d
Sodium Sulfamethazine Solution 25%	Dominion	poultry, cattle, calves, sheep, swine	10 - 12 d
Sodium Sulfamethazine 25%	Citadel	cattle, calves, sheep, swine, horses, poultry	12 d
Sodium Sulfamethazine Solution 12.5%	Dominion	poultry, cattle, calves, sheep, swine	10 - 12 d
Sulectim** Plus	Equivet	calves	30 d
Sulfa 2 Soluble Powder	Dominion	cattle, swine	10 d
Sulfa "25"	P.V.L.	poultry, cattle, calves, sheep, swine	10 - 12 d
Sulfa 25%	Bimeda-MTC	poultry, cattle, calves, sheep, swine	12 d
SULFALEAN® Powder	Bimeda-MTC	cattle, calves, sheep, horses	10 d
Sulfamethazine Bolus 15 g	Dominion	large animals	10 d
Sulfamethazine Bolus 15.6 g	P.V.L.	large animals	10 d
Sulfa-MT	A.P.A.	cattle, swine	10 d
Sulfa-Plus	P.V.U.	cattle, sheep, swine	10 d
SULFASURE™ SR	Boehringer	calves	8 d
Sulfavite	Dominion	cattle, sheep, swine	10 d
Sulmed Plus	Medprodex	cattle, sheep, swine	10 d
Super Chlor 250	Bio Agri Mix	swine	10 d
Super Chlorosol-250	A.P.A.	swine	10 d
SUSTAIN III®	P.V.U.	cattle	12 d
Triple Sulfa Bolus	Dominion	cattle	10 d
Triple Sulfa Bolus	P.V.L.	large animals	10 d
TYLAN® 50/Sulfa-G	Elanco	swine	10 d

Equine Arboviral Encephalitides: Renewed Risk in 2001

Horse owners and veterinary practitioners in Ontario should be aware of two mosquito-borne viral infections threatening Ontario this summer: West Nile Virus (WNV) and Eastern Equine Encephalitis (EEE).

The West Nile Virus has now been detected in Ontario. As of September 12, there were 42 confirmed positive crows and blue jays in the province, mostly in the regions of Windsor-Essex, Toronto and Peel. The virus has not been detected in any other species in Ontario to date. What impact WNV will have on the horse population in Ontario is not known at this time. Like humans, horses are dead-end hosts for this virus. Most infected horses do not develop clinical disease. The US experience indicates, however, that approximately 30% of horses that become ill will die or be euthanised. The United States Department of Agriculture has given a 1-year approval for the production and use of a WNV vaccine in the US. The efficacy and safety of this vaccine are not known, and there are no plans to approve its use in Canada. The Canadian Food Inspection Agency (CFIA) is offering serologic testing for horses suspected of being infected by WNV. For details regarding sample submission, contact your local CFIA office.

An outbreak of EEE occurred in horses in Wisconsin, and the virus has been detected in birds in Michigan this summer. EEE virus has a range from southeastern Canada to the southeastern United States, as well as the Caribbean and South and Central America. From 1938 until the fall of 1992, there were no cases of EEE diagnosed in Ontario. Since 1992, there have been four sporadic EEE outbreaks in Ontario, the latest occurring in 1994 in the Bracebridge area. Many horses in the Gravenhurst-Bracebridge area have been vaccinated annually since the 1994 outbreak. Like WNV, the EEE virus is spread by a mosquito that normally feeds on birds. People, horses, pigs and birds may become infected during periods of high mosquito populations. In contrast to WNV infection, 80-90% of infected horses develop acute and lethal disease.

The viral causes of brain or spinal cord disease affecting horses include: the arboviruses (e.g., Eastern, Western, and Venezuelan Equine Encephalitis and West Nile), herpes viruses and rabies. Viral encephalitis in horses is uncommon in Ontario and can, in most cases, be prevented by following a preventive health program of vaccinations and control of arthropod vectors such as mosquitoes and biting flies. Fly-sprays approved for use on horses may have some repellent effect for mosquitoes on horses. Owners can reduce the number of mosquitoes around homes and stables by reducing the amount of standing water available for mosquito breeding. Veterinarians can advise on vaccine use as part of a preventive health program.

For further information on the equine viral encephalitides, refer to the information sheet, *Equine Viral Encephalitis*, http://www.gov.on.ca/OMAFRA/english/livestock/horses/health.html, or contact the Agricultural Information Contact Centre, 1-877-424-1300.

Bob Wright and Paul Innes

Correction - Coccidiostats in Sheep Rations

In the last edition of Ceptor, there was an article on coccidiostats used in sheep rations to control/prevent coccidiosis. There may have been some confusion concerning the use of monensin.

Research has shown that, while doses between 5 and 22 ppm will safely control coccidiosis in lambs, 11 ppm (11 gms per tonne) is considered to be the most effective inclusion level. Under severe challenges, levels of 22 ppm (22 gms per tonne) may be required. Clinical signs of toxicity can appear when the sheep consume 4 mg/kg of body weight, about 60 ppm.

As monensin has no claim for coccidiosis control in sheep, any inclusion of the drug in sheep rations requires a prescription from the flock veterinarian (extra-label usage).

Monensin continues to be a useful coccidiostat as long as the manufacturer's feeding instructions are strictly adhered to, and prescriptions do not order more that 22 ppm in a ration. Mistakes can occur if the dose rate is not clearly stated. A movement of the decimal point one place to the right in a script could result in monensin toxicity in a flock.

John Martin

Resources

Antimicrobial Therapy in Veterinary Medicine. Third Edition. 2000. Iowa State University Press. John F. Prescott, J.D. Baggot, and R.D. Walker. Dr. Prescott (Ontario Veterinary College), his co-editors and authors created a comprehensive reference text for veterinary practitioners and students. With 34 chapters, this is an expanded and updated version of the previous edition. Large animal practitioners will find the chapters on the use of feed antibiotics and antibiotic resistance very useful. Several chapters describe antimicrobial drug use in farm animals, companion animals, poultry, aquaculture and bovine mastitis. The tables showing primary and alternative drug selections for diseases of farm livestock provide excellent summaries for quick reference. In Ontario, the book is available at the University of Guelph bookstore. Contact Karen at (519) 824-4120 Ext. 4399. The current price is $159.95 CAN. The book is also available from the publisher: Iowa State University Press. 2121 South State Avenue, Ames, Iowa 50014. Orders: (800) 862-6657, www.isupress.edu.

Compendium of Veterinary Products (CVP) 7th Edition 2001. North American Compendiums Ltd. This edition is available either in book form or on CD ROM. The CD ROM is searchable on the brand name and ingredient index. Either is available for $85.00 plus $7.50 shipping and handling plus applicable taxes. Both (together) are available for $125.00 plus $8.00 shipping and handling plus applicable taxes. To order, call (800) 350-0627.

Continuing Education

Oct 12 - 13, 2001	Annual Meeting of the Western Canadian Association of Swine Practitioners, Travelodge Hotel, Saskatoon, Saskatchewan. Dr. Chuck Rhodes, Tel: (306) 966-7068, Fax: (306) 966-8747, e-mail charles.rhodes@usask.ca
Oct 13 -14, 2001	Atlantic Veterinary College Fall Conference. Susan Stensch, Tel: (902) 566-0780, Fax: (902) 566-0846, www.upei.ca/~avc/events.htm
Oct 16, 2001	Chronic Wasting Disease Workshop, Animal Health Laboratory, Kemptville College, Kemptville, Ontario. Contact Ora Zondervan, Tel: (519) 846-0941, e-mail ora.zondervan@omafra.gov.on.ca
Oct 25, 2001	Practical Pharmacology and Rational Therapeutics in Bovine Practice. Ontario Association of Bovine Practitioners - Fall Seminar, Holiday Inn, Guelph, Ontario. For more information, contact Ruth Cudmore, Tel: (519) 846-2290, e-mail cudmore@golden.net
Oct 29 - 30, 2001	Sheep technical update and introduction of the 2001 OMAFRA Sheep Ration Formulation Software. Holiday Inn, Guelph, Ontario. Call the OMAFRA Agricultural Information Contact Centre, Tel: (877) 424-1300, e-mail ag.info@omafra.gov.on.ca
Nov 13, 2001	Annual Poultry Health Conference, Bingeman Park, Kitchener, Ontario. Poultry Industry Council, Guelph, Ontario. Tel: (519) 837-0284.
Nov 14 - 16, 2001	National Beef Science Seminar. Lethbridge, Alberta. $200 before Oct. 1 and $240 for later registration. Contact Jennifer Squires, Lethbridge Research Centre, P.O. Box 3000, Lethbridge, Alberta, T1J 4B1, Tel: (403) 317-2297, Fax: (403) 382-3156, e-mail NBSS@em.agr.ca www.agr.gc.ca/science/lethbridge
Nov 20, 2001 Nov 22, 2001	Managing Flock Expansion, Elmo Community Centre, Atwood Managing Flock Expansion, Napanee Lions Hall, Napanee. For either, pre-registration $40 (includes lamb lunch and proceedings). For information and registration contact OMAFRA Agricultural Information Contact Centre, Tel: (877) 424-1300, e-mail ag.info@omafra.gov.on.ca
Jan 10 - 13, 2002	Twelfth International Symposium on Lameness in Ruminants. Orlando, Florida. Leslie Shearer Tel: (352) 392-4700 ext. 4112, www.ruminantlameness.com
Jan 12 - 16, 2002	North American Veterinary Conference. Orlando, Florida. Tel: (353) 375-5672, www.navconline.com
Jan 24 - 26, 2002	Ontario Veterinary Medical Association Conference. Westin Harbor Castle Hotel, Toronto. Tel:(905) 875-0756, www.ovma.org
Mar 5 - 8, 2002	Western Canadian Dairy Seminar. Red Deer, Alberta. Tel: (780) 492-3236, Fax: (780) 492-9130, www.afns.ualberta.ca/wcds/wcd2002/program.htm
Mar 20 - 22, 2002	The First North American Conference on Robotic Milking. Regal Constellation Hotel, Toronto. Brian Lang, conference co-ordinator, Tel: (519) 537-8786, e-mail rmilking@omafra.gov.on.ca www.ontdhi.com/robotics
Jun 11 - 14, 2002	Seventh International Colloquium on Paratuberculosis, Bilbao, Spain. www.paratuberculosis.org/colloquium.htm
Aug 18 - 23, 2002	The XXII World Buiatrics Congress, Hanover, Germany. www.wbc2002.de

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Topics for future issues include: . . . . . .

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