VIRGINIA COOPERATIVE EXTENSION SERVICE
EXTENSION DIVISION – VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY – BLACKSBURG, VIRGINIA 24061

THE FOOD ANIMAL VETERINARIAN

VIRGINIA-MARYLAND REGIONAL COLLEGE OF VETERINARY MEDICINE

Fall 2003 No. 29

Dear Virginia Food Animal Practitioner,
After many years of talking about a Johne's program in Virginia, we finally have one! To quote from an e-mail from Dr. Terry Taylor, Area Veterinarian in Charge
USDA, APHIS, Veterinary Services:

"As an incentive for producers to participate in the voluntary bovine Johne's disease program, the Virginia State Veterinarian's office will reimburse the producer up to $265.00 for veterinary fees for a herd risk assessment and herd management plan. In addition, only for herds that are testing animals in order to join the program, the state laboratories are reducing fees. The reduced fees will be $2.00 per ELISA test and $10.00 per confirmation test (Trek plus PCR). (Other Johne's disease testing will not be run at a reduced fee.) These monetary incentives will expire the first of August, 2004. The state laboratory in Lynchburg expects to have equipment in place and training completed so that they can begin doing the ELISA tests in mid-November."

Practitioners wishing to participate in the program must participate in a full-day training program for which 8 hours of CE credit will be issued. Dr. Ernest Hovingh is holding three of these training program during November. This is an opportunity to start your clients on a program that can lead to their classification as a Johne's free herd, with economic incentives from the State Veterinarian's Office. Don't miss this opportunity.

As you may have heard, there have been some changes to the Veterinary Extension program. When budget cuts came last fall, it was decided that Veterinary Extension would be discontinued. With significant support from many interested entities in the state, that decision was reversed. There are currently three Veterinary Extension positions at Virginia Tech: Beef Cattle Veterinary Extension, Dairy Cattle Veterinary Extension and Equine Veterinary Extension. I fill the Beef Cattle Veterinary Extension position. Dr. Hovingh fills the Dairy Cattle Veterinary Extension, but is unfortunately accepting a position at Penn State and will be leaving in December. We are currently recruiting for the Equine Extension Veterinarian, hoping to fill the position by early 2004. Thank you very much for your support of our program.

The meeting of the Virginia Academy of Food Animal Practice and the VVMA will be held February 6 and 7, 2004 at the Hotel Roanoke. Dr. Tom Van Dyke, president of the Academy, has worked hard to put together an excellent program. Dr. Tom Fuhrmann, noted veterinary speaker and consultant, will be our invited guest. A number of local experts including Dr. Mark McGann, Dr. Bennett Cassel and Dr. Steve Nickerson will round out the program. Please put the dates on your calendar and plan to attend this great educational event.

My best,
Dee Whittier, D.V.M.
Extension Veterinarian, Beef Cattle

Virginia Tech 1872

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VIRGINIA STATE UNIVERSITY SINCE 1882

A Big Thank you!

The editors, Dee Whittier and Kent Roberts, and staff, Anne Cinsavich, are most appreciative of the moral and financial support provided by the Academy of Food Animal Practitioners in the printing and mailing of this newsletter. Because of continuing budget problems at Virginia Tech, the publication of the Food Animal Veterinarian would not be possible without their support. Dr. Don Gardner has been very responsive and helpful when we have asked for financial assistance. The Academy's generosity has been solely responsible for our ability to continue publication of this newsletter. To Don Gardner and the Academy members – a great big thank you!

Think Twice Before Using Gentamicin

No one was thinking about drug residues when they treated several hundred head of sick young calves that had just traveled hundreds of miles from dairy farms in Idaho and Washington. They were just trying to keep them alive and save their sight, because many were scouring and suffering with severe pinkeye. Using gentamicin under a veterinarian's direction seemed to be the most effective treatment when given orally to treat the scours and used as a flush in the calves' eyes. The calves recovered and in another two months were in good enough shape to be shipped out to feedlots.

Another year would pass before the calves had grown and reached market weight. No one was thinking about drug residues when the calves, now grown to steers, were shipped for slaughter, because no one had treated them at the feedlot. Sampling by USDA at the slaughter plant changed everyone's thinking when a gentamicin residue was found in the kidney of the steer sampled.

There is no "tolerance" for gentamicin in cattle, because a gentamicin-containing drug has not been approved for use in cattle. Gentamicin is known to bind to the kidney tissue of cattle irregardless of the route of administration and could be a residue concern for 18 months or more. In fact, no withdrawal period has been scientif~cally established in cattle for those veterinarians searching the literature for direction in an "extra-label" use scenario. No one thought about a drug being sustained in an animal for a year or more, but gentamicin is different and professionals treating cattle need to know this. In this investigation, veterinarians involved in treating the calves recommended a six-month withdrawal period and their colleagues were their source of the withdrawal period. There was a learning experience from this investigation for the professionals involved when they were informed of the unusual residue problems with gentamicin, and subsequently stopped using it in dairy and feedlot cattle.

CVM's Dr. Mike Talley notes that "veterinarians and producers should be aware that there are approved drugs to treat the conditions described in calves that have much less potential for prolonged residues available for extra-label use if the approved drugs were found not to be effective by the prescribing veterinarian. In addition, the AABP, the AVMA, and the Academy of Veterinary Consultants have position papers or resolutions saying that aminoglycosides should not be used for extra-label purposes in cattle."

Linda Cline FDA Investigator, Sioux City, Iowa, as reported in Penn State Veterinary News, October 2003, University Park, PA

Transmission Of BVD Virus By Vaccination, Air, And Pens

Knowing how bovine viral diarrhea virus (BVDV) infection spreads via indirect contacts is required in order to plan large-scale eradication schemes against BVDV. When a cow exposed to primary BVDV infection is in calf, the virus can be transmitted via the placenta to the fetus, resulting in the birth of an immunotolerant and persistently infected (PI) calf, and so perpetuating the infection within a herd. PI animals shed the virus almost continuously in high concentrations in their secretions, urine, and excrement. Direct nose-to-nose contact between a PI animal and a susceptible animal is considered to be the most plausible and effective route for transmission of the agent. Rectal gloves can transmit the infection to susceptible animals after use on a PI animal. The ability of flies, hypodermic needles, nose tongs, and even ambient air to act as vectors for the spreading of BVDV excreted by PI animals has been demonstrated under experimental conditions.

This experiment was designed to study the possibility of transmitting BVDV indirectly by exposing calves to BVDV originating from PI calves, either by using an unhygienic vaccination procedure, ambient air, or by physical contact with contaminated pens. Despite the use of disposable needles and syringes, primary BVDV infection was observed in two calves vaccinated with a vaccine against Trichophyton spp. that had been contaminated by smearing nasal secretion from a PI calf on the rubber membrane and penetrating it twice with a hypodermic needle. Four other calves, housed in pairs in two separate housing units near a PI calf for one week - at distances of 1.5 and 10 meters, respectively - became infected without having direct contact with the PI calf. Furthermore, two of the three calves housed in a pen directly after removal of a PI calf, but without the pen being cleaned and disinfected, also contracted primary BVDV infection, whereas two calves that entered such a pen four days after removal of another PI calf did not.

In herds where most animals are seronegative to BVDV, indirect airborne transmission of BVDV or contact with a contaminated housing interior may be an important factor in spreading of the virus, once a PI animal is present. However, the spreading of BVDV within herds can be stopped by identifying and removing PI animals and also by ensuring that susceptible breeding animals do not become infected during this procedure. In contrast, injectables contaminated with BVDV may prove to be a significant vector for spreading the infection, not only within an infected herd but, most importantly, also between herds. In our opinion, it is questionable whether medicine bottles, once opened and used within an infected herd, should be used in other herds. In any case, prior knowledge of a herd's BVDV status will help practicing veterinarians and technicians to undertake appropriate hygienic measures.

Appropriate hygienic precautions are needed when handling animals in herds infected with BVDV. The risk of transmission will probably be greater when administering preparations that are used both on young animals and on breeding animals early in gestation, e.g. antibiotics, vitamins and sedatives, and local anesthetics. Such preparations are often used in several different herds and therefore this route of indirect transmission has the potential of being an important vector for spreading the virus, not only within a herd but also between herds. On four occasions, contaminated injectables have been suggested as the vehicle by which BVDV has been transmitted to non-infected cattle herds in Sweden. The rubber membrane of medicine bottles should be disinfected before it is punctured - each and every time - or medicine bottles used in an infected herd should not be used in other herds.

Taken from: Niskanen, R., and A. Lindberg,Vet J 165:125-130, 2003, as reported in Vet-Med, Vol. 10, Issue 1, October, 2003, Iowa State University, Ames, Iowa

Johnes Disease in Goats

Cattle aren't the only animals susceptible to Johnes Disease (JD); other ruminants, both domestic and wild, can be affected. Goats can acquire JD, with most reports describing the disease in dairy-type goats. The causative organism, *Mycobacterium avium* subspecies paratuberculosis (Map), in goats appears to be cattle strains rather than sheep strains, at least in North American goats. The signs of JD in goats are primarily chronic weight loss; only 10-20% of clinically affected goats exhibit diarrhea or clumping of feces. Lesions include thickening of the distal small intestine and enlarged mesenteric lymph nodes. Lesions can be focal or diffuse; diffuse lesions can be multibacillary, with involvement of macrophages containing many acid-fast organisms, or can consist primarily of lymphocyte infiltration with few organisms, or mixtures of lymphocytes and macrophages. Clinically and pathologically, JD must be differentiated from other causes of chronic weight loss in goats, such as CAE, caseous lymphadenitis, endoparasitism and malnutrition.

Diagnostic tests developed and validated for use in cattle have been used in goats. Herrold's egg yolk media, widely used for cattle fecal culture in North America, appears to detect a high percentage of confirmed, clinical JD goats. Both AGID and ELISA tests are used in cattle as herd screening tests. The sensitivity of both these tests in cattle is much lower in earlier stages of the disease progression than in clinically affected cows. It is likely that a similar situation is true for goats. AGID is reported to have a similar sensitivity to fecal culture for diagnosis of JD in goats. In one study, ELISA had an apparent sensitivity of 54%.

JD in goats is spread primarily by the fecal-oral route. Other routes of infection such as intrauterine, milk or colostrum ingestion are likely to occur but their frequency has not been documented in goats. Transmission from goats to cattle or cattle to goats can occur.

Johnes control in goat herds: Many of the control recommendations are based upon cattle herd control guidelines.

• Use individual kidding pens - clean and disinfect after each use.

• Feed colostrum only from test-negative does.

• If cow colostrum is used, establish Johne's disease status of cow or herd.

• Feed milk replacer, rather than milk.

• Isolate kids from adult goats and from all manure contamination.

• Test all adult bucks and does: Goat-specific recommendations on test selection, testing schedule and test interpretation are generally not available, but herd screening by ELISA or AGID can be used as a basis for follow-up fecal culture and/ or segregation of test-positive animals. Post mortem exam of all test positive or clinical-suspect animals will help confirm diagnosis.

• Maintain a closed herd or purchase only from herds known to be JD free.

Selected references on JD in goats:
1. Smith and Sherman; Goat Medicine; 1994; Lea and Febiger
2. SM Stehman; Paratuberculosis in small ruminants, deer and south american camelids; in Paratuberculosis, The Veterinary Clinics of North America; RW Sweeney, editor; 1996

Larry Hutchinson, Extension Veterinarian, PSU, as reported in Herd Health Memo, December 2002, Penn State University, University Park, PA

The Use of a Progesterone-Releasing Device (CIDR-B) or Melengestrol Acetate With GnRH, LH, or Estradiol Benzoate for Fixed-Time AI in Beef Heifers

The objective of this experiment was to compare two progestins and three treatments for synchronizing follicular wave emergence and ovulation in protocols for fixed-time AI in beef heifers. On d 0 (beginning of the experiment), Angus and Angus-Simmental cross beef heifers at random stages of the estrous cycle either received a CIDR-B device (n = 257) or were started on 0.5 mg animal day^{-1} melengestrol acetate (MGA; n = 246) and were randomly assigned to receive i.m. injections of 100μg GnRH, 12.5 mg porcine LH (pLH) or 2 mg estradiol benzoate (EB) and 50 mg progesterone (P4). The last feeding of MGA was given on d 6 and on day 7, CIDR-B devices were removed and all heifers received 500 μg cloprostenol (PG). Consistent with their treatment groups on day 0, heifers were given either lOO μg GnRH or 12.5 mg pLH 48 h after PG (and were concurrently inseminated) or 1 mg EB 24 h after PG and were inseminated 28 h later (52 h after PGF). Estrus rate (combined for both progestins) in heifers receiving EB (92.0%) was greater than that in heifers receiving GnRH and pLH (combined) and a CIDR-B device(62.9%) or MGA (34.3%). Although the mean interval from PG treatment to estrus did not differ among groups (overall, 47.8 h), it was less variable in MGA-fed heifers (SD = 2.5 h) than in CIDR-B-treated heifers (SD = 8. l h). Pregnancy rates (determined by ultrasonography approximately 30 d after AI) did not differ among the six treatment groups (average, 58.0%; range, 52.5 to 65.0%). Although fixed-time AI was done, pregnancy rates were greater in heifers detected in estrus than in those not detected in estrus (62.6 vs 51.9%). In conclusion, GnRH, pLH, or EB treatment in combination with a CIDR-B device or MGA effectively synchronized ovulation for fixed time AI, resulting in acceptable pregnancy rates in beef heifers.

M. Martinez, J. Kastelic, G. Adams, R. Mapletoft, Journal of Animal Science, July 2002; 80:7:1746-1751, as appeared in AABP Newsletter, September 2002, as reported in Animal Health Spectrum, Vol. 13, No. 4, Winter 2002, Mississippi State University, Mississippi State, MS

Why Foot Warts Recur

Research from the University of California—Davis shows that 60 percent of cows successfully treated for foot warts, also known as digital dermatitis or hairy heel warts, have a recurrence of foot warts within seven to 15 weeks. The researchers cite these risk factors:

- Environment. Hairy heel warts are associated with wet, muddy conditions.
- Bacteria. The scientists have isolated three types of Treponema bacteria in hooves infected with hairy heel warts. These are anaerobic bacteria, which is probably why hooves covered in mud and manure are more susceptible to foot warts—oxygen can't reach the hoof, and moisture adds to the problem.
- Management. Frequent alley scrapping and other facility and manure management techniques can help control foot warts by reducing favorable growth conditions. Proper use of footbaths helps too, just be aware of other environmental issues associated with products like copper sulfate.

Dairy Herd Management, May 2003 p. 14, as reported in Dairy, September 2003, Utah State University, Logan, UT

Cow Density is Critical

Excessive animal density can be a huge stress on dairy cows, says Brian Perkins, technical services specialist with Monsanto Dairy Business. To determine how crowded your cows are, begin by measuring bed space, or stalls available, before factoring in bunk space. "All cows must be able to rest comfortably," he says. That means you should have plenty of stalls, one per cow, so that cows are not forced to stand unless they are eating or drinking or forced to lie in alleys. Perkins offers the following recommendations of how many cows should be grouped together. These percentages represent the maximum number of cows per total number of free-stalls. Dry cows: 100 percent of bed space. (100 stalls=100 cows) Close-up cows: 80 percent to 100 percent of bed space. (100 stalls=80 to 100 cows) Fresh cows: 80 percent to 100 percent of bed space. (100 stall=80 to 100 cows) Up to 100 days in milk: 100 percent bed space. (100 stalls= 100 cows) If you're going to over-crowd any group of cows, only do so for those more than 100 days in milk. However, don't expect them to respond positively to the situation. "You can overcrowd these cows," says Perkins. "But how much laminitis and environmental mastitis can you deal with? Because these issues will become more severe the more cows you add and poor cow performance won't be the fault of your nutritionist. It's a matter of cow comfort."

Dairy Herd Management, March 2003, as reported in Dairy, September 2003, Utah State University, Logan, UT

Give Your Medicine Fridge A Checkup

When was the last time you defrosted the refrigerator used to store medicines? If you can't remember, or the answer is "never," it's definitely time to do so. John Carr, Extension veterinarian at Iowa State University, says dirty or infrequently defrosted refrigerators are common findings when he visits farms. Carr recently completed a research project in the United States and Europe that examined medicine storage. Here are a few other management tips you should heed.

- Don't overstock the fridge. It causes poor air circulation.
- Don't store medicines in the door—it's not cold enough.
- Keep your fridge set between 36-46F. Use a thermometer to monitor the temperature.
- Avoid pushing medicines all the way to the back, which can lead to localized freezing.
- Consider refrigerator maintenance a priority. Old, cracked door seals make it difficult to maintain the desired temperature.
- Don't store human foods in the same refrigerator as your medicine supply.
- Keep the fridge, or the room in which it is located, locked.

Dairy Herd Management, November 2002, Vol.39,No.ll,p.10, as reported in Dairy, September 2003, Utah State University, Logan, UT

Internal Parasites in Cattle Organically reared on Pasture

Nematode parasite infections are one of the greatest causes of lost productivity of grazing livestock and by far the greatest losses associated with parasite infections are sub-clinical. Organic cattle producers sometimes practice a grazing management procedure that consists of the turnout in spring of young animals onto pasture that had not been grazed during the previous late summer and autumn by similar classes of animals. A study was conducted to investigate the benefit of such a management procedure on groups of young cattle grazing on semi-natural pasture.

A grazing experiment with young cattle was conducted over two consecutive (1997,1998) grazing seasons on semi-natural pasturelands in central-eastern Sweden. In mid-May each year, 10 first-year grazing castrated male cattle of approximately 9 months of age, were allocated to each of three experimental groups: 1) untreated, set-stock (non-treated); 2) untreated, midsummer move 15 July in both 1997 and 1998 to ungrazed pasture (rotation), and 3) ivermectin bolus, set-stocked (bolus). The whole experimental area had remained virtually free of cattle during the previous two seasons and the cattle had been raised indoors since birth. Because of the worm-free status of these animals and the expected negligible levels of pasture contamination with parasite free-living states, all animals received a single "priming" dose of infective larvae at turnout. Each dose was of approximately 10,000 larvae. In the first year of study (1997), the larvae used were predominately Cooperia o'1cophora. In the second year (1998),0. ostertagi made up approximately 50% of the dose.

Results of the first year study showed that the level of parasitism was so low that it failed to induce any productivity losses in both groups of untreated cattle, which grew as well as those given boluses at turnout. In contrast, in 1998 both groups of untreated cattle suffered varying degrees of sub-clinical and clinical parasitism to result in an average of 30 kg live weight depression, compared with the bolus treated cattle, at the end of the season. The only major departure between the two years was that in the latter, the cattle in the untreated groups were exposed to infective larval pickup, which had over wintered on pasture. Cattle in the move treatment grazed in the same sequence on pastures used by similar classes of animals during the previous year. That is, their pastures at turnout had not been grazed since mid-summer of the previous year. Clearly this early season (1997) grazing by young cattle resulted in sufficient over wintered larvae at the start of the following year (1998) to cause productivity losses of the same magnitude as those recorded for young cattle grazing on pastures contaminated for the entire grazing season of the previous year.

For the mid-summer move treatment, these pastures had only been grazed, and thus contaminated with worm eggs, for the first 8 weeks of the previous grazing season. At the time of turnout, infective larval availability was as high on the pastures grazed only in the first 8 weeks of the previous season as larval numbers on the pastures grazed from the mid-summer move until the end of the season. This work showed that proportionally greater numbers of infective larvae developed from nematode eggs deposited in cattle dung during the first half of the grazing season. Certainly the "spring grazed" pastures were not "worm safe," which is the expectation underlying the strategy used by some organic cattle producers to manage worm infections in their young cattle. For organic cattle farming systems, young cattle should be prevented from having any exposure to pasture grazed by a similar class of stock during the previous season. Even if these pastures were left unstocked from mid-sumrner to provide good pasture regrowth, substantial losses in productivity may occur as early as 6 weeks following turnout.

Taken from Dimander, S. O., et al., Vet Parasitol 90:271-284, 2000as reported in VETMED, Vol. 6, Issue 5, September 2000 Iowa State University, Ames, Iowa

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