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 1995 **No. 15**

Dear Virginia Food Animal Practitioners,

Dr. Randall Hinshaw has put together an exceptional program for the food animal portion of the Virginia Veterinary Medical Association meeting that will be held in Roanoke February 15-18, 1996. The food animal educational program will be on Friday and Saturday the 16th and 17th. It will include a wet lab on reproductive procedures at the College of Veterinary Medicine at Blacksburg on Friday afternoon. The tentative program is as follows:

Friday (2/16)

8:00-9:30	Gary Snider (Farm Business Consultant for Farm Credit of Western New York) - Farm Finance Workshop
9:30-10:00	Bill McKinnon (Va Tech Animal Science Extension) - Health Aspects of Marketing Beef Cattle
11:00-12:15	Snider-Workshop
12:15-1:30	Lunch
1:30-5:30	Wet Lab : Bill Beal (VA Tech Animal Science), Tom Bailey (College of Vet. Med., VA Tech) - Bovine Ultrasound Dick Saacke (VA Tech Dairy Science) - Bovine Semen Evaluation

Saturday(2/17)

8:00-9:30	Snider-Workshop continued
9:30-10:00	Gordon Groover (VA Tech Ag Econ.) - Virginia Dairy Farm Economics
10:30-12:15	Snider-Workshop continued

The annual meeting of the Virginia Academy of Food Animal Practice is scheduled for May 4, 1996. Please put that date on your calendars. More details to follow.

For those of you who have gotten into the cyberworld: So have we! My e-mail address is dwit@vt.edu. If you would like to e-mail me a note, I can send you all of the addresses of the faculty of the Department of Large Animal Clinical Sciences. We find this a great way to communicate to avoid the phone tag we often play when we try to get busy faculty together with even busier practitioners, neither of whom spend much time by the phone. Also, the Virginia-Maryland Regional College of Veterinary Medicine has a home page on the World Wide Web. Our address there is: http://www.vetmed.vt.edu/ .

Hope you are all doing well given the tight economies of both the dairy and beef cattle industries at this point. Our belief is that they need the efficiencies of our programs even more in these tight times.

Best Regards,

W. Dee Whittier, DVM
Extension Veterinarian

NEW ESTRUS SYNCHRONIZATION PROGRAM TOUTED

A new estrus synchronization program has been developed by Dr. Milo Wiltbank and associates at the University of Wisconsin. It is being touted in a dairy producer publication as a major advance (Dairy Today, Dec 1994). While this program seems to be effective and may have some benefits, its cost effectiveness is yet to be established.

The main purpose of the treatment scheme was to be able to inseminate cows "by appointment" without any need for estrus detection. The program uses a combination of one prostaglandin-F-2 alpha (PGF) injection and two GnRH injections. The treatment regime is as follows and is a bit different on heifers vs cows:

1) GnRH was given at any stage of the estrus cycle.
2) PGF was given 7 days later.
3) Cows: GnRH was given 2 days after PGF.
4) Cows and heifers bred 20-24 hours after the second GnRH injection.

Dr. Wiltbank and collaborators tested this treatment program using 333 dairy cows in 3 herds. All cows had a voluntary wait period 50 days postpartum and were randomly assigned to two groups. The treated cows received the GnRH-PGF-GnRH protocol above after 50 days post-partum and were randomly assigned to two groups. The treated cows received the GnRH-PGF-GnRH protocol above after 50 days post-partum and were inseminated by appointment without regard to observed estrus. The control cows received the farm's typical reproductive management strategy, which relied on "estrus detection, AM/PM inseminations and periodic use of PGF." Pregnancy diagnosis was by ultrasound at 32-38 days after AI. Cows found open were inseminated according to the same treatment or control policy as initially assigned until pregnant or culled. The culling policy and policy concerning periodic use of PGF were not defined any further (J. Dairy Sci. 77 Suppl. 1): 69 (Abstr. 259A). Results have been presented in abstract form only, and have been submitted to a referred journal for review.

The results of the study were encouraging, and they are listed in Table 1. Days to first insemination, days open, and percentage pregnant by 100 days post partum were all significantly different between control and synchronized groups. There was no significant difference in first service conception rate.

Table 1. Reproductive parameters for two treatment groups.

Treatment Group	Median day 1st Insem.	1st Service Concept. Rate	Median Days Open	% Pregnant by 100 day
Control	81	39%	121	35%
Synchronized	54	37%	98	53%

These results suggest that the GnRH-PGF-GnRH treatment regime can be used to obtain acceptable reproductive performance from artificial inseminations when no estrus detection program is used. The cost effectiveness of this program has not been evaluated, however. The PGF use policy for control cows needs to be examined critically to determine whether a more aggressive PGF policy alone could account for the results. After all, the days to first insemination and days open for control cows were still in or near an acceptable range.

There is one situation where clinicians may wish to consider this therapy now, and that is with repeat breeder cows. One theory indicates that some repeat breeder cows may have a different amount of time from estrus onset until ovulation. Some repeat breeders are thought to be inseminated before optimum time of fertility by the traditional AM/PM rule. This series of injections would control the whole follicular development time frame, and the therapy program might be useful for valuable cows on 3rd or later inseminations. **--Source: Dr. Mark A. Varner, Dept. of Animal Sci., Univ. of Maryland, College Park, MD, Veterinary NL, Feb 1995, as reported in Veterinary Newsletter, University of Georgia, June 1995.**

SUPER FOOTROT

Lesions typical of interdigital necrobacillosis (phlegmona interdigitalis, bovine footrot) can be produced by subcutaneous inoculation of *Fusobacterium necrophorum*. Other species of bacteria such as *Bacteroides melaninogenicus*, and injury to the interdigital space may be causative factors as well. Characteristically, bovine footrot responds well to parenteral antibiotics.

In 1993, G.P. David (Vet Record, May 29, 1993) reported an apparent severe form of bovine footrot in England which was peracute in onset and which did not respond to conventional therapy. This condition (or one similar to it) has also been described in the U.S. by Dr. Charles Guard from Cornell and termed "super footrot." The condition presented with severely lame cattle which have extreme interdigital swelling. Dr. Guard has described cases of a week's duration which had separation between horny and sensitive tissues at the coronary band. Sloughing of the horny claw may occur. End stage septic arthritis often results. In many cases, bacterial isolates were resistant to penicillin. Guard did report success with early diagnosis following monitoring of locomotion using a pedometer, examination on a tilt table and parenteral treatment with ceftiofur and topical treatment with lincomycin--spectinomycin (L-S 50 Water Soluble®, UpJohn). Practitioners should note that such use of both products would constitute extra-label use and act accordingly.

Cook and Cutler (Vet Record, Jan 7, 1995,) have described and graded the progression of the disease as follows:

Grade	Description and grading progression of the disease	Hours
1	Severe swelling of the interdigital skin	< 12
2	Necrosis and splitting of the interdigital skin with prolapse of the dermis	12-36
3	Extensive swelling of soft tissue with deep interdigital erosion	> 36
4	Deep digital sepsis septic arthritis	> 36

To date, benefits have not been reported following the use of preventive foot baths consisting of 5% $CuSO_4$, tetracycline, or 5% formalin. "Super footrot" is differentiated from "ordinary" bovine footrot by its severity, rapid progression, and resistance to usual therapy. This disease does not appear to be self limiting. Multiple cases in a herd with some animals progressing to recumbency have been reported. Guard, as well as Cook and Cutler suggest that early diagnosis and aggressive therapy are indicated until a definitive cure or preventive strategies are defined. **--Kent Hoblet, DVM, Extension Veterinarian, Dairy, The Ohio State University, as reported in Ohio Veterinary Newsletter, Volume 21, #4, April - June 1995.**

BOVINE NEOSPOROSIS

Neospora is a recently emerging protozoal parasite of cattle. Infection is most often manifested as abortion. This report will review current opinion on the life cycle/transmission, clinical presentation, management and diagnosis of *Neospora sp.* abortion in the bovine.

The life cycle of *Neospora* is unknown, but is probably similar to *Toxoplasma gondii*. In toxoplasmosis, a carnivore host passes oocysts in feces. The intermediate host can be infected by consumption of feed or water contaminated with oocysts. Ingestion of tachyzoites or bradyzoites in the tissues of infected animals can also cause infection. The fetus is infected by transplacental migration of the *Toxoplasma* organisms. Experimental and natural transplacental transmission of *Neospora caninum* has been documented in dogs and cats. Transplacental infection has been the only reported route of infection. An oocyst stage for *Neospora* has not been identified. Initial infection with *Neospora* tachyzoites is characterized by invasion of the central nervous system (CNS) with muscle macrophages.

Clinically, infection with *Neospora* is characterized by abortion at 3-8 months of gestation, with most abortions occurring at 5-6 months (fetal death and reabsorption has been described in experimentally infected dogs). Abortions can occur sporadically or in storms. Subsequent calves from previously infected cows are usually normal; however, cows with repeated *Neospora* abortions have been described. Gross lesions are nonspecific and the fetus is usually autolyzed. Cows that have aborted appear clinically normal, usually don't have metritis or a retained placenta and continue milking. Cows that abort have higher antibody titers to *Neospora* when compared to non-aborting herd mates. Occasionally, infected calves are born alive and are recumbent at birth or within a few days. Presenting signs in these calves are hindlimb weakness and paralysis.

Management to prevent or control *Neospora* abortions should include protection of feed and water from fecal contamination, and elimination of domestic and feral animal contact with water and feed. There is no known treatment. Pyrimethamine and trimethoprim are effective in ameliorating *Neospora* infection in puppies. Sulfadiazine is effective in ameliorating disease in experimentally infected mice, if given early.

Specimens for the diagnosis of *Neospora* abortions should include stomach content and thoracic fluid with fresh and formalin (neutral buffered) fixed brain, heart, skeletal muscle, liver, lung, kidney, thoracic fluid, stomach content, spleen, and placenta. Multifocal, necrotic, nonsuppurative encephalitis, mononuclear myocarditis and mononuclear myositis are the characteristic microscopic lesions. An immunohistochemical stain specific for *Neospora* is used to identify the organism in tissue sections. Tissue not fixed in neutral buffered formalin may result in false negative reactions. Serum antibodies to *Neospora* can be detected with an indirect fluorescent antibody test; however, serologic testing is not widely available. *Neospora sp.* is a major abortifacient of cattle and should be considered as a differential diagnosis for bovine abortion and neonatal calves with rear limb paralysis. **--Kurt Russow, DVM, University of Minnesota in the Bovine Practitioner, Sep. 94, as reported in Herd Health Memo, 1995-96, No. 2, University of Kentucky, Lexington, KY.**

BST UPDATE: FIRST YEAR EXPERIENCE REPORTS

FDA is receiving inquires about the health effects of recombinant bovine somatropin (rbST) on dairy cattle. FDA has reviewed the adverse reactions reported during the first year of marketing. The following may be used to respond to inquires.

In March 1993, before rbST was approved, an FDA advisory committee concluded that the use of rbST -- and any increased risk of mastitis and resulting increased use of antibiotics in treated cattle -- would not pose a risk to human health. The committee also concluded that safeguards were in place to assure a safe milk supply. Mosnanto Co.'s Posilac®, the only rbST product approved for increasing milk production in dairy cattle, was first marketed in February 1994. More than 14 million doses have been sold for use on 13,000 dairy farms, representing about 11 percent of dairy farmers in the United Stated, according to the company.

The total adverse effects reported to Monsanto and submitted to the agency so far include 806 reports for the year. In the first six months of marketing, FDA received 96 reports of adverse reactions in cattle. FDA then asked the company to examine all records and to submit any references that might relate to an adverse experience. These detailed examinations resulted in the submission of additional reports related to the use of the drug. Of the 806 reports, 121 reports include mastitis, 105 reports involve increased somatic cell counts, 73 include swelling of the udder or abnormal milk and 89 include reproductive disorders. Other reports related to digestive disorders and foot or leg problems. In some cases, one report contains more than one condition.

The number and severity of the reported conditions raise no new animal health concerns based on data from clinical trials, and as set out in the product's approved labeling. Also, there is no indication that the drug is any less effective than labeled. In monitoring these reports, FDA typically looks for unusual events not included in labeling as well as trends indicating an increase in the incidence of expected side effects. FDA has validated Monsanto's adverse drug reaction reporting system and investigated some of the reports with on-farm inspections. Based on these reports, FDA does not find any cause for concern. However, the agency is continuing to monitor herds treated under field conditions and those in a two-year study of dairy farms of various sizes in different regions of the country. It is important for dairy farmers to continue to report all adverse reactions associated with use of rbST. They may report reactions to Monsanto, to FDA through their veterinarian or directly to FDA. **--Herd Health Memo, Univ. of Kentucky Cooperative Extension, 1995-96 #1, July 1995, as reported in Animal Health Beat, Vol. 11, No. 8, August 1995, University of Nevada, Reno, NV.**

ALLOW THREE WEEKS BETWEEN PINKEYE, IBR SHOTS

"If you use a pinkeye vaccine, or are considering using one, be careful about giving injectable or intranasal modified live virus (MLV) infectious bovine rhinotracheitis (IBR) vaccines at the same time," says Chuck McCutcheon, vice-president of marketing and operations at Addison Biological Laboratory at Fayette, Missouri.

When modified, live IBR vaccines are given to calves at 4 to 10 months of age, their eyes may be colonized by the vaccinal virus for as much at 19 days. If a pinkeye vaccine is given during that time, a calf's immune system is not capable of responding well to the bacteria which causes pinkeye. The stressed calf is more likely to develop some symptoms of the disease.

In a study conducted at the University of California-Davis, calves vaccinated with modified live IBR vaccine and later inoculated with pinkeye bacteria developed a greater eye lesions than unvaccinated calves.

McCutcheon says a pinkeye bacterin can be given the same day if a killed IBR vaccine is used on cattle. "If you use modified live IBR vaccines, allow three weeks for the MLV IBR vaccinal strain to clear itself from eye tissue before vaccinating for pinkeye." **--Hoard's Dairyman, May 10, 1995, as reported in Veterinary News, The Pennsylvania State University, August 1995.**

THE USE OF LONG-ACTING OXYTETRACYCLINE FOR THE TREATMENT OF OVINE FOOT ROT

A single injection of oxytetracycline was more effective than foot bathing in 10% zinc sulfate. Previous workers have found 10% zinc sulfate equally effective for treating foot rot in sheep, although the formalin is more unpleasant to use. Either method is time consuming. At the beginning of this study, foot rot was induced in 8-month-old lambs by housing them with infected ewes on wet straw. After foot rot developed, the lambs were housed in groups on clean, dry straw and given no treatment, injected once with long-acting oxytetracycline IM at 20 mg/kg, or foot bathed for one hour on day 1 and again on day 5 in 10% zinc sulfate. Cure rate six weeks later was 1/5 control feet, 6/6 feet in the oxytetracycline group, and 2/8 zinc sulfate treated feet. Next, 27 naturally infected Suffolk cross lambs were trimmed carefully to remove all excess and separated horn, then housed on flatted wooden floors for six weeks. None of nine

control sheep improved in one week, and they were treated at that time on welfare grounds. Eight of nine feet were cured six weeks after the sheep were treated with a single injection of oxytetracycline; this efficacy was comparable to the cure rate of seven of ten observed with two, one-hour soaks in zinc sulfate. Finally, 58 ewes with foot rot were trimmed and stood in a 10% zinc sulfate foot bath for three minutes. Thirty sheep received a single dose of long-acting oxytetracycline, as above, while 28 received no further treatment. The sheep were maintained in two groups on pasture during a period of dry weather. After six weeks, 39/51 feet had been cured by foot trimming and bathing (77%) while addition of oxytetracycline cured 49/52 feet (94%); this difference in cure rate was statistically significant. **--R.G. Thomas et al., Brit Vet J 150, 1994, as reported in Veterinary News, August 1995, Penn State Univ.**

COMPARISON OF TWO COMMERCIALLY AVAILABLE CHLAMYDIAL ABORTION VACCINES

Chlamydial abortion, also known as enzootic abortion of ewes (EAE), is the most common cause of abortion in the western United States. Because ewes become immune after exposure and infection, flocks chronically infected with the agent generally have a low annual incidence (0.7-4%) of abortion, usually experienced in first or second gestational ewes. However, when the agent is first introduced into a susceptible flock, incidences of 15-33% affecting all ages have been reported.

Development of placental and subsequent fetal lesions do not commence until after 90 days gestation, regardless of when the ewe becomes infected, and abortions are usually seen between 120 and 150 days. Mummies, stillbirths, weak lambs, and undersized lambs are also commonly experienced in flocks affected with *C. psittaci*.

Presently, there are two commercially available vaccines in the U.S. which contain one or two isolates of *C. psittaci* grown in cell culture. Both vaccines contain *Campylobacter fetus ss fetus,* and *C. jejuni*, and one of these vaccines also contains 4 strains of K99 positive *Escherichia coli*. The efficacy of these vaccines has been questioned due to *Chlamydia* caused abortions occurring in flocks vaccinated according to the manufacturers' recommendations.

A flock of approximately 300 range ewes of six different breeds had a long-diagnosed history (since 1958) of Chlamydial abortions. The average annual abortion rate in the flock from 1985 to 1992 was 2.6%, with a low of 1.5% in 1992 and a high of 4.2% in 1987.

Ewes were randomly assigned by computer into three treatment groups, without regard for breed or age. The number of control (CNTRL) animals was limited to 194, to prevent potential abortions from reaching an unacceptable economic level. The two remaining groups received either the Grand Laboratories product (GL) or the Colorado Serum Co. product (CS) 7 weeks before, and a booster vaccination 3 weeks before exposure to rams. The immunization procedure followed label instructions for each vaccine. Five ml of GL vaccine was given intramuscularly into a hind leg of each ewe; two ml of the CS vaccine was given subcutaneously in the neck region. After vaccination, there was no attempt to keep treatment groups separated.

Of the 83 ewe which aborted, placental and fetal tissue samples from 75 abortions were submitted to the laboratory for diagnosis. Of the 75 submissions for pathological examination, 30 (40%) were positive for *Chlamydia*. No other infectious agents were detected in any of the samples. The CF test for *Chlamydia* demonstrated high antibody titers (16) in five additional ewes, indicative of recent *Chlamydia* infection. This increased the incidence of positively diagnosed chlamydial abortion to 47%. Abortion rates among pregnant ewes within groups were 4.0% for CNTRL, 2.9% for GL and 3.0% for CS ewes. Abortion rates were not statistically different among treatment groups. Fertility and percent of live lambs within age groups were not increased by vaccine treatment.

Vaccine treatments did not improved the percent of ewes .lambing (reduce early undetected abortion) or the percent of lambs born live (reduce stillbirths) per ewe lambing, when compared to the CNTRL population. **--Snowder GD, Bulgin MS, Ward ACS, et al. (Pg 60-64), as reported in Animal Health Update, Utah State University, Logan, Utah.**

APPLICATION OF ANTIBODY TITERS AGAINST BOVINE VIRAL DIARRHEA VIRUS (BVDV) AS A MEASURE TO DETECT HERDS WITH CATTLE PERSISTENTLY INFECTED WITH BVDV

H. House, J.C. Baker, R.K. Maes, P.L. Ruegg, J.W. Lloyd

Abstract: Based on the distribution of antibody titers against bovine viral diarrhea virus (BVDV) in 10 Michigan dairy herds with persistently infection (PI) animals from herds without such animals. The herds were selected to represent 3 different herd categories: A, herds without use of vaccination and without PI animals (5 herds); B, herds with use of killed vaccine but no PI animals (2 herds); C, herds with use of killed vaccine and presence of PI animals (3 herds). The animals were described as having high antibody titers ($\geq$128) or low antibody titers (<64). For animals from 9 to 18 months of age, the probability of obtaining at least 3 animals with high titers among a screening sample of 5 animals was calculated as <0.001 for all herds in category A, <0.01 for the 2 herds in category B, and >0.99 for all herds in category C. Thus, among herds in this study, by categorizing 9-18 month-old animals as having high titers ($\geq$128) or low titers ($\leq$64), herds with PI cattle could be distinguished from other herds by testing only 5 animals. **--J Vet Diagn Invest 7:327-332 (1995) -- abstract submitted by Dr. Sherrill Fleming, Associate Professor, Diagnostic Lab Service Field Services, Mississippi State University College of Veterinary Medicine, as reported in Animal Health Spectrum, Vol. 6, No. 3, Sept. 1995..**

INFECTION OF CATTLE PERSISTENTLY INFECTED WITH BVD VIRUS

Once BVD virus has been identified in a herd through necropsy of a dead animal or following abortion, control of the disease involves identifying any persistently infected (PI) cattle in the herd. As a general rule, PI cattle do not survive past 2-3 years of age, due to death or culling. The period of time that PI cattle are in the herd serves as source of virus for producing more PI calves and other forms of BVD virus infection. The gold standard of identification is to isolate BVD virus from the buffy coat of EDTA whole blood samples. Virus isolation is costly, labor intensive and may miss a large percentage of cattle which are PI. Cattle which are not PI could also culture positive if undergoing a transient BVD virus infection at the time of sample collection. Newer technology includes the immunoperoxidase microtiter assay (IPMA) for BVD virus antigens in serum. Only PI cattle test positive to this test, as they are the only ones which tend to have sufficient levels of BVD virus antigen in the serum to be detected by this test. Serum is used to test all cattle >6 months old and EDTA samples are used on cattle <6 months old. The test is more rapid than virus isolation and costs are reduced. Currently, the diagnostic laboratory at Michigan State University and Cornell University are able to run the IPMA test. Testing plans should concentrate on replacement cattle <3 years old, as this is the group that is most likely to have PI individuals. All cattle identified as PI should be immediately culled to slaughter to reduce the exposure of healthy cattle to BVD virus. When combined with an effective vaccination program, the economic losses associated with BVD virus infection can be minimized. **--Dr. Sherill Flaming, Associate Professor, Diagnostic Lab Services Field Services, Mississippi State University College of Veterinary Medicine, as reported in Animal Health Spectrum, Vol. 6, No. 3, Sept 1995..**

CONSEQUENCES OF PRRS IN FATTENING PIGS

In studies in 12 pig herds using various husbandry systems, average mortality rate increased from 2.2% before the outbreak of Porcine Reproductive and Respiratory Syndrome (PRRS) to 4.3% at 3 months and 2.8% at 8 months after the outbreak. The average frequency of lung lesions at slaughter changed from 45% before PRRS to 70% in pigs born during and after the outbreak. The severity of lung lesions was greater in pigs with poorer levels of hygiene and management. **--Abstracted from Blaha, T., Proceedings Soc. Vet. Epid. Prev. Med. (1993), p. 1-5, as reported in Vet Med, Volume 1, Issue 6, November 1995, Iowa State University, Ames, Iowa.**

VIRGINIA POLYTECHNIC INSTITUTE
AND STATE UNIVERSITY
VIRGINIA COOPERATIVE EXTENSION
BLACKSBURG, VIRGINIA 24061-0512

Nonprofit Org.
U. S. Postage
PAID
Blacksburg, VA 24060
Permit #28