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

Spring 2003 No. 28

Dear Food Animal Practitioners,

Many changes have taken place and are taking place at the Virginia-Maryland Regional College of Veterinary Medicine.

Perhaps many of you have heard of the tragic and accidental death of Dr. Antonio Garcia in March. Dr. Garcia was a food animal theriogenologist who had made a very positive impact in the relatively short time that he had been in Virginia. He was very active in a research program in applied bovine reproduction. He is being sorely missed and we again extend our sympathies to his family. We are currently searching for a replacement for his position.

As we told you at the February meeting, there are changes that are being made to Veterinary Extension at Virginia Tech. In December we were told that all Veterinary Extension would be discontinued. I have discontinued most of my extension duties since the beginning of the year. I have continued to work in a funded project on Beef Quality Assurance. More below about this. I am continuing to work with the Academy of Food Animal Practice. At this writing there are still discussions ongoing about Veterinary Extension. One proposal has been to have Extension veterinarians working in the Animal and Poultry Sciences and Dairy Science departments. We'll keep you informed as things develop.

Beef Quality Assurance (BQA) is a national program that has at least some effort now in all states. It is both an educational and certification program. Virginia has joined with Pennsylvania, West Virginia, Maryland, and New York in a Mid-Atlantic group that has made getting the materials together more efficient. The Beef Quality Assurance effort in Virginia involves training producers in both classroom and chute-side settings and then certifying them by having them sign an agreement wherein they promise to conduct the production of beef cattle in their farms according to a list of BQA procedures. Each producer who is certified is given a number. A few marketing options (Nebraska Corn Fed Beef, for example) are only buying beef from producers with certification numbers. We are told to expect more of this. Nearly 1000 producers have now been certified in Virginia with more to come. We gave a brief overview of the program at the joint Academy/VVMA meeting in Roanoke in February.

My best to all of you in your food animal veterinary endeavors.

William D. Whittier

This newsletter is published quarterly in support of the outreach program of the Veterinary Teaching Hospital VMRCVM, Blacksburg, VA and is prepared for and distributed to veterinarians in the Mid Atlantic Region.

Lameness Is More Expensive Than Previously Thought

For many years the primary cost associated with lameness was thought to be reduced milk yield. Recent work by Hernandez (JAVMA, Vol 220, March 2002) indicated that while severe lameness did reduce milk yield by 10%, less severe lameness reduced milk yield but, not significantly. This does not imply that even minor lameness is not expensive for producers. In fact other costs associated with lameness may exceed the revenues of lost milk. Even minor lameness has been associated with significant decreases in reproductive efficiency. Shearer and co-workers at Florida (12th International Symposium on Lameness in Ruminants, 2002, p 339-342) showed lame cattle had greatly decreased first service conception rates, a higher percentage of cystic ovaries, and a much higher cull rate. The additive effects of lameness have lead many researchers to place lameness as the third most costly disease of cattle on modern dairies. Lloyd at Michigan State has estimated the total cost per case of lameness at $317 in large farms and $253 on smaller farms. These figures are in line with previous estimates by Guard at Cornell of $302 per case of lameness (Northeast Dairy Business, Sept. 1999). These high costs have lead many producers to resort to a variety of strategies to control lameness. Most strategies focus on controlling Digital Dermatitis, which has emerged as the single most frequently identified cause of lameness.

Footbaths and individual animal treatments are established and well known to help control this condition. These various topical control strategies can be time consuming and expensive. Since a multitude of factors lead to invasion of the skin by bacteria, simply using a topical therapy can control but not totally eliminate the condition. Recent introduction of a *Treponema Bacterin* by Novartis, has allowed veterinarians and producers to decrease clinical signs associated with Digital Dermatitis through immunization. Since Treponema-associated lesions are viewed as bacterial invasion of the epidermis and partially into the dermis, they are generally quite superficial. Generally a bacterin is very effective in producing a humoral response. The Novartis label recommends 3 initial doses followed by a booster each 6 months. It is very important that veterinarians and producers adhere to label recommendations. Under the best of circumstances it is difficult for a humoral response to produce adequate antibodies at the skin level. If the immune system is not properly stimulated, sufficient antibody titer will not be maintained to effectively control clinical signs. Therefore, while use of the bacterin can aid in control of clinical signs associated with Digital Dermatitis, just the bacterin alone will not produce an effective control program. It is just as important that veterinarians assist producers in identification and implementation of other management practices such as: reducing manure buildup, ensuring a gentle transition into the lactating string, providing a balanced diet to all animal groups, and reducing moisture in animal environments. A more holistic approach to hoof health will not only improve animal comfort but will also help to reduce losses associated with lameness from multiple causes.

David R. Wolfgang, VMD, Extension Veterinarian, PSU, as reported in Health Memo, Dec. 2002, Penn State University, University Park, PA

Non-Antibiotic Footbaths For Treating Digital Dermatitis

Digital dermatitis is a skin disease of cattle which causes considerable pain and discomfort, even when the cow is not obviously lame, and significantly reduces milk yield. In the UK, over 70% of farms whose cows had digital dermatitis used antibiotic footbaths, and in some areas antibiotic footbaths were used on 100% of farms. No antibiotics are licenced for use in footbaths. Therefore, alternatives are required.

The efficacy of three non-antibiotic products (copper sulfate, formalin, and peracetic acid) was compared with the efficacy of erythromycin, when the four substances were applied in footbaths for the treatment of cows with digital dermatitis. The cows were divided into four groups on the basis of their current housing and randomly allocated to one of the four treatments. Before they were treated, the feet of the cattle were cleaned with water from a hose. The cows were then walked once a day through a clean 3 m long concrete footbath filled to a minimum depth of 130 mm. Each cow spent a minimum of 20 seconds in the footbath. Each footbath solution was freshly prepared each day. Cattle allocated to the non-antibiotic treatments were footbathed daily for seven days, but the cattle treated with erythromycin were footbathed for two days only. Complete records were obtained for 252 lesions from 169 cows.

Table 1. Effect of Treatment and Time on the Mean (Se) Lesion Scores

	Number	Number	Mean lesion score			
Treatment	**of cows**	**of lesions**	**Day O**	**Day 4**	**Day 7**	**Day 21**
Erythromycin	52	74	2.9	2.1	1.3	1.3
Formalin	42	64	3.0	1.6	1.5	1.1
Copper sulfate	31	44	3.2	2.1	1.5	0.9
Peracetic acid	44	70	3.1	2.5	1.5	1.6

There were significant reductions in the lesion scores of all four groups, but there was no significant effect of treatment and no significant interaction between treatment and time. These results suggest that a seven-day footbath regimen of 6% formalin, 2% copper sulfate or 1% peracetic acid can be as effective in controlling digital dermatitis as erythromycin at 210 g/100 liters for two days.
Taken from: Laved, R. A., and H. Hunt, VetRec 151:144-146,2002, as reported in VETMED, Vol. 9, Issue 1, October 2002, Iowa State University, Ames, IA

Would You Believe?

Currently, less than 6 percent of US beef cows are artificially inseminated because of the cost associated with detecting when a cow is in heat. But scientists in industry and academia continue to look for more effective ways of inducing ovulation, so producers won't need to dedicate valuable resources to heat detection.

Thomas W. Geary, USDA_ARS, Miles City, MT

Antibiotic Ionophores And Salmonella And E. Coli 0157:H7

Ruminant animals are asymptomatic carriers of *E. coli 0157:H7* and other enterohemorrhagic *E. coli* with the majority of human outbreaks linked to contact with ruminant animals or to products derived from ruminants. Ninety-five percent of an estimated 1.4 million non-typhoidal *Salmonella* cases in the United States are estimated to be foodborne with beef, lamb, and dairy products listed as major sources of infection. In the United States, ionophores are widely used in the feeding of growing beef and dairy cattle, sheep and goats and the benefits to growing ruminants and the subsequent effects of ruminal fermentation are well-documented. The use of ionophores has attracted interest because of the increase in human *E. coli 0157:H7* cases and the corresponding timeframe of widespread ionophore use. Researchers have suggested that because *E. coli* is a gram-negative bacterium, ionophores might promote the incidence of *E. coli* in cattle by inhibiting competitive gram-positive species. The ability of ionophores to alter the gut microbiota may give *E. coli* and/or *Salmonella* a selective advantage. Furthermore, it is hypothesized that the increasing number of antimicrobial-resistant *Salmonella* strains isolated from human salmonellosis cases are because of widespread use of antimicrobial agents in food animal production and that these resistant strains originate from animals.

Four *Salmonella* serotypes (*dublin, derby, typhimurium, and enteriditis*) and two strains of *E. coli 0157:H7* (ATCC 43895 and FDIU 6058) were cultured in the presence of varying concentrations of ionophores (monensin, lasalocid, laidlomycin propionate, and bambermycin) in pure and mixed ruminal fluid cultures. Bacterial growth rates in pure culture were not affected by ionophores at concentrations up to 10 times the approximate rumen ionophore concentration under normal feeding regimens. Likewise, ionophores had no effect on *Salmonella or E. coli* CFU plated from 24-hour ruminal fluid incubations. Ionophore treatment decreased the acetate: propionate ratio in ruminal fluid cultures as expected. The lack of any ionophore effect may be attributed to the double membrane present on gram-negative bacteria that is capable of excluding a variety of compounds. The results suggest that ionophore feeding would have little or no effect on *Salmonella or E. coli* populations in the ruminant.

Taken from: Edrington, T. S., et al J App Micro 94:207-213, 2003, as reported in Vet Med, Vol. 9, Issue 3, May 2003, Iowa State University, Ames, IA

Pasture Cattle Implants And Feedlot Performance

Beef production historically has existed as a highly segmented industry, with the various segments being owned and operated independently of one another. Profitability of one segment of the industry often has occurred at the expense of another, with little or no attention afforded to overall profitability of the entire production system. However, management strategies designed to improve grazing animal performance can influence feedlot performance and carcass traits both positively and negatively. Many studies have documented the growth-enhancing capabilities of implants during the suckling, growing, and finishing phases of production, but few have evaluated carryover or lifetime effects.

Calf Implants. In a pooled summary of three studies, all using Ralgro implants, it was concluded that implants used during the preweaning phase improved weaning weights slightly, positively influenced growing performance, and tended to reduce finishing and overall postweaning growth and feed efficiency.

Pasture Implants. Researchers, using estrogenic products in both the grazing season and feedlot, found no carryover effects of summer grazing implants on feedlot performance or carcass traits. Grazing gains and overall (grazing plus finishing) gains were improved by pasture implants. Pasture-implanted cattle tended to have higher quality grades at slaughter.

Pasture Implants + Feedlot Implants. In one study, 300 calves were dry-wintered on native tallgrass range with either no implant or Synovex-C, -S, or Revalor-G. Subsequently, all calves were implanted with Ralgro during the grazing period and with Revalor in the feedlot. Winter treatments had no effect on performance during the summer grazing period or in the finishing phase. Steers implanted in the winter averaged 14.1 kg heavier at slaughter (9.1 kg greater carcass weight). Unexpectedly, winter-implanted stockers had slightly higher yield grades and increased skeletal maturities.

These pasture/feedlot studies demonstrate that benefits achieved with grazing implants generally are retained through finishing when adequate, but not excessive, exogenous hormonal stimulation is provided throughout production phases. The bulk of evidence with suckling cattle and stocker implants suggests that effects on subsequent finishing performance are minimal.
Taken from: Drouillard, J. S., and G. L. Kuhl, J Anim Sci 77:142-144, 1999, as reported in VetMed, Vol. 6, Issue 2, March 2000, Iowa State University, Ames, IA

Maasai Gift

To the Maasai, no gift is more precious than cattle. Living in isolated villages with no electricity, telephones or paved toads, the Maasai tribes of Kenya are an impoverished people who rely totally on cattle for their diet of blood, meat and milk.

In a generous show of sympathy for U.S. losses suffered in the Sept. 11 terrorist attacks, these tribes people from Kenya paid the highest gesture of regard and sympathy. Several hundred Maasai were in attendance in early June when elders presented 15 head of cattle to acting U.S. Ambassador William Brencick.

Because of the difficulty in shipping the cattle to the U.S., Brencick says the embassy will sell the animas to raise funds to buy beadwork made in the village. The beadwork will be displayed at a Sept. 11 memorial in New York.
Beef, July 2002, Page 34, www.beef-mag.com, as reported in Beef, August 2002, Utah State University, Logan. UT

Influenza A Virus In Dairy Cows

Sporadic milk drop in dairy cows has been reported with increasing frequency in recent years. Typically, individual cows show a sudden and often dramatic reduction in milk yield, and accompanying signs include mild pyrexia, inappetence, and malaise. Increased respiratory rate and nasal discharge are sometimes evident but are not consistent features. In many cases there is an increase in the serum haptoglobin level and total blood neutrophil count. There is no age predilection and the condition may occur at any stage of lactation. Recovery is usually uneventful with or without antibiotic treatment and milk yield returns to normal within a week or two. It is unusual for more than one or two clinical cases to occur concurrently but the accumulated number of cases over time may be quite considerable, with an annual incidence of 10 to 20% in some herds.

A year-long survey was undertaken starting in the summer of 1997 in order to identify possible causes of ~the condition. Holstein-Friesian dairy herds with a recent history of sporadic milk drop were selected. Paired acute and convalescent sera from 45 cows in five herds were examined for antibodies to a wide range of pathogens. Paired sera from 40 of the cows were further tested in the hemagglutination inhibition test using two subtypes of human influenza A virus, HlN1 and H3N2.

With the exception of influenza viruses, a consistent active antibody response to any etiological agent was absent. There were significant rises in antibody titer to human influenza A viruses H 1N 1 and H3N2 in 24 (60%) and 26 (65%) cows, respectively, and this response was detected in at least two cows in each of the five herds examined. Only two (5%) of the cows tested were seronegative to both HlN1 and H3N2 viruses.

These results provide evidence that influenza A virus maybe a significant pathogen of cattle. Rise in antibody titers to influenza A viruses concurrent with sporadic milk drop in several cows in five herds suggests a relationship which merits further investigation. Two outbreaks of epidemic respiratory disease and milk drop in cattle associated with influenza A virus infections have previously been reported.

Taken from: Gunning, R. F., et al., VetRec 145:556-557, 1999, as reported in Vet Med, Vol. 6, Issue 2, March 2000, Iowa State University, Ames, IA

Did You Know?

Of the farms in Virginia, Maryland, Delaware & West Virginia, 58% have computers and 43% of those have internet access. Another approach is the satellite system Data Transmission Network, which provides live weather maps and commodity prices.

Kent Roberts, April 2003

Treatment Of Mastitis To Minimize The Use Of Antibiotics

Intramammary antibiotics may be used ineffectively because treatment protocols are inappropriate. Most protocols were designed to return milk to sale quickly when quality standards of bacterial content and cell count in milk did not exist. Effective elimination of bacteria can be achieved by use of 6 to 12 syringes, one per milking, as opposed to poor elimination with one syringe every second milking for 3 days. The greatly increased effectiveness of this aggressive treatment reduced the rate of recurrence of disease by achieving a greater rate of bacteriological cure. Perhaps as many as 40% of cases are a recurrence of previous disease from failed therapy, when therapy has not achieved a bacteriological cure even if a clinical cure has resulted. Failure to achieve a clinical cure may require even more extreme measures, often culling of the cow. Failed therapy also increased the amount of antibiotic necessary for dry cow treatment because the main reason to use dry cow treatment is to eliminate existing infections.

A series of trials was conducted to determine the most effective method of treating clinical mastitis caused by *Streptococcus uberis* to achieve a clinical and bacteriological cure. Suitable cows (n = 54), free from previous intramammary infection in two or more quarters, and never having been infected with *S. uberis*, were selected by screening of the institute herd and health databases. A bacterial suspension, approximately 1000 cfu *S. uberis* 0140J in quarter strength mammalian Ringers solution, was infused into two quarters of each cow and the response of the cows measured against the baseline data. All quarters cured clinically by any of the treatments were assessed for bacteriological cure by examining milk samples after 14 and 21 days. Cure required that *S. uberis* was not isolated from either sample.

a) No treatment led to deterioration of infected quarters, requiring intervention within 48 hours for cow health.

b) Aggressive intramammary antibiotic at every milking achieved 70% clinical cure in 3 days and 100% cure within 6 days; overall bacteriological cure was 80%.

c) Parenteral treatment alone used about 14 times as much antibiotic with 18% clinical cure in 3 days and 91% within 6 days; overall bacteriological cure was 80%.

d) Combination of aggressive intramammary and parenteral treatments achieved 61% clinical cure in 3 days and 100% within 6 days; overall bacteriological cure was 72%.

e) Intramammary antibiotic at labeled rates (1X for 3 days) achieved 27% clinical cure in 3 days but 91% within 6 days of infection rates or increase calf weights at weaning.

Journal of Animal Science, June 2000, Vol. 80, No. 6, pp.1405-1412, as reported in Dairy, Sept. 2002, Utah State University Extension, Logan, UT

The Effect Of Left Displacement Of Abomasum Corrected By Toggle-Pin Suture On Lacation, Reproduction, And Health Of Holstein Dairy Cows

Our objectives were to evaluate the effect of left displacement of abomasum (LDA) after correction by toggle-pin suture (TPS) on lactation performance, reproduction and health in Holstein dairy cows in a commercial dairy farm. Cows diagnosed with LDA and corrected by the TPS procedure (188 cows) during the first 70 d postpartum were matched with control herdmates (186 controls) according to lactation number, calving date, and previous lactation 305-d mature equivalent milk yield. Cows were grouped according to parity and days in milk and fed the same total mixed ration throughout a 321-d lactation. Data collected included yields of milk and 3.5% fat-corrected milk (FCM), concentration and yields of milk fat, somatic cell count, incidence of mastitis, abortion, death, and culling, in addition to reproductive measures. Cows affected by LDA corrected by TPS procedure produced less milk and tended to produce less 3.5% FCM than control cows, but the decrease in production occurred only during the first 4 month lactation. Left displacement of abomasum did not affect the interval from calving to conception and conception rates, but it extended the period from calving to first postpartum artificial insemination. Incidences of abortions and mastitis were not influenced by LDA. Cows affected with LDA remained in the study for a shorter period than their control herdmates, and higher proportions of cows with LDA were sold or died. Death and culling were more pronounced immediately after the diagnosis of LDA and TPS procedure.

E.A. Raizman, J.E.P. Santos, Journal of Dairy Science, 2002; 85:5: 1141-1149, as reported in Animal Health Spectrum, Vol. 14, No. 1, Spring 2003, Mississippi State University, Mississippi State, MS

"The human race has one really effective weapon, and that is laughter"
Mark Twain

Middle age is when a narrow waist and a broad mind change places!

If the wheel was discovered thousands of years ago, why did it take so long to figure out we could put it on a suitcase?

With the exception of your parents and your children, most people will consider you an adult.

If someone with multiple personalities threatens to kill himself, is it considered a hostage situation?

Real courage is a willingness to attack spaghetti in public.

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