

We have found the IBR and BVD are gradually becoming more prevalent in our area. However, not much exist on ranches, so very few are vaccinated for anything but blackleg, malignant edema, pasteurilla triple vaccine.

We autopsy calves in the presence of the rancher. Most of them are the usual disease problems, and we like to show the rancher that he does not have a new disease but that they were too advanced for treatment to be effective.

Our treatments are on conventional lines. If we

have a good man on the outfit, we let him treat I/V., otherwise I/M.

To summarize, in our area, with the vaccines that are available, the proper handling and management of the cattle from prior to conception through until weaning is the greatest aid to getting the weaning job done and going through the winter with a minimum of problems.

(Dr. Schaffner's talk was illustrated by several slides.)

From the Ranch into the Feedlot

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Introduction

One of the main problems in the feeding industry today is the shortage of 600 to 800 lb. feeder cattle. The solution seemed simple—buy next year's feeders as calves. The advantages of calf feeding were less dollars invested and cheaper cost of gains due to improved feed conversion. With calves coming off the ranches from all parts of the nation, death losses became alarming. It soon became apparent that a 4% mortality was an average acceptable death loss. The inclement weather and other factors, some pneumonia outbreaks reached mortality rates as high as 15 to 40%. The yards looked to the veterinary profession to help solve these problems. The discussion of this paper will be limited to the handling of calves from the ranch into the feedlots.

Bovine Respiratory Disease

Bovine respiratory disease (BRD) accounts for the majority of death loss in feeder calves. Before we can discuss the solution to this problem, we must first ask ourselves, "Why do apparently healthy ranch calves get sick?" The formula for shipping fever or pneumonia has been well established as stress + viruses + bacteria = shipping fever. The best place to exercise this formula is our present means of handling calves. A susceptible ranch calf is sold in a disease contaminated sale barn and hauled in a questionable manner to a feedlot many miles away. There the calf experiences what we call "processing" and is

yarded in a pen next to calves that are already having what is known as a "wreck." Needless to mention, most pens are not designed to give the calf any protection from inclement weather.

Emphasis has been placed on attempting to break this disease cycle by developing immunity against various viruses and the *Pasteurella spp.* Knowledge of bovine immunology has been broadened with these efforts, but the same old problem still exists. Vaccinating is sound judgement, but a large percentage of calves are exposed before they arrive or shortly thereafter, and thus not allowed enough time for immunity to develop.

To explain the shipping fever formula in more detail, let's examine each part.

I. Stress:

Handling calves from the ranch to the feedlots creates a traumatic experience we call stress. Some of these can be listed: 1) weaning, 2) mental fatigue, 3) dehydration, 4) castrating and dehorning, 5) physical fatigue, 6) inhalants—dust and truck fumes, 7) hunger, 8) fright, 9) diet change—including water, 10) overheating, 11) chilling, 12) dampness, 13) vaccination, 14) insecticides, especially organic phosphates.

The stress syndrome is not fully understood, but it apparently does lower the body resistance to infectious agents.

II. Viruses and/or Non-Bacterial Agents:

This group is so large that only a few of the

more common will be listed: Parainfluenza-3-virus, BVD virus, IBR virus, reo virus, adeno virus, chlamydia, mycoplasma, enterovirus, rhinovirus. This group can cause diseases that are subclinical or fatal. Most virus invasion causes mild infection when uncomplicated; however, in the field this seldom happens.

III. *Bacteria*:

This group is considered to be the cause of clinical pneumonia. The pasteurilla group is the main bacteria, but *Hemophilus spp.*, *Streptococcus spp.*, *Pseudomonas spp.*, and others can be involved. Pure cultures of *Pasteurella spp.* are easily cultured from the lungs of dead calves.

Case Histories

To demonstrate how the feedlots would like to have calves handled before they arrive, let us discuss one ranch's history of preconditioning calves. This particular ranch has 4500 head of Hereford cows. The ranch headquarters are in southwestern Kansas with individual ranches in Wyoming, Nebraska, Oklahoma, south central and east central Kansas. Approximately one-half of these calves are weaned at the ranch headquarters; the others are weaned at one of the ranches in Wyoming. In the year 1966, a policy was made to keep the calves and market them at slaughter weights. After 1966's death loss, the incentive was there to start a preconditioning program. This program consists of internal and external parasite control, dehorning and castrating, vaccination, and a weaning procedure which includes bunk feeding. At the headquarters there are two native buffalo pastures which are not grazed all summer and are used for fall weaning pastures. One pasture consists of 640 acres, the other 480 acres. Portable bunk feeding of weaning pellets, with 175 mg/lb. of chlortetracycline and sulfamethazine, are used. These pellets are fed at the rate of two lbs. per head per day along with three lbs. of alfalfa hay pellets. After seven to 10 days, corn silage is gradually added to the ration.

The ranch's program begins by branding, dehorning, castrating, and vaccinating in the late spring when the calves are two to four months of age. Booster vaccination is given in the fall just before the calves are loaded or within 24 hours after they arrive at their destination. The vaccination program given below, morbidity and mortality percentages, deal only with respiratory diseases.

Vaccination Program

I. Weaned at ranch headquarters:

Year 1966 — 2250 head. No program. Results:

Morbidity—40%, Mortality—5.1%.

Year 1967 — 2580 head. Fall vaccination — (inactivated) PI₃, IBR, Bacterin-Pasteurella. Results: Morbidity—17%, Mortality—2.4%.

Year 1968 — 1900 head. Spring vaccination — (inactivated) PI₃, IBR, Bacterin-Pasteurella. Fall vaccination — (MLV) PI₃, IBR, Bacterin-Pasteurella (Detoxified). Results: Morbidity—9%, Mortality—1.8%.

Year 1969 — 2025 head. Vaccination — Same as 1968. Results: Morbidity—7%, Mortality—1.4%.

Year 1970 — 2050 head. Spring vaccination — (MLV) PI₃, IBR, Bacterin-Pasteurella (Detoxified). Fall vaccination — (MLV) PI₃, IBR, BVD, Bacterin-Pasteurella (Detoxified). Results: Morbidity—2.2%, Mortality—1.5%.

Year 1971 — 1855 head. Spring vaccination — (MLV) PI₃, IBR, Bacterin-Pasteurella (Detoxified). Fall vaccination — (MLV) PI₃, IBR, BVD, Bacterin-Pasteurella (Detoxified). Results: Morbidity—1.5%, Mortality—.54%.

Year 1972 — 1880 head. Vaccination — Same as 1971. Results: Morbidity—1%, Mortality—.21%.

Year 1973 — 2050 head. Spring vaccination — (MLV) Intranasal PI₃, IBR, Bacterin-Pasteurella (Detoxified). Fall vaccination — (MLV) IBR, BVD, Bacterin-Pasteurella (Detoxified). Results: Not complete — Statistics figured on 23 days. Weaning Pasture — 750 head. Results: Morbidity—3%, Mortality—.5%. Feedlot — 1300 head yarded. Results: Morbidity—30%-plus, 15% estimated — BRD, 15% estimated — anorexia. Mortality—1.2%-plus.

II. Calves weaned on ranch in Wyoming:

There are two ranches 250 miles apart. The north ranch's calves are moved to the south ranch for weaning.

Years — 1967 through 1973 — Approximately 2,000 head yearly. Spring vaccination — Same as other calves. Fall vaccination — Same as ranch headquarters, only no BVD. Results: Morbidity—Less than 1%, Mortality—Less than .1%.

Considerations on Year 1973

There was an unidentified disease in Wyoming calves noticed three days after arrival. The disease was observed both in the weaning pasture and also in the calves yarded. The same lesions were noticed in another group of calves at the Wyoming ranch before they were weaned. This disease was mild and responded well to medicated feed. It had a very high morbidity (50-60%) with no deaths. The lesion will not be discussed, but so far, attempts to isolate viruses and bacteria have been negative from two different diagnostic labs. This disease probably

made an overall increase in the stress which contributed to the total sickness. However, the comparison rates should be the same.

III. Case history on 1138 head of Old Mexico calves:

Pasture weaning: Number — 438 head, Weight — 424 lbs. Processed within 24 hours. Vaccination — (MLV) IBR, BVD, Bacterin-Lepto, CSNS, Antibiotics - Oxytetracycline, Vitamins - ADE. Turned out on rye pasture. Results: Morbidity—25%, Mortality—0%.

Yarded: Number — 700 head, Weight — 419 lbs., Vaccination — None. Results: Morbidity—15%, Mortality—2.14%.

Discussion on Case Histories

The only major change in handling these ranch calves from year to year was the vaccination program.

1. In the year 1970, notice how close the percentages are between morbidity and mortality. The majority of these deaths came as postvaccinal reaction from the BVD vaccine.
2. PI₃ and IBR as modified live virus vaccine showed superior results than when used as inactivated viruses.
3. When BVD vaccine was added to the vaccination program in 1971 and 1972 the results were better than the previous year's.
4. Calves that were moved several miles to be weaned benefited from double vaccination — one injection given at two to four months of age and the other at weaning time.
5. All vaccination programs show better results than when no program was used.
6. Weaning on pasture is much better than yarding new calves.

7. Weaning calves at home in their natural environment is more beneficial than any other program.

Conclusion

The feeding industry is asking the veterinary profession to solve respiratory diseases. We must have cooperation between the rancher and the feedlots to wean as many calves as possible under limited stress. An incentive program must be employed to draw the rancher's attention. This will probably be done only by the rancher receiving a premium for his calves. It is true that many small herds may never get involved and a large proportion of these calves do enter feedlots. The solution for these calves is not so easily ascertained.

The correct use of MLV vaccines in a calf program is very important. MLV vaccines vary from one biological house to another. They are not all the same and they do act differently in the field. Postvaccinal complication with BVD has already been mentioned. When vaccinating calves on the cows with a MLV, be sure it will not shed and cause trouble in the cows. If you are not absolutely sure, then don't use the vaccine.

Summary

The intention of this paper is to show the benefits of weaning calves on the ranch before moving them into the feedlots. Unconditioned calves, in lot confinement, experience severe death loss. The most desirable calves are those weaned for 30 or more days and know how to eat from a bunk. Non-vaccination and various vaccinating programs are mentioned with morbidity and mortality results recorded.

This report stemmed from the careful observation and records, kept over a period of six years, of a rancher's effort to control shipping fever.