

Beef Section

Chairman: Dr. John Thimmig, Brighton, Colorado

Feedlot Deficiencies in Practice

Beef Calf Deficiencies in Practice

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Completely compatible—for 3-way prevention program

Working together, this team of three
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Powerful, all-around protection.
Rea-Plex works against the two most
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Septobac against the most common
bacterial pneumonia.
Ultilep against the most common
type of leptospirosis.
As a specific, each is unsurpassed.
In combination, your feedlot
prevention program is well in hand.

FORT DODGE®

Fort Dodge Laboratories, Fort Dodge, Iowa





Rea-Plex[®] IBR/PI-3 VACCINE
The "big one" in its field—Rea-Plex is today's most widely used, most trusted vaccine for bovine viral respiratory infections.

Proven on millions of calves—Efficacy and safety have been confirmed by bovine practitioners, in over 4 years of feedlot use—longer than any other IBR/PI-3 vaccine.

Easy to give—easy on the calf—Just one quick, easy injection—with minimum restraint, minimum stress. There's no problem of virus excretion, or transmission from vaccinates to non-vaccinates.

Only one Rea-Plex—Though widely imitated, Rea-Plex is produced by a patented process that can't be copied. No other vaccine is "just like Rea-Plex."

Septobac[®] PASTEURILLA BACTERIN
Adds protection against pneumonia—Septobac adds a third dimension to the protection program—by helping prevent pasteurella-caused pneumonia. Compatible in every way with Rea-Plex and Ultilep, it may be used simultaneously.

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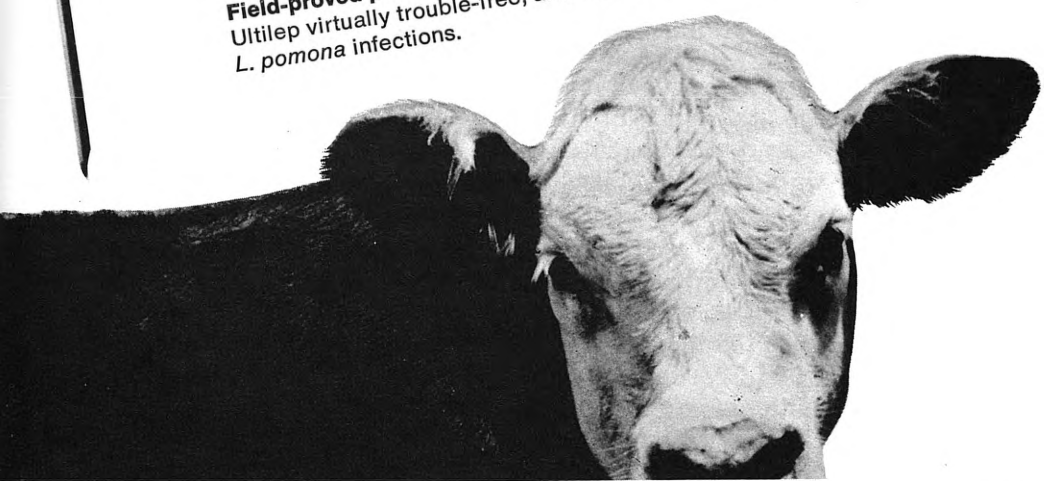
"Biotized" for highest efficacy—In the exclusive Biotized process, bacteria are harvested at peak of vigor, during most active growth. This results in greater antigenic response.

Proven effective—Established potency. First potency tested pasteurella bacterin.

Ultilep[®] LEPTOSPIRA POMONA BACTERIN
Absolutely 100% serum-free—No serum whatever is used in producing Ultilep. This reduces shock-producing potential—provides highest safety.

Adjuvant heightens antigenicity—The time-honored adjuvant, Gel 21, provides slow-release of killed organisms and antigenic fractions. This greatly enhances immunizing properties.

Field-proved potency and efficacy—Years of feedlot and herd use show Ultilep virtually trouble-free, and highly effective in preventing *L. pomona* infections.



Feedlot Deficiencies in Practice

DONALD MACKEY, *D. V. M.*
Greeley, Colorado

When you come to “feedlot deficiencies”: as far as nutrition, they are really hard to describe, hard to detect, and rather vague. If you can go out into a specific lot and make an accurate diagnosis as to what the deficiency might be, I will say that you are much better than I am. I think one of the most common deficiencies that we have is probably calcium and probably it is the most common deficiency because of the very nature of what we are doing with feedlot animals. We are taking an animal that is a highly roughage dependent animal, putting it in the feedlot, and making it an animal that is supposed to have only one stomach, feeding it all of these concentrates. By the very nature of what we are feeding, we reduce the calcium intake. Now, corn, of course, is high in calcium, but it isn't high enough, and so one of the main things you will find is a *calcium deficiency*. Now, I have run into some feedlots, not only in one lot, but lots within a lot, in which calcium is going in at the level it ought to and phosphorus is going in at the level that it should, but the blood chemistry shows that they are not being metabolized the way they should. I think that in one specific lot in the last month we have been having some problems even though the nutritionist at this lot is very good. He has calcium and phosphorus going in there the way they should, but the blood chemistry shows low calcium and the phosphorus about three times too high! So, in this specific instance, there is something probably tying up the calcium. When we talk about deficiencies that may be in the diet, we may have problems getting them metabolized. Some of the factors that will interfere with metabolism would be nitrates, low vitamin B and A, etc.

Calcium can be one of these common deficiencies. What do we look for in a calcium deficiency? One of the main things is inobscure lameness. These cattle will get a hyperemia around the coronary band. They walk a little tender and the bowel movement may be rather loose with quite a bit of fiber coming through. Now, you can say, “Well, that happens with vitamin A; it happens with other deficiencies.” It sure does, so when you say you can walk out into a lot and say, “Well, this is a calcium deficiency,” then I say that you are a better man than I

am! You will have to do some blood chemistry and some laboratory work before you can make an accurate diagnosis.

Phosphorus

I think one of the other common deficiencies is *phosphorus*. As you know, we are trying to put on pounds a day gain, and in order to do this, we have to get all the energy we can out of the ration. If you think back over Kebs cycle, one of the important products in the cycle is phosphorus. I know a lot of us have been a little fearful of feeding higher phosphorus because of the fear of urinary calculi. We see urinary calculi when we are on high level, small grain rations; but, if you keep the calcium high along with the phosphate, I don't think you will find that you have any problems. I happen to have had finished a bunch of my own cattle and in July they went to market. I increased the phosphorus pretty high on those cattle. They were getting over an ounce of added phosphate a day and they made fantastic gains, very cheaply. They were steers, and I didn't have one case of calculi, so I did it on my own, and if you want to get your feet wet and know what it feels like to be a feedlot operator and a feedlot owner, go ahead and buy some cattle and put them in a lot. You will soon become well acquainted with what the owner is thinking about and what his problems are. You will change your philosophy as far as treatment is concerned and tell a man to do this and do that, and you start thinking in terms of economics, and other things, rather than just results!

Vitamin A

One of the other common deficiencies in the feedlot concerns *vitamin A*, and here again I think this is brought on by change in the diet. We have taken this animal off a high roughage diet, with many roughages high in vitamin A—alfalfa hay, grass, etc.—and we put him on a highly concentrated ration consisting mainly of grains and cut the roughage down to five to two percent of the ration, thus cutting down a lot of the vitamin A. Then we have the water supply in some of the feeds that is high in nitrates tying up with vitamin A. Then we have all of this acid in the rumen and all the toxin being formed, which the liver must detoxify. We overload the liver to such an extent that it can't store vitamin A, and if you have ever taken vitamin A analysis of the blood, you will find that for an animal in the feedlot it is almost impossible to keep the vitamin A level in the blood where it is supposed to be, even supplying, say, 100,000 units a day. So, my recommendations have usually been on calves—60,000 units a day, and on larger cattle 100,000 units a day, and disregard everything that is in the ration. Just add it. Now, I think another common mistake is we increase the "A," and we forget about "B" and "E," and these must be in harmony. They must be in balance because they help metabolize each other—*vitamin B* helps to metabolize calcium, so if we increase the "A," and we don't increase the "B," we may find ourselves in some trouble, especially over a long term, with a calf going to the feedlot at

350 to 400 pounds, if he is a steer calf which stays in there until he weighs 1,100. By the time he reaches 900 to 1,000 lbs., you are going to find some bone problem. Keep that "B" up there. I usually like to give calves 60,000 "A" and 20,000 "B," and on larger animals 100,000 "A" and 60,000 to 75,000 "B."

Vitamin E

The other common deficiency which is very obscure and hard to identify, in fact, I defy anybody to identify it, but I am sure that it does exist, is *vitamin E*. As I said, all the way along we increase "A" and forget the others. So, if you are going to increase "A," you better increase "B" and "E," and I like to increase the "E" up to around 500 units, 300 to 500 units on calves and up to 500 to 600 on the larger calves. These things must be in harmony, and we don't just add one thing without disturbing something else.

Organic Iodine

The other ingredient that I think is entirely too low in feedlot rations is *organic iodine*. FDA limits the feeding of organic iodine to 50 milligrams a day. Well, that is slightly less than a grain! There are 60 milligrams in a grain, and they limit it to 50 milligrams a day. In our area here in Northern Colorado, that as a rule is not enough, and so I usually go to a grain a day for calves 300 to 400 to 500 pounds; a grain and a quarter for those around 600 pounds; and up to a grain and a half to two grains for those that weight 700, 800, 900 pounds. If you are using it for the prevention of foot-rot, liver abscesses, etc., it must be fed from the start. If you wait until you have an outbreak of foot-rot, or you wait until you have a liver abscess problem, you are asking for trouble because it takes 10 days to two weeks, even up to three weeks, to increase the iodine level high enough to be of any value.

The last thing I would like to discuss is very controversial. You heard the paper yesterday on "Cellulose Digestion in the Rumen," and how on a high roughage diet, we have high cellulose digestion in the rumen, and on a high grain diet, low roughage diet, we have very little cellulose digestion in the rumen, how it takes place in the cecum, and the large intestines, because of the difference in the microflora of the rumen. This is when we change that animal from a roughage consuming animal to one that is consuming concentrate. The rumen flora changes. So, I think we are going to see in the future an increase in the amount of additives in the form of either enzymes or microflora that are normally in the rumen. We are feeding this animal a high grain ration, and we are keeping the rumen in a highly acid state. So, the cellulose bacteria do not like this! That is the wrong environment, so they leave, they don't multiply, and you have to supply some of these every day. I have found it very valuable to add buffers. One of the most common ones I add is a product that contains 20% calcium carbonate and 10% magnesium carbonate. This serves two purposes—the carbonate acts as a buffer to change the pH of that rumen and hold down the acidosis. In

order to have proper metabolism of calcium and phosphorus, we need *magnesium*, which is one of the most overlooked trace elements. By using this product, which has 10% magnesium carbonate and 20% calcium carbonate, you assist the metabolism of these two elements.

If you provide proper levels of calcium, phosphorus, magnesium, vitamin A and iodine, keep the rumen neutralized and retain the microflora that are supposed to be there, you will find you will have a much greater feedlot performance. I appreciate being asked to discuss this subject. I know that some of these things will be controversial.