

were routinely used prophylactically. This would indicate that they were probably being used as a crutch.

Summary

Because the calf is born with a digestive system that functions in its own peculiar monogastric manner, its nutritional demands are very particular. Whole milk is the most ideal feed, but because of economics, substitute diets must be considered. Colostrum and quality milk replacers may be used. Milk proteins are the most efficient and available

to the calf. Other sources of proteins have been used with varying degrees of success, with only specially manufactured soy proteins approaching milk proteins in performance. Animal fats have been successfully used to replace butterfat. Their utilization is enhanced by homogenization and addition of soy lecithin. Calf starters should not only be properly formulated, but also must be palatable. Hay and silage used should be of top quality. Routine use of antibiotics for calves should be avoided.

A Successful Program for Raising Dairy Calves

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Our operation has been written up in the Des Moines *Register* and they said that we're the largest cattle feedlot in the state of Iowa. I think probably some of those old Hereford and Angus boys would take exception to that. Our operation has been in business for three years and we are raising and marketing Holstein calves. We start with them from about three days of age and take them on to market. Because of the nature of our operation, we start with the baby calf and take it through and have it custom slaughtered and put a pampered beef label on it and the meat is sold over the counter as "pampered beef." We have a unit in Wisconsin at the present time with 3,500 baby calves. My younger brother runs that operation. We have 12,000 Holsteins in our feedlot. We have just completed a feedlot in Missouri that will be a 6,000-head Holstein operation. This is again from birth to market. We are under construction with a unit in Ohio that will produce a thousand calves per month. I have been asked quite a few times by visitors, and they are obviously city visitors who decide to get rich in the cattle business, how we keep the Holstein calves alive? Well, one day I was a little bit frustrated; it had been a long day and these people came driving in, in their shiny big cars, so my answer to them was that well, you set out and you dig this big trench about 600 feet long, about 20 feet wide and about six feet deep. When you fill that with dead calves then you are an

expert and know how to raise them! Well, I think I have probably filled my trench with dead calves so maybe I qualify to speak here this afternoon!

Our death loss at the present time in the operation in Wisconsin from purchase to weaning is running about six and seven percent. Our death loss in our Iowa feedlot is running about two percent. This gives you an average death loss from birth to market of about eight and nine percent.

I want you to bear with me and pretend you are a bawling 110-lb. Holstein calf coming through the front door, and we will take off from there!

We have two order buyers that buy our 350 calves a week that we start in Wisconsin. We buy these from Wisconsin and Minnesota. We have one requirement—that the calves be delivered the same day that they are purchased. A lot of the calves we buy are bought by the pound; we want the calves to have dry navels and be a minimum of 100 lbs. when they arrive. We try to buy calves that are three days of age or older to be sure they have had colostrum. I do not think we have had this problem that Dean was speaking of in small calves, if they have had colostrum. The type of calves that we buy are fresh and bellowing. Our calves average 115 lbs. coming in. We try to buy good-boned calves. We check every navel to make sure there is no swelling. We want a healthy look and a shiny hair coat. We have the right to reject calves for 24 hours after they come into our facility from our

buyers. The calves are put in holding pens when they come in at night, having been bought during that day. We have a night watchman that checks the calves in. We keep them in dry quarters and they have water in front of them overnight. The next morning the calves are processed immediately. We have used various programs on the calves coming in. We give Nasalgen, vitamin A and B complex, and also iron. We give these calves some anti-serum and we powder them for lice. Then the calves are put in individual crates and we make sure they get their bottles by 10:00 in the morning. This is very important. We have the ladies feed the calves. We have between 10 and 12 farm wives that feed the calves for us. The calves are fed a bottle twice a day until they are four weeks of age. At that time they receive a bottle once a day until they are six weeks old. So, we feed on an average about 5,000 bottles of milk a day!

Then the calves are put on a 24% protein dried skim milk product. It is a custom product with a private label we had manufactured for us. We keep 20% fat in this milk and there is no vegetable protein in it. It is an all-milk protein source. We feel this is important and we like to keep our fat in the milk as high as we can. We've run some experiments and we may even decide to keep our fat a little higher than we have so far. I think South Dakota workers did some real good research on taking the fat out of milk and they could routinely

Treatment

Our calves are checked twice a day and they are walked in the morning and in the afternoon. There are individual treatment cards kept on each calf and any calf that is treated once is treated three days in a row twice a day. We have used various drugs in our treatment program.

The calves have a shelled corn protein pellet, free choice, in front of them at all times. By the time the calves are one month of age they will be eating about five pounds of this grain and protein mixture. Also, we keep fresh water in front of the calves at all times. Calves are weaned at about six weeks of age. At that time they are moved out of the barn into what we call our outside run barn. It is hard to find a level spot large enough to put all the barns in it! Calves are pinched and implanted with Ralgro_R at about six weeks of age. The runs are concrete, the calves have self-feeders for corn and an automatic waterer. The calves get outside and they like the sunshine and the exercise. They are grouped about 75 to 100 calves to a pen at this time.

Any calves that do not take to weaning at six

weeks of age when they are moved across to the outside pens are sorted out and taken back and put back on milk. Our eight-week-old calves weigh about 225 lbs. They are sorted out and the next stop for these calves will be Iowa.

We use triple deck semi-trucks and haul 160 calves per load. We have seven hours trucking time from the time the truck leaves Wisconsin to when it comes into Iowa. We call the time down when the truck is loaded and we expect it in Iowa seven hours later.

On arrival, they are placed in what we call weaning barns. These barns are 700 feet long, 24 feet wide and have a scraper underneath that removes the manure daily. The waterers are outside and the self-feeders inside. One of the things we do with the calves when they come off the truck is to have a powdered-pelleted milk preparation in the car. We put the top-dress on the feed in the self-feeder. The calves come off the truck and they are attracted to this and start eating it immediately. It is a commercially made preparation by Carnation. We give each calf a pound of that when it comes off the truck and this brings them up to the feed bunk and starts them eating. Also, to each one of these pens we put five gallons of fresh dirt. Within 24 hours those 12 calves will have that dirt cleaned up. I am not sure exactly what that dirt is doing. We have sure cut down on our acidosis and shipping fever problems. Also, these calves, on arrival, for two days in a row, receive 20 cc of antibiotics as they come into the feedlot. They are also given their IBR and pasteurilla boosters.

In the past six weeks we have started 2,300 calves coming into the feedlot. As of last night, out of 2,300, we had lost 17. These calves come in at about 225 lbs. We have been weighing them coming out of the weaner barn 30 days later and the last five groups averaged 3.2 lbs. gain a day. We feel that they are taking off very well.

At the feedlot, we feed 5,000 bushels of corn per day. It is purchased from local farmers.

We have two bunker silos. They hold about 12,000 tons. We have one man that feeds the 13,000 cattle in the feedlot twice a day from a truck.

The calves are weighed and then they are taken back and put in what we call tempering barns. The calves will stay in these tempering barns for about 60 days. These barns are 650 feet long and they hold 650 cattle each.

The feed is weighed for each lot of cattle. The ticket is punched when it starts up and then it is punched at the end of the line. The calves, at this

time, are eating about 17 lbs. of complete ration per head per day. They are fed twice a day.

There is a cattle work alley between the barns where the cattle are taken when we work them.

The calves have been in the tempering barns now about 60 days and they are taken back up to be reimplanted. They are sorted for size into three groups. We sort them large, medium and small. The calves are reimplanted this time with Synadex S and they are revaccinated with IBR and pasteurized bacterin. This would be the fourth time that these cattle have been vaccinated for IBR. The calves are then re-weighed. They are still gaining about three pounds per head per day. They are getting a feed conversion of about 5 to 1. The calves are weighing about 600 lbs. at this time. They are now taken back into the growing pens. They have just had their second implant. The ration is about 74% shelled corn, 6% protein and about 20% corn silage. We are taking out some of the corn. The calves will be eating about 18 lbs. of feed about this time. They will stay in the growing barns 120 days. Then we take them back up to reimplant again and re-sort for size. The calves are reimplanted again using Synadex S. We use Ralgro^R the first time when the calves are six weeks old; we use Synadex S then two more times, 100 days apart. You can work about 100 calves an hour through the hydraulic chutes. The cattle go back to the scales and are weighed again. We run another close-out on them. And now our gain is starting to drop. These calves are doing about 2.7 lbs. a day. Their feed conversion has crept up to about a 6½ or 7 to 1 conversion. The cattle go back to the feedlot for their last 100 days on feed. They are now weighing about 825 to 850 lbs. and are eating about 20 lbs. of this 52 therm ration per head per day. The cattle are fed twice a day. At about 10 months of age they are weighing about 900 lbs.

Manure Disposal System

We have a scraper system underneath each of the barns. The manure is scraped daily from under the barns. Last spring we had some problems with the Department of Environmental Quality and we had about two months that we could not scrape the barns. It was interesting to see what happened when the ammonia started building up under the pits and started coming up to the cattle—how feed consumption dropped off drastically and so did daily gain. We had lots of problems.

There is some really excellent work being done on ammonia and its tie-in with chicken problems and some of the feed conversion work that is being done. This ammonia is really important. It is

important to get the manure out from under these cattle—get that ammonia away from them. With our manure disposal system, we scrape the manure daily; the scrapers are the full length of the barn. The manure flows into a gutter. It flows from this gutter into a steel tank. From the steel tank we pump it up over a screening device that screens the corn out. The corn we usually refeed. We are doing some experimenting with it. The liquid goes to an anaerobic settling basin-digester, what you call a primary digester, from there it goes to an aeration basin; from there it flows out into a 15-acre lagoon with floating aerators. From these aerators it goes to a second lagoon without aeration or anaerobic treatment, and then to a third cell lagoon. The final stage is irrigating the cropland. We have three environmental agents out about every week! We are the largest feedlot in the state and they take samples, look and try to drum up something! We have spent 250,000 dollars so far on pollution control with our lot and the monitoring that they are requiring us to do at the present time costs us \$2,000 a month just for the laboratory work.

The cattle are ready to sell now. They are between 10 and 11 months of age and are weighing between 900 to 1,000 lbs. We take them up for their final weighing and load them. Most of these cattle will be yield grade No. 1. They will have an average market weight of 950 lbs. and we will get a high yield of about 62% carcass weight on these cattle. They are a real desirable type cattle. About 80% of the cattle we are marketing will meet our pampered beef specifications. They are being merchandised through the Piggly Wiggly stores. We have an exclusive contract with them.

We have been shooting to get a 100 lbs. per month of age. We have a few animals that are doing it, but I think we are a couple of years away from meeting our goal.

Cattle are weighed with a 4% shrink at 4:00 in the afternoon. Then they go seven miles to a packing plant that custom kills them for us.

We market about 70 head of cattle per day. We do raise Holsteins outside of confinement, but mud can give you a lot of problems. You have a higher death loss where you get these animals chilled.

I would like to go back over our vaccination program. We do not have an enteritis problem with our calves. I know in talking with a lot of people this is what I expected to be our biggest problem. We probably do not lose one calf a month to enteritis. Pneumonia or respiratory problems are the big kill. I think probably the reason we do not have the enteritis problem is that we are buying a little older calf that has had its colostrum. We

stress sanitation. If you will notice, most of what I have presented is management. I think this is probably the key to helping these dairymen keep these calves alive. Everybody wants that magic shot and I myself a few times would have liked to have had some of it! If I could find any of that PGU serum I would give quite a lot for it. In case some of you fellows are looking for it that is called "Please Get Up"! I can use a lot of that some days.

We can cause enteritis in our calves by not washing the milk bottles, by not washing the mixer, and not keeping the nipples clean. Whenever we have an enteritis outbreak, when we start seeing some scouring in the calves, I do not go to the calves or get the drugs out. I go to the ladies and start checking the bottles and the milk mixers; I start looking and there is usually a foul-up somewhere in our sanitation program.

We still have problems with the respiratory system. We have tried various programs. We have used Nasalgen^R for several years. We have tried not using Nasalgen. At the present time we are not using it. We are using straight IBR vaccine. We hit the calves when they come in on day one; at four weeks; eight weeks; again at 12 weeks and at four months. So, we hyperimmunize these calves five times with IBR vaccine. Since we do not know at what age these calves will become susceptible, we vaccinate five times. We have had some bad results with the pasteurilla bacterins. The baby calf you start injecting things into will tell you in a hurry if you are going to have problems. If you will check the temperature of these baby calves after injecting them, they will tell you quite a story. With those big yearling calves you can get by with about anything.

Panel Discussion

Dr. William Stouder, *Chairman*
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Question: When do you castrate?

Dr. Bryant: We do not castrate the calves. We have been having problems with hemorrhaging, so we pinch the cord. Thus, we get added action out of the testicles, helping on the growth rate.

Question: Have you finished out any bulls?

Dr. Bryant: We have finished out several pens of cattle on a field trial basis as bulls. Their rate of gain was excellent, feed conversion excellent, but we had trouble selling the product!

Question: How do you handle mineral supplementation for fast growing cattle?

Dr. Bryant: Actually, I do not think we handle our minerals too much different to what the NRC recommends. We are using some meat and bone scraps as one of our mineral sources along with Di-Cal and trace elements. Probably the only place we are doing anything different on trace elements would be on the ferric sulphate which we are adding extra to the milk. We like to get a higher level of iron into these calves.

Question: How do you sterilize the bottles?

Dr. Bryant: We use a chemical sterilization. Iodine is one of our sources.

Question: How do you determine if a calf needs treatment. Do you get reports from the person who feeds them that they did not eat?

Dr. Bryant: No. We walk every calf barn and check every calf twice a day. If the calf is slow taking his milk, the ladies put a red ring up on his

crate. When the treaters come by, they will know that that calf was slow taking its bottle and they will look him over carefully. We do not treat every calf that is slow, but if there is any question, then we start the three-day treatment.

Question: You mentioned intranasal experimentation. What were your results?

Dr. Kahrs: Our experiments are still under way. About all we had time to do was an epidemiologic study of salmonellosis. We have to do serology to determine the immunologic status of the calves at the time of vaccination. There is always a tendency when you give a vaccine to blame subsequent events. We had four rooms. Among two of the groups we had larger death rates among vaccinated calves and in the other two groups we have had lower death rates among vaccinated calves. It looks like the vaccine is not doing any harm or much good!

Question: What effect might the gammaglobulin test have on test design?

Dr. Thomas: It is an unusual feeling to run a test on a calf and then point out that it is going to die. But what seems more unusual is that I have set up tests before we started on this testing procedure, and many times the calves that were going to die were in the controls. So we would test our product and it would look fine because the controls would die. Many times it was just because they could have been agammaglobulinemic. One of the things that