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New Feeder Cattle: Nutrition, Health, and Treatment  
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# MICHIGAN BEEF PRODUCTION

Cooperative Extension Service  Michigan State University



## New Feeder Cattle: Nutrition, Health and Treatments

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A plan for handling newly arrived cattle needs to include minimizing stress, feeding, immunization, parasite control, castration and dehorning and treatment of sick cattle.

### Minimizing Stress

1. Avoid cattle that have been through several sales and are highly stressed. When possible know the source, how they are handled prior to shipment and how long in transit.
2. Load cattle with a moderate fill of grass hay and water.
3. Cattle should be loaded quickly and quietly and moved to the feedlot as fast as possible. Insist that the trucker avoid any unnecessary stops.
4. Provide a good environment upon arrival.
  - a. Small shallow lots with space for every animal to eat at one time minimize stress. This also allows detection of those animals that fail to come to the feedbunk when fed. Be sure that small calves can reach the feedbunk.
  - b. Provide fresh and palatable feed in the feedbunk. It is desirable to feed several times a day to be sure that the feed is fresh. Frequent feeding and observation will also help detect sick cattle.
  - c. The lot should be well drained and dry, but not dusty. It should provide cattle with a good place to rest without lung irritation. The starting lot should be located close to the working chutes and sick pens so that sick cattle can be handled with a minimum of disturbance. The sick pens should be small with a small shed to provide a dry, draft-free place for sick cattle. Small pastures provide a clean, dust free environment, but sorting out sick cattle for treatment is difficult and creates additional stress for the rest of the cattle.
5. Cattle should be given routine immunizations upon arrival if they arrive strong and healthy. Groups that arrive containing many sick calves, however, should not receive routine immunizations until they have recovered. These calves have probably undergone stress and multiple point origin and further stress is undesirable.

### Nutrition of Newly Arrived Feeder Calves

A portion of the weight loss is loss of gut fill, but at least one half of the shrink is from tissue loss of moisture, minerals, energy and protein. These moisture and nutrient losses must be regained as rapidly as possible upon arrival in the feedlot to maintain the health of the animal. This involves proper feeding practices and nutritional management of new feeder cattle.

#### 1. Energy level and sources of energy:

Get cattle to eat as soon as possible after arrival. Good quality hay is likely to be the feed that will be most readily consumed, and it is the safest feed to use because of the variation in origin, size, and prior feeding history. However, hay is becoming expensive and may not be necessary in most cases. In three experiments at the Ohio Beef Cattle Research Center and in two experiments at MSU, there has been no advantage to feeding chopped hay on arrival and then switching to corn silage, as compared to feeding silage and soybean meal based supplement. Calves fed chopped hay ate more and gained faster initially, but performance was lower during the change to silage and soy. Gains of 400-500 lb. calves at the Ohio and MSU stations on silage plus soy supplement with no hay have been 1.5 to 2.6 lb. per head daily for the first 4-6 weeks. This is a desirable level of performance. These experiments suggest that in most cases calves and yearlings can be started on silage and soy supplement with no hay. Severely stressed or sick calves will probably do better if they are started on high quality hay.

The desirable starting ration for lightweight calves may be different. In three experiments at the California station with 300-350 lb. calves, best results were obtained with a ration that was about 70% concentrates. One of the best rations for starting lightweight calves, or any feeder cattle that you expect may not eat well, is 1½% of body weight of shelled corn plus a full feed of alfalfa-brome hay. Experienced feedlot operators like to spread high quality hay on top of the regular ration for the first few days to attract young calves to the feedbunk.

#### 2. Effect of Energy Level on Health:

In the California, Ohio and MSU studies, health was not related to energy level fed. In all experiments,



the highest levels of energy gave the fastest gains, but had no influence on treatment required or days sick.

The cardinal rules of not increasing concentrate too rapidly and not making sudden feed changes would of course apply.

### 3. Protein Requirements:

Few studies have been conducted on the protein requirements of new feeder cattle. However, studies at the Ohio Station suggest that the ration can be balanced according to the weight of the cattle and energy level of the ration with no special adjustments for the starting period. Thus, the protein requirements outlined in fact sheets 1097 and 1204 should be adequate for new feeder cattle.

### 4. Sources of Protein:

Most studies have shown that performance is not as good the first 4-6 weeks when the protein supplement contains urea, as compared to soybean meal or other sources of natural protein. In the Ohio studies, urea supplements gave 20% lower gains and feed efficiency during the first 4 weeks. However, the urea fed cattle gained about 50% faster and more efficiently than those fed only untreated silage and minerals.

In these same studies urea treated silage properly supplemented with vitamins and minerals gave performance nearly equal to those fed untreated silage plus soy supplement. In studies at MSU with ammonia treated silage, however, calves have benefited from feeding  $\frac{1}{2}$  to  $\frac{3}{4}$  lb. of soy supplement with the treated silage for the first four weeks. Further studies are underway at MSU to determine the need for supplemental natural protein with treated silage.

### 5. Vitamins and Medicated Supplements:

Vitamin A requirements are increased during stress. The starter supplement should provide 40,000 to 60,000 I.U. per head daily. One million I.U. per head could be injected as an alternative to providing vitamin A in the feed. Most studies have shown that feeding a low level of antibiotics such as Aureo S700 or neo-terramycin will increase gains and feed efficiency during the first 4-6 weeks. However, these products will not prevent disease outbreaks nor are they adequate for treatment of sick cattle.

### 6. Water:

Provide water for the cattle 3 to 4 hours after arrival. Although water is important in stress, the most immediate need is for energy and other nutrients, and cattle that have had a fill of water first may not consume enough hay to meet these needs. The water tank should be close to the feeding area and should be large enough so they can find it easily. The noise of running water also helps to attract the cattle to the water and is helpful in getting them to drink. Water tanks should be cleaned before new cattle arrive.

### 7. Changing From a Low Energy to a High Energy Ration:

Most problems with cattle going off feed when the concentrate level is being increased occur when the ration reaches 67-70% concentrate. Most Michigan cattle feeders will be feeding corn silage, which is 40-50% grain, plus supplement prior to increasing the grain content. These cattle could be increased to concentrate equal to 1% of body weight by the addition of corn over a one or two day period. The ration would then be the equivalent of about 70% concentrate. Increases of grain beyond this level should be at the rate of  $\frac{1}{3}$  to  $\frac{1}{2}$  lb. per head daily to avoid animals that go off feed, bloat or founder. The final high grain ration should contain 6-10 lb. of corn silage or 2-3 lb. of hay per head daily to prevent digestive disorders. See fact sheet 4100, Feedbunk Management in Feedlots, for additional management suggestions for keeping cattle on full feed with a minimum of problems.

### 8. Guideline Rations for Newly Arrived Feeder Cattle:

A. *Silage plus supplement:* One lb. of soy supplement/20 lb. of corn silage. Two lb. of good quality hay per head daily can be fed until calves consume 15-20 lb. of silage if problems with consumption occur. The supplement given below or a similar supplement, will balance this ration.

Ingredient	Lb./1000 lb.
Soy 44	930
Dicalcium Phosphate	25
Limestone	15
Trace Mineral Salt	30
Vitamin A - 40,000 IU/lb. or inject 1 million IU	
% Protein	41
% Calcium	1.5
% Phosphorus	1.2

After the first 4-6 weeks, follow the feeding schedule given in fact sheet 1204A or B.

B. *Shelled Corn plus Hay:* 1% of body weight of shelled corn and a full feed of early cut alfalfa-brome hay plus trace mineral salt free choice. If grass hay is fed, feed one lb. per head daily of a 40% all natural supplement containing about 2% calcium and .5% phosphorus.

C. *Ground Ear Corn plus Hay:* 1 lb. of ground ear corn per 100 lb. of bodyweight and a full feed of alfalfa-brome hay plus trace mineral salt free choice. If grass hay is used, feed  $1\frac{1}{4}$  lb. per head daily of a 40% all natural supplement containing about 2% calcium and .5% phosphorus.

### Health Programs and Treatment Procedures

There is no single vaccination or control program which is best for all feedlots. The age, size, condition, health and prior history will affect your decisions related to handling a particular group of cattle. It helps to know when a group of cattle were weaned, how they had been handled and their vaccination history.



Most cattle arriving in the feedlot should receive any injections you plan to give them as they come off the trucks, or as soon thereafter as possible. These cattle are most likely to become ill during their first three weeks in the feedlot. It simply does not make sense to excite and handle a group of cattle, some of which may be in the incubation stages of illness, that are just starting to settle down, eat and drink. In approximately three weeks the cattle can be handled a second time or given injections which were not given upon arrival.

Most cattle should receive infectious bovine rhinotracheitis (IBR) parainfluenza 3 (PI<sub>3</sub>) and leptospirosis vaccine upon arrival at the feedlot, regardless of prior vaccination history. There is an advantage in purchasing calves which have received IBR, PI<sub>3</sub>, leptospirosis and pasteurized vaccines at least three weeks prior to the time they were weaned. Calves which have not been dehorned and/or castrated may not have received any vaccine or bacterin. If you receive a group of cattle with a number of calves that need to be dehorned and castrated, you probably should include bacterins for blackleg and malignant edema (*Clostridium chauveii septicum*) in your vaccination program.

Most cattle should receive one to two million units of vitamin A by injection when they enter the lot. Vitamins D and E are also present in most of these intramuscular products. Bovine virus diarrhea (BVD) vaccination may not be necessary in all feedlots. However, the economic loss when this disease affects a group of cattle which are totally at risk may be severe. In a feedlot in which BVD is known to be a problem BVD vaccination should be accomplished upon arrival. Most feeders that have not had prior problems with BVD, if they elect to vaccinate for BVD, should vaccinate their cattle three weeks after arrival. Cattle should not be vaccinated for BVD in the face of a disease outbreak.

Some feedlots have a history of problems with enterotoxemia and/or the "blackleg-like" diseases. In these feedlots it may be advantageous to vaccinate the cattle for *Clostridium chauveii*, *septicum*, *novyi sordellii* and *perfringens* B, C and D. These organisms are all available in a single product (bacterin) which should be administered three weeks after arrival.

Lice, mange and grubs must be controlled if optimum gains are to be obtained. Pour-on organophosphate products for control of cattle grubs and lice are satisfactory if they can be used prior to the cut-off date for the area where the cattle originated. This is best accomplished three weeks after the cattle arrive in the lot, but can be done upon arrival if waiting will result in going beyond the cut-off date for a given group of cattle. Spraying or dipping should be done after the cattle have been in the lot for three or more weeks. Spraying, dipping or lice pour-ons are the only satisfactory methods for external parasite control during periods when the organophosphate grub control products should not be used.

Most calves will benefit from deworming. In some feedlots it is possible to collect fecal samples from ten

calves upon arrival and estimate the parasite load from the parasite egg counts. Identification of the parasite eggs may also indicate which anthelmintic product would be most effective. Worming is most easily accomplished by feeding the anthelmintic after the ration has stabilized and all cattle are eating well. Boluses, drenches or injections may be administered approximately three weeks after the cattle enter the lot. However, when boluses or drenches are administered care must be taken to avoid injury to the throat area.

Rarely should antibiotics or sulfa drugs be administered to arriving cattle. There are some situations where, based on the previous history of the feedlot or the health of the arriving cattle, it may be desirable to use feed containing aureomycin and sulfamethazine or drinking water containing sulfathiazide. Routine injection of antibiotics to all cattle is undesirable in most situations.

Branding may be accomplished upon arrival in the feedlot or when the cattle are handled approximately three weeks later. Calves should be castrated three weeks after entering the lot if they are doing well. Calves may also be dehorned at this time; however, dehorning often sets the calves back and may not be economically advantageous.

### Handling Sick Cattle

One of the most serious problems in the feedlot is early detection and treatment of sick animals. Early detection and treatment is essential; as little as twelve hours may mean the difference between a rapid recovery and a chronic poor-doing calf that results in an economic loss.

A schedule of surveillance and observation for signs of illness should be established and initiated on the day of arrival. The entire group of cattle should be closely observed for signs of illness at least three times a day for a minimum of two weeks. The best time to observe cattle is following feeding.

It is essential that one person be delegated the responsibility to observe the cattle and to identify those animals that are to be handled individually. He must be familiar with the common signs of illness. Some of the signs of illness which we look for (many of these signs are often present in the same calf) include:

- A. An elevated body temperature (103.5 F or higher).
- B. Drooping of one or both ears.
- C. A drooping head or carrying the head in an abnormal position.
- D. Reluctance to rise.
- E. Reluctance to move about.
- F. Failure to come to the feed bunk.
- G. A gaunt appearance.
- H. A stiff gait; dragging the hind feet when walking.
- I. Abnormal discharges from eyes or nose.



J. Dull or sunken eyes.

K. Respiratory signs including: a dry crusted muzzle, pus discharging from nose, a harsh dry cough, and/or rapid or labored breathing.

L. Diarrhea; occasionally containing mucus or blood.

M. Dehydration and a rough hair coat.

Sick cattle must be treated individually as soon as clinical signs appear. These cattle will not consume adequate antibiotics or sulfa drugs to treat the condition by placing drugs in either the feed or water. They must be treated for at least three consecutive days regardless of the amount of improvement shown at the end of 24 hours. Animals that are missed when they show the first signs of illness and are not detected until twelve hours later may require treatment over a period of five days or more. When large numbers of animals are becoming ill, or if over 25% of the cattle are sick at any one time, treatment of those cattle that are not yet sick by placing sulfathiazole in the drinking water or a product such as Aureo S-700 in the feed may be indicated.

Treatment of disease is one area in which the use of a professional can be an exceptionally good investment. Although we can provide a number of guidelines, you should rely upon your veterinarian to help you select the proper drugs, dosages, and treatment schedule. Veterinary assistance is extremely important in arriving at a diagnosis, utilizing diagnostic tests and performing post-mortem examinations. And these, in turn, are essential to establish an accurate diagnosis and arrive at effective treatment regimens.

Bovine respiratory disease (BRD) is the most common disease complex encountered early in the feedlot period. The therapeutic agents most commonly employed in the treatment of BRD include penicillin, penicillin and dihydrostreptomycin in combination, penicillin-dihydrostreptomycin and a corticosteroid in combination, and sulfamethazine. Treatments which include a corticosteroid often result in a more dramatic response than treatments which do not include the corticosteroid. However, because the corticosteroid has a depressing effect upon the immune system of the calf, it is important that the corticosteroid be used only the first one or two treatments and that treatment without the corticosteroid be continued for at least two or three additional days.

We most often elect to treat with either antibiotics or sulfa drugs. There are some situations in which a veterinarian may, based on his professional judgment, elect to use antibiotics and sulfas together. The dosage of sulfamethazine, either orally or intravenously, necessary for effective treatment, is one and one-half grains per pound of body weight the first day fol-

lowed by one grain per pound of weight for an additional two to four days. This would be 1½ fifteen gram boluses per 225 pounds of body weight the first day followed by one bolus per 225 pounds each additional day. The 12½% solution contains 2 grains per cc; the 25% solution contains 4 grains per cc; hence, a 500 pound calf would receive intravenously 375 cc of the 12½% solution the first day, followed by 250 cc each additional day. Under no circumstances should sulfa drugs be continued beyond five days, or those dosages be exceeded, without making a change in the sulfa utilized or combining more than one sulfa. Damage to the kidneys can be caused by excessive dosages of a sulfa or prolonged use of the sulfa. Adequate water must be provided to cattle on sulfa drugs.

The most common antibiotic injected by feedlot operators is a combination of penicillin and dihydrostreptomycin. These products are generally least expensive, most easily administered and most effective. If they are not doing the job, you need professional help. Most products of this nature contain 200,000 units of penicillin per cc of product. In order to be effective this product must be given at a dosage rate of 2 cc per hundred pounds of body weight *twice a day*. Lower dosages or dosages given less frequently result in too low a level of the antibiotics being maintained in the blood stream. As with the sulfa drugs, early detection of the sick animal, early treatment, and maintaining an adequate blood level of the antibiotics for at least three days are essential to satisfactory treatment. The likelihood of relapses, chronically poor-doing cattle, chronic pneumonia and organisms which gain resistance to the antibiotic being used are increased when inadequate levels of the therapeutic agent or inadequate duration of treatment are employed.

Drugs are not the solution to all problems. Switching drugs back and forth may not allow a product time to be effective (especially if you missed the calf when it first became ill). Post mortem examination of all dead animals, histopathology, culturing tissues and drug sensitivity tests may save you thousands of dollars. Do these things first, not when all else has failed. Your veterinarian can help you set up the treatment program that will be most effective in your lot based on this kind of information. He can tell you which drugs to use, what dosage is best, and how often and how long you must continue treatment.

The utilization of sick pens, recovery pens (to get the animals back on feed), and individual marking systems, all under the supervision of one individual who works closely with the veterinarian, markedly enhance the likelihood of a successful treatment program. The feedlot operator, county agent, veterinarian, extension specialist and diagnostic laboratory can be a most effective problem solving team. Is your team playing short handed?

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