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Stocker Cattle Management: Receiving Nutrition

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The Arkansas cattle industry is following the national trend. To make more money, cow/calf operations retain some calves over the winter to be sold as feeders. That venture proves profitable and the next year additional calves are bought to go with the retained calves.

Before deciding to buy stockers, or even deciding to keep over some homegrown calves, considerable thought needs to be given to management of these valuable and vulnerable animals. What kind of calf? What weight? What age? What health problems? What facilities? What feed?

The Situation With New Calves

Calves that wind up on stocker operations range in weight from 200 pounds to 550 pounds or more. This group of calves may have been "put together" from numerous sale barns and may be severely stressed.

When designing a nutritional program, you must also take into account management experience and facility limitations for each operation. Many operations will have very limited options, and compromises must be made between ideal nutritional programs and feasible programs.

Fortunately, flexible nutritional programs for stressed calves have been researched. Options range from small supplement packages formulated to be fed with hay, to larger supplement packages that provide greater weight gain, to full-feed programs designed to get high rates of gain very quickly after arrival.

The challenge for the nutritional program is to provide highly palatable feeds that stimulate intake, provide critical nutrients and additives, reduce the stress level of the calves, minimize the potential for metabolic problems, permit the calves to overcome disease challenges, respond to veterinary treatments and begin to perform quickly.

Requirements of Newly Received Calves

Weaning and shipping stress do not seem to increase the **total** requirement for most nutrients. But, because feed intake is usually reduced for the first week or two after arrival, the **concentration** of key nutrients must be increased to ensure that total requirements are met. One exception may be potassium. Research suggests the requirement for potassium may be increased by about 20 percent during stress.

Very Young Beef Calves and Holstein Calves

The key nutritional considerations for this type of calf (under 300 pounds) are that protein and energy requirements are high and that roughage levels must be kept relatively low. Lightweight calves can be received and grown on supplement-roughage programs, but rates of gain may be poor.

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Palatability is critical for young calves. These calves must recognize and begin to consume dry feed very quickly. Because young cattle simply cannot consume enough roughage to make acceptable rates of gain, many nutritionists prefer a complete mixed ration for lightweight, young calves. The real danger of trying to receive and grow very light calves on supplement and free-choice hay programs is that you must offer so much concentrate that many calves may not eat hay. The result is rumen acidosis from over-consumption of grain-based supplements. Clinical signs will be brown runny diarrhea, bloating and going off feed. Death may occur in severe cases. Complete, mixed rations greatly reduce the possibility of sorting roughage from grain.

A good full-fed receiving ration for very young calves is shown in Table 1. This ration has proven to be extremely palatable to young calves that are not familiar with dry feeds. It is best to only pellet the portion that contains the soybean meal, mineral and additives and then mix the pellets in with the cottonseed hulls and corn. Although this adds to mixing cost, this physical form promotes intake and safety. Many producers are not aware that you cannot feed a totally pelleted ration to cattle for more than a few days. Pelleting destroys the scratch factor in roughages and the rumen wall deteriorates rapidly. At minimum, cattle on all-pelleted diets should receive 2 or 3 pounds of long stem hay. For young calves, soybean meal is preferred over cottonseed meal because of the threat from gossypol in the cottonseed meal. This is less a problem for calves weighing 400 pounds and more.

Arkansas cattlemen are fortunate to have cottonseed hulls. There is no better appetite stimulant. In terms of nutrient content, cottonseed hulls are hard to justify in rations, but for whatever reason, cattle love them and will often eat unfamiliar feeds when cottonseed hulls are added. Hulls can probably be justified in stressed calf receiving rations at almost any cost.

Alfalfa pellets are used because they provide excellent protein along with roughage factor. In Arkansas, soybean hull pellets, rice bran pellets or other roughages may be substituted for alfalfa after adjustments are made for the difference in protein content. Coarse-chopped good-quality grass hay could also be substituted for the pellets.

Feed Only to Lightweight Calves

This receiving ration could be dangerous if presented directly to yearlings without additional roughage or a warm-up period. However, this level of concentrate is necessary for calves because calves have such low levels of intake. With light calves, the ration can be offered with no additional hay. Consumption should be 3 to 3.5 percent of body weight within 4 or 5 days, and calves should gain about 2 pounds per day.

Table 1. Ration for Receiving Very Light Calves or Early Weaning

Ingredient	% in ration, as fed
Cottonseed hulls	14.7
Alfalfa pellets	15.1
Rolled corn	46.0
Cane molasses	4.7
Soybean meal	17.7
Calcium carbonate	1.0
Dicalcium phosphate	.5
Salt	.3
Vitamin A	2000 IU/lb
Vitamin E	20 IU/lb
Trace mineral	Cu, Zn, Se as needed to meet NRC requirement
Coccidiostat	As per veterinarian's preference
Ration Specs (DM basis)	
Dry matter, %	88.2
NEm, Mcal/100 lb	82
NEg, Mcal/100 lb	50
Crude protein, %	16.7
Potassium, %	1.2
Calcium, %	.95
Phosphorus, %	.45

Receiving Programs for Larger Calves

Typical stocker calves weighing 400 to 550 pounds should easily recognize and consume hay. Most operations already have hay and like to use it in their receiving programs in order to minimize purchased feed. If a high rate of gain during the receiving period is not critical, and high quality (clean, palatable, not moldy) grass hay is available, a program for calves over about 400 pounds can be designed with free-choice hay and a well-designed supplement.

Most hays analyzed in Arkansas have moderate to high levels of protein but do not have sufficient energy for new cattle. The receiving supplement should nevertheless provide both additional protein and energy, as well as satisfy needs for minerals, vitamins and appropriate additives. Why additional protein? Because stressed calves' intake is low and protein is essential for everything from immune function to proper rumen function.

As a starting point, the supplement should contain about 25 percent protein and be fed at a rate of 2 to 4 pounds per day. Rather than list the many formulations that could work in Arkansas, we have chosen to list specifications for nutrients and ingredients that will work well in receiving supplements. A feed company nutritionist or Extension specialist can assist in designing a formula that economically uses ingredients available in the area. The supplement should be pelleted at a diameter of 1/2 inch or less. Calves do not like large hard pellets.

Specifications for a 25% Protein Supplement

- 25 percent crude protein (min., all natural)
- 0.7 percent phosphorus (min.)
- 1.0 percent calcium (max.)
- Up to 20,000 IU supplemental vitamin A per day when needed (probably not needed in summer)
- Ionophore, coccidiostat or antibiotic at label recommendations (Rumensin, Bovatec, Deccox and Chlortetracycline are examples)

Feeding Level

- 2 to 4 pounds per day (observe feeding restrictions for additives)

Good Ingredients for Arkansas

- soybean meal
- cottonseed meal
- molasses
- corn, milo, hominy feed and/or wheat (in total, up to 33 percent of formula)
- soybean hulls
- wheat middlings
- rice bran

What About the Energy Level?

Using the ingredients listed ensures adequate energy levels and at the same time keeps grain content low enough to minimize (but not eliminate) chances of acidosis from feeding too much starch. The byproducts such as wheat midds, soybean hulls and rice bran are good sources of digestible fiber.

Additives for Receiving Rations

Research has shown that vitamin E in receiving diets can improve gain and sometimes reduce sickness in stressed cattle. Levels of vitamin E fed have generally been from 300 to 400 IU per head per day. In a Texas study, an excellent response in daily gain during receiving was obtained with 100 IU vitamin E and 0.1 ppm of added selenium. Remember that selenium is low in many Arkansas forages and locally grown calves may need added selenium.

Copper, zinc and selenium all play roles in the immune response and should be included at proper levels in diets of stressed calves. However, there is much debate about just what constitutes optimal levels. Overfeeding of trace minerals seldom is beneficial and can cause toxicity, especially with some sources of copper and selenium. A good recommendation is to provide the upper end of the recommended levels from ingredients with good bioavailability. Feed ingredients like alfalfa and wheat middlings are, themselves, good sources on many trace minerals.

All receiving rations should contain a coccidiostat. The incidence and implications of subclinical coccidiosis during receiving are well known. Further, coccidiosis seems to play a role in the immune response, although whether directly or indirectly is not known.

Using these recommendations should help in designing a nutritional program for stressed cattle. The goals are to reduce sickness and provide sufficient weight gain that prepares the cattle for profitable performance when turned out to the grazing program.

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