Supplemental Feeding of Range Livestock and Its Effect on Ranch Operations

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Experimental data for properly supplementing range cattle is either lacking or needs considerable refinement. Usually ranchers supplement their livestock according to general information and common practices of their area. It is with these facts in mind that I attempt to suggest proper supplements for range cattle from experience gained by ranching in the sandhill area of northeastern Colorado.

Range cattle, for nutritional requirements, fall into three general categories: (1) breeding livestock, (2) yearlings, and (3) calves. The breeding herd would include all producing cows, bulls, and replacement heifers after they have their first calf. A calf becomes a yearling when the spring grazing season begins.

Supplements for range cattle in the sandhills of northeastern Colorado should be considered for discussion purposes as follows: (1) protein, (2) minerals, (3) energy, and (4) vitamins. All of these supplements must be considered for at least one class of livestock during some years.

The amount and period of supplementation may vary widely with the condition of the range, with management practices, rate of stocking, the season, and the year. To help simplify the discussion I would assume that the range is stocked properly for year-around grazing in a near normal rainfall year, and that the range is in a high-fair to good condition. This may seem ridiculous when we consider that such a small fraction of our ranges are up to these standards, but it appears to me that no normal individual can exist under present economic conditions unless he maintains at least a near-good range condition. To maintain such a condition is extremely difficult unless the operator uses his range forage on a year-around basis.

Protein

The protein content of range forage indicates that protein supplement should be supplied to range cattle as early as late July in some years, and no later than September 1 in the best years. It is difficult, however, to improve gain rates by adding protein supplements at this time, and it is possible that by selective grazing the animals may be able to maintain their protein requirements on good condition ranges during this period. Ordinarily ranchers do not start to supplement the breeding herd before November 15, and most do not start before early December, depending upon the season and the condition of the cattle. Calves need not receive a supplement of protein while nursing the cows, but should receive some as soon as they are weaned. If they are on native range, they should receive a minimum of three-fourths pound of 40 percent protein per day. I feel that the upper limits of recommended levels of protein should be maintained for calves during the post weaning period. Seeded cool-season grass and legume pasture make an excellent place to wean calves. Such a pasture, or dehydrated alfalfa pellets, reduces the total protein requirement because of the increased quality of the protein. Most important is to make certain that all calves get their share of the supplement. This may be accomplished by feeding in small groups or by mixing the protein with grain or chopped hay, and by taking considerable time in teaching the calves to eat during the first days after weaning. Self feeding of protein supplement mixed with salt has proved very satisfactory for me.

Yearling cattle that are marketed or put in the feed lot early in the fall ordinarily do not receive protein supplements. If such cattle are to be maintained on native range after October 1, I believe that improved gains would be maintained by supplementing with protein beginning in late August or early September. Condition of the pasture and cattle, cost of the supplement, price of the cattle, and convenience and cost of feeding the supplement will govern whether or not this practice will pay the producer. If yearling cattle are to be maintained over the winter, I believe that little is to be gained by supplementing with protein before mid-November because all "grass-flesh" will be lost before winter is over anyway. Here again protein mixed with salt makes an excellent method for governing consumption and providing a uniform feed of all cattle. I would not recommend the use of salt-protein mixture during cold weather (December 15 to February 15 in our area) because increased water consumption requires additional energy for maintaining body temperature. Feeding salt and protein mixture increases water consumption materially.

Cows will pick up considerable flesh during October, November, and early December if calves are

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In this paper Marvin relates his experiences with supplemental feeding and points out the importance of being able to make the fine adjustments in supplemental feeding that often mean the difference between success and failure of the ranch operation.

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weaned. Since these cows will probably lose most of this flesh before winter is over, I do not think it advisable to start supplementing cows before late November or early December. The amount of supplement depends primarily upon the calving date and the condition of the cows. Generally 0.3 pound of protein added daily to good range forage will meet all nitrogen requirements. A good method of providing this is to feed one pound of 40 percent protein one day and a pound of dehydrated alfalfa on alternate days, or by feeding one-half pound of each daily. This ration should be maintained until grass starts to grow in the spring, and may be increased slightly just prior to early grass growth. Bulls should be supplemented in the same manner, if they are mature.

Gestating coming-two-year-old heifers will usually be quite fleshy in the fall prior to having their first calf. It has been my belief that it is much easier to grow these calves after they are born than before. For this reason protein should be kept at a minimum, especially during the last two to three months before calving. It is a good practice to keep these heifers on green pasture as late as possible in the fall and as early as possible in the spring. Cool-season seeded pastures work out very well. If the protein level is kept at a minimum (approximately 0.25 pound daily), the heifers will be thin and the calves will be comparatively free of flesh at birth. Then if heifers are calved about mid-April, milk production will be adequate. Heifers may not reach their mature weight as early in life as under a more liberal feeding plan, but it will not affect their production materially. These cattle should be kept separate from cows until after they have their second calf, and should receive additional supplemenation between their first and second calf. They should be started earlier in the fall, and receive slightly more protein. The most desirable winter pasture for these coming-three-year-olds will help.

MARVIN KNEISE

Minerals

Only two minerals seem to be of concern to ranchers in our area. These may be fed free choice at all times to prevent deficiencies. The two, *common salt* and *phosphorus,* are relatively inexpensive. Yet livestock may be deficient in these at times because ranchers are careless in putting them out, or the supplements are too unpalatable, due to weathering or being dirty, for cattle to consume enough to meet minimum requirements.

Phosphorus may be supplied most economically in the form of steamed bonemeal. If mixed with salt, about 50-50 by weight, and fed in boxes protected from wind and rain, cattle will eat one to two pounds per month each. I believe it is a good plan to place this mixture near watering places or other places where cattle normally congregate. Unless this mixture is fed in a feeder, it is wise to feed only enough at one time to last one week to ten days. Consumption varies considerably from season to season, so the rancher must always keep a close watch on the supply. If salt and protein supplement are self fed, bonemeal may be added to this mixture to reduce the amount of salt consumed.

Crushed rock salt, ground or in plain white blocks, will meet salt requirements. This should be fed in addition to that salt fed in the bonemeal. This salt may be placed in strategic places in the pasture to improve utilization of all areas. Blocks should be placed on short stakes or posts, and loose salt should be fed in well drained boxes or bunks.

Manganese and *iodine* deficiencies have been noted in some areas, but steamed bonemeal will meet these requirements except in unusual cases.

Although we hear considerable advertising information concerning the value of *copper, iron, cobalt,* and *manganese,* it is most difficult to demonstrate deficiencies of these elements in cattle.

Mineralized blocks and protein blocks have received considerable attention during the past few years. Many of these may be all right to feed, but most are far over-priced, and some may cause cattle to eat excess amounts of one mineral to obtain minimum quantities of another. Force-feeding of minerals is generally not recommended, and may prove dangerous in the case of some elements.

Energy

In my experience it has been impossible to attain maximum growth rates with calves under 450 pounds when hay, silage, or native pasture with protein supplement is the ration. A calf this size simply does not have enough capacity to consume enough roughage to meet energy and growth requirements. One to two pounds of grain will perform miracles in a calf being wintered for maximum growth without putting on any flesh. The grain saves hay and greatly improves the appearance, growth rate, and morale of the calves. In addition, it is excellent insurance against severe storms, prolonged severe weather, and disease. Oats makes an excellent feed for calves. Ground shelled corn, barley, or ground snapped corn may be used.

If cows calve in February or

early March, the calves will be getting large enough to require quite a bit of milk about the time grass starts. The cows will be very thin, and energy is lacking in both weathered grass and the very early green growing grass. During this two to three week period, two pounds of No. 2 ground yellow corn will work wonders with the cows and the calves.

Small amounts of concentrate will be very helpful for bulls during this same period. This is also a very good place to use some good quality hay to an advantage. Good condition of the bulls should be insured in the very early spring.

Vitamins

On sandhill range it is most difficult to see vitamin A deficiency in mature cattle, but it may be that small amounts of dehydrated alfalfa pellets will well pay for themselves. Besides being a source of protein of highest biological value, the alfalfa pellets improve milk production and hair condition, and the general attitude of the cows or calfy heifers. It may have some value in preventing scours in calves and blind calves in certain years. One-half pound of alfalfa pellets daily will have considerable benefit.

Much different than cows', the calf's reserve of vitamin A is depleted quite rapidly. These calves should receive a minimum of one-half pound of dehydrated alfalfa pellets per head daily, or one to two pounds of good quality green hay, if they are on dry native range. This should be continued until grass starts to grow in the spring. It appears that other vitamins need not receive consideration in range cattle nutrition, but later experiments may prove different. Vitamin E may have some value for improving fertility at times, and some of the B complex may improve hair and skin condition.

Stilbesterol and *aureomycin* have not found their way into the range cattle business successfully as yet, but it may be that both may prove valuable in growing livestock in the future.

Summary

Successful ranching depends very largely on good range production year after year. This must be insured by attaining and maintaining good range condition. Proper stocking rates and seasonal and yearly rotation plans built around year-around grazing practices are the best methods for attaining these goals.

The successful ranch operator depends on maximum weight for age without spending large amounts for supplemental feeding. In addition to top calf crop percentages the economic balance of the operation depends primarily on maximum growth rates at a minimum cost. It is with these things in mind that I make the recommendations for maximum efficiency of ranch operation in our area.

Much of the success or failure of the ranch operation depends upon the ability of the individual to recognize the condition of the cattle and in making prompt adjustments to correct for abnormalities. Experience and keen observation will tell him such things as when to start feeding protein supplement and when to increase the amount of the supplement. The most successful rancher must study and understand the habits and condition of cattle, just as successful business people understand stock market trends. General recommendations for supplementing range cattle have little value if the cow man has neither the interest nor ability to make the fine adjustments.

In conclusion I would say that the most important qualification for a rancher would be his ability to "read the range and the cattle." His second most important requirement is his willingness to make proper refinement of general recommendations to fit his particular area, the season, condition of the range, and condition of the cattle.

New Publications of Interest

The Conservation Yearbook. Edited by Erle Kauffman. *Forestry Enterprises, Washington 6, D. C. 320 pages. New Edition. 1956. $5.50.*

Can We Solve the Farm Problem? An analysis of Federal aid to agriculture. By Murray R. Benedict. *Twentieth Century Fund, New York. 601 pages. 1955. $5.00.*

Farm Policies of the United States, 1790-1950. By Murray R. Benedict. *Twentieth Century Fund, New York. 548 pages. 1953. $5.00.*

Breeding and Improvement of Farm Animals. By V. A. Rice, F. N. Andrews, E. J. Warwick, and J. E. Legates. *McGraw-Hill, New York. Fifth Edition. 1957. 537 pages. $8.50.*

Experimental Designs. By William G. Cochran and Gertrude M. Cox. *John Wiley & Sons, Inc., New York. Second Edition. July 1957. 617 pages. $8.50.*

The Merck Veterinary Manual. *Merck & Company, Inc., Rahway, New Jersey. 1,400 pages. 1957. $7.50.*

The Agricultural Commodity Programs. Two decades of experience. *Twentieth Century Fund, New York. 510 pages. 1956. $5.00.*