



# RATIONS FOR GROWING AND FINISHING CATTLE

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# RATIONS FOR GROWING AND FINISHING CATTLE

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**T**HE CRUDE PROTEIN of the suggested mixtures is calculated on the basis of 41 percent crude protein in the supplement, 9 percent crude protein in sorghum grain and no crude protein in the roughage. Feed intake and daily gain estimates are based on steers. Bulls should gain about 1/10 to 2/10 more pounds while heifers should be expected to gain about 1/10 to 3/10 less with similar feed intakes.

## **STARTING CATTLE ON FEED**

Cattle which have been creep fed or have had grain on grass may be started in drylot on a mixture of 80 percent concentrates and 20 percent roughage. Decrease the roughage by 10 percent and increase the concentrate by 10 at the end of one week. Feed a mixture of 90 percent concentrates and 10 percent roughage for the remainder of the finishing period.

Cattle not accustomed to concentrate feeds may be started on feed by either of two methods. Feed them a mixture of 60 percent concentrates and 40 percent roughage. Gradually, during a 2-week period, increase the concentrates and decrease the roughage until they are receiving 90 percent concentrates and 10 percent roughage. Another method is to start with a 90 percent concentrate and 10 percent roughage mixture and limit the daily feed per head to no more than 1% of the body weight. Increase the amount daily until the cattle are receiving all they will eat at the end of 2 weeks. Continue feeding this mixture until cattle are finished. Daily feed requirements for all weights of cattle vary from 2 to 4 percent of average body weight,

## SUGGESTED MIXTURES

Percent protein supplement	Percent grain	Percent roughage	Percent minerals salt -	Percent minerals others*	Percent crude protein	Starting weight, lb.	Expected daily feed, lb.	Expected daily gain, lb.
<b>GROWTH AND DEVELOPMENT</b>								
<b>50% Concentrate, 50% Roughage</b>								
20	30	50	.5	.5	10.9	300	9	1.2
						500	15	1.5
						700	21	2.0
<b>DRYLOT FINISHING</b>								
<b>60% Concentrate, 40% Roughage</b>								
15	45	40	.5	.5	10.2	300	9	1.5
						500	15	2.0
						700	21	2.2
<b>70% Concentrate, 30% Roughage</b>								
12	58	30	.5	.5	10.14	300	8	1.6
						500	14	2.2
						700	20	2.5
<b>80% Concentrate, 20% Roughage</b>								
9	71	20	.5	.5	10.08	300	7	1.7
						500	13	2.4
						700	19	2.7
<b>90% Concentrate, 10% Roughage</b>								
7	83	10	.5	.5	10.34	300	6	1.8
						500	12	2.5
						700	18	2.8
<b>PASTURE FINISHING CATTLE</b>								
10	90	Pasture	.5	.5	12.4	300	7.5	1.5
						500	12.5	2.0
						700	17.5	2.5

\*See mineral discussion.

depending upon percent concentrate in the mixture.

The system of starting cattle and feeding until slaughter on all grain, grain and a protein supplement or all concentrates with no roughage has been practiced by some feeders and is being studied at Texas A&M University. It is recognized that feed per 100 pounds of gain is reduced considerably, thus lowering production costs. However, risk of higher death losses, founder, liver abscesses, rumen ulcers and slaughter price dock are some of the areas which need further study. No definite recommendations presently can be made.

### STARTING PASTURE CATTLE ON FEED

Cattle on pasture may be started on feed by two methods. First feed a mixture free choice of 80 percent concentrates and 20 percent roughage. Change the mixture weekly by increasing the concentrates 10 percent and decreasing the roughage by 10 percent. Continue this practice until cattle are receiving 100 percent concentrates. An alternate method is to feed a mixture of 90 percent ground sorghum grain and 10 percent cottonseed meal and limit the concentrate mixture to 1 percent of body weight daily per head for the first week. Thereafter, keep feed

in the trough at all times. Under this method, some individuals may founder.

## **GRAINS**

Corn, sorghum grain or barley or any percent combination of these may be fed. Grain price determines usage. Wheat may be fed up to 50 percent of the grain portion of the mixture. Oats are excellent for growth and development, but should not be considered a fattening grain. The form in which grains are fed is of economic importance. Although the exact process or treatment for maximum efficiency may not be known at this time, enough research has been conducted with various forms to warrant certain conclusions. Grinding is the least preparation which may be done to all the grains to improve performance. Most research supports moderately fine grinding over coarse grinding. Five percent molasses may be added to control wind loss. Dry rolling gives similar results to fine grinding. Steam-rolled sorghum grain appears to improve feed efficiency. More recent research looks highly promising for improving sorghum grain utilization through longer steaming, pressure cooking, reconstituting in air-tight silos and moist harvested sorghum grain from air-tight silos. These treatments, along with rolling, flaking, or grinding, tend to significantly improve daily gain and feed required per 100 pounds of gain. Arizona research with 18 to 20 percent moisture content sorghum grain, subjected for 20 minutes at 204° to 210° F. temperature and flaked by a roller set at zero tolerance, increased gains by 10 percent and reduced feed requirements by 5 percent over that of dry-rolled grain. Texas A&M research with cattle fed ground moist sorghum grain from sealed storage required 10 to 18 percent less feed on a dry matter basis than cattle fed ground dry sorghum grain to produce a unit of gain. No significant difference in daily gain has been observed. Equally good results have occurred from dry sorghum grain when reconstituted with water and stored in air-tight silos. The popping of sorghum grain is the latest method under study. Not enough research has been conducted to form any conclusions. Pelleted grains may increase feed efficiency by 5 percent. However, pelleting decreases feed intake, reduces gain slightly and such rations containing more than 50 percent concentrates has not been economical.

## **PROTEIN SUPPLEMENTS**

Any of the protein supplements may be fed. Cost per pound of protein usually determines usage. Multiple protein sources offer little or no gain advantage over single sources. Urea should be limited to provide no more than one-third of the total protein equivalent of a mixture and should not exceed 1 percent of the total ration.

## **ROUGHAGE**

The nutrient value of the roughage has little influence on gain when the mixture contains less than 20 percent roughage. Gain is influenced significantly in rations containing 30 percent or more roughage, and the higher energy roughages should be used in these mixtures. The crude protein in roughage is about 50 percent digestible except it is higher in alfalfa. Two to 5 percent alfalfa in a mixture may increase daily gains slightly.

Silage is about two-thirds to three-fourths water and one-third to one-fourth dry matter. To determine the amount to feed, multiply the required pounds of dry roughage by three or four depending on the moisture content of the silage. Two hundred to 300-pound calves should be limited to about 4 to 6 pounds of silage daily. Hay may be fed ground or unground, whichever is most convenient to the feeder. Low-quality roughages need to be ground. Pelleting roughages generally is not economical because of the high cost.

## **ADDITIVES**

*Hormones* such as diethylstilbestrol may increase daily gain as much as 15 percent and improve feed efficiency by 10 percent. Calves weighing two hundred to 500-pounds should receive one 12 or 15 milligram ear implant or be fed 5 milligrams daily per head in the feed mixture. Yearling steers respond best to 30 to 36 milligram implants or fed 10 milligrams daily per head in the feed mixture. Slaughter grade may be lowered slightly. The Food and Drug Administration requires cattle to be implanted 100 days before slaughter and removal of hormone feeds from the ration 48 hours prior to slaughter.

Heifers receiving hormones develop their sex organs rapidly and price may be affected adversely. They should be marketed as 850-pound cattle.

*Antibiotics* such as Aureomycin or Terramycin may increase gain about 6 percent at a feed saving of 4 percent on the average. A level of 75 milligrams daily per head in the ration, generally is adequate. Cattle which have not been under stress and are from the same herd normally do not need an antibiotic injection or orally in the feed. If infections occur, give a high level injection or oral high level (360 milligrams per day) feeding. Most experienced feeders are including antibiotics in the high and all concentrate rations since it tends to decrease the incidence of liver abscesses.

*Vitamin A* is essential in all rations. Alfalfa products are considered good sources of carotene, the plant precursor of Vitamin A. None of the grains except yellow corn contain this vitamin. Silage is considered a fair to good source, but non-legume hays may or may not supply sufficient amounts. Some protein supplements are fortified with Vitamin A and may not supply requirements. Synthetic Vitamin A may be included in the concentrate mixture at the 5,000 International Unit level daily per head for calves, 10,000 for yearlings, and 20,000 for older cattle. Texas research shows that 6 million unit injections does not improve gains of yearlings when the ration already contains adequate Vitamin A from natural feeds.

*Yeast* feeds have not proved to be advantageous in fattening rations which contain the essential nutrients.

*Molasses* increases ration palatability, controls dust and may replace up to 10 percent of the grain portion of the ration, depending upon price. Five to 7 percent is sufficient to control dust and increase palatability.

*Fat* has an energy value 2.25 times that of grain. No more than 5 percent fat should be included in a mixture in that daily gains are affected adversely. Two to 4 percent is used to control dust and reduce mixing equipment wear.

*Enzymes* have not proved to increase gains consistently.

## MINERALS

Minerals may be combined in the mixture or fed separately free choice. Salt may be included in the feed mixture at the .5 percent level or be available free choice. A calcium supplement such as limestone or oyster shell flour should be included in high concentrate mixtures at the .5 percent level. A phosphorus supplement such as bonemeal or dicalcium phosphate may be included in the mixture at the .5 percent level or fed free choice. Trace mineral mixtures have not proved to increase gains when the ration contains high quality roughage and natural proteins. Rations based principally on poor-quality forages should be supplemented with a trace mineral mixture containing copper and cobalt in an amount sufficient to supply 2 to 5 parts per million copper and 0.1 parts per million cobalt.

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