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BEEF COW MANAGEMENT

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Rations for Growing and Finishing Beef

High Roughage Rations for Growing Beef

Many farmers feed cattle as a means of marketing home grown feedstuffs, primarily roughages. Also many cattle feeders prefer to grow lightweight cattle for a period of time before placing them on a finishing ration to obtain maximum utilization of the feedstuffs available and economy of gain.

It is usually advisable to have the cattle gain a minimum of about 1.8 to 2.2 lb. per day in the feedlot in order to obtain economical gains and still utilize large amounts of roughages. The rations given here are designed to allow cattle to gain at these rates under most conditions. These rations will not fit all situations, however, because of differences in composition of feedstuffs and the amounts and kinds of feedstuffs that are available, types of cattle fed and rates of gain that will be the most economical under specific conditions.

Ration 1

Grain: One lb. of shelled corn dry matter per 100 lb. of body weight per day.

Roughage: Good quality hay or haylage (at least 50% alfalfa) fed free choice.

Protein supplement: None needed if good quality hay or haylage (at least 50% alfalfa) is used.

Mineral supplement: Feed dicalcium phosphate, deflorinated rock phosphate or a commercial mineral mix that is high in phosphorus free choice and trace mineralized salt free choice.

Vitamins: Due to the variability in vitamin A content of feedstuffs, it is recommended that a source of supplemental vitamin A be given. One method of doing this under these conditions is to feed 600,000 I.U. (international units) of vitamin A in 1 lb. of ground shelled corn per head once every month.

Feed additives: Implant the cattle with one of the growth stimulating compounds.

Ration 2

Grain and roughage: Corn silage free choice.

Protein supplement: The equivalent of 1½ lb. of a 40% protein supplement per head daily.

Mineral supplement: Feed free choice a mixture containing equal parts of limestone and trace mineralized salt, providing the protein supplement contains at least 1% phosphorus.

Vitamins: The protein supplement should contain about 15,000 international units of vitamin A per lb.

Feed additives: The supplement should contain the recommended levels, or implant the cattle with one of the growth stimulating compounds.

Ration 3

Grain: 1 ¾ lb. of oats* per 100 lb. of body weight.

*Bloat can be troublesome when oats is fed in combination with alfalfa hay, and caution should be used under these conditions.

Roughage: Good quality hay or haylage free choice.

Protein supplement: None needed if good quality hay or haylage is used.

Mineral supplement: Feed trace mineralized salt free choice. Under most conditions, no supplemental source of calcium and phosphorous is needed for this ration.

Vitamins: Due to the variability in vitamin A content of feedstuffs, it is recommended that a source of supplemental vitamin A be given. One method of doing this under these conditions is to feed 600,000 I.U. (international units) of vitamin A in 1 lb. of ground shelled corn per head once every month.

Feed additives: Implant the cattle with one of the growth stimulating compounds.

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Ration 4

Grain: One half lb. shelled corn, wheat or barley dry matter per 100 lb. body weight.

Roughage: Feed free choice a mixture of 3 parts of corn silage to 2 parts of alfalfa haylage, as fed basis (approximately 65% moisture corn silage and 55% moisture haylage) *or* feed free choice a mixture of 3 parts of corn silage and 1 part of alfalfa hay, as fed basis.

Protein supplement: None needed if good quality hay or haylage (at least 50% alfalfa) is used.

Mineral supplement: Feed dicalcium phosphate, deflorinated rock phosphate or a commercial mineral mix that is high in phosphorus free choice and trace mineralized salt free choice.

Vitamins: Due to the variability in vitamin A content of feedstuffs, it is recommended that a source of supplemental vitamin A be given. One method of doing this under these conditions is to feed 600,000 I.U. (international units) of vitamin A in 1 lb. of ground shelled corn per head once every month.

Feed additives: Implant the cattle with one of the growth stimulating compounds.

Ration 5

Grain: One lb. of shelled corn, barley or wheat dry matter per 100 lb. of body weight.
One and one half to 1¾ lb. of grain should be fed per 100 lb. of body weight to obtain the indicated rates of gain if barley weighing less than 46 to 48 lb. per bushel is used.

Roughage: Oat silage free choice. One and one half to 1¾ lb. of grain should be fed per 100 lb. of body weight to obtain the indicated rates of gain if barley weighing less than 46 to 48 lb. per bushel is used.

Protein supplement: The equivalent of 1 lb. per day of a 40% protein supplement. If barley or wheat is used rather than shelled corn, feed the equivalent of ½ lb. per head per day of a 40% protein supplement.

Mineral supplement: Feed free choice a mixture containing equal parts of limestone and trace mineralized salt.

Vitamins: Provide about 20,000 international units per head daily through the supplement *or* feed 600,000 I.U. in 1 lb. of ground shelled corn once every month.

Feed additives: Implant the cattle with one of the growth stimulating compounds.

Ration 6

Grain: One and one-half lb. of shelled corn dry matter per 100 lb. of body weight per day.

Roughage: Non-legume hay such as brome or timothy hay free choice.

Protein supplement: The equivalent of 1 lb. of a 40% protein supplement per head daily.

Mineral supplement: Feed free choice a mixture containing equal parts of dicalcium or deflorinated rock phosphate and trace mineralized salt free choice, or use a commercial mineral mix that contains approximately equal parts of calcium and phosphorous.

Vitamins: Provide about 20,000 international units per head daily through the supplement *or* feed 600,000 I.U. in 1 lb. of ground shelled corn once every month.

Feed additives: Implant the cattle with one of the growth stimulating compounds.

Ration 7

Grain: One and one-half lb. of ground ear corn dry matter per 100 lb. of body weight.

Roughage: Good quality hay or haylage (at least 50% alfalfa) free choice.

Protein supplement: None needed if good quality hay or haylage (at least 50% alfalfa) is used.

Mineral supplement: Feed dicalcium phosphate, deflorinated rock phosphate or a commercial mineral mix that is high in phosphorous free choice and trace mineralized salt free choice.

Vitamins: Due to the variability in vitamin A content of feedstuffs, it is recommended that a source of supplemental vitamin A be given. One method of doing this under these conditions is to feed 600,000 I.U. (international units) of vitamin A in 1 lb. of ground shelled corn per head once every month.

Feed additives: Implant the cattle with one of the growth stimulating coumpounds.

High Grain Rations for Finishing Beef

Most cattle feeders who finish cattle to normal slaughter weights prefer to have the finishing ration contain the minimum level of roughage in the ration that will help prevent management problems such as going off feed, bloat and founder and still allow the cattle to gain as rapidly as possible. The level of roughage that is desirable varies considerably, depending on feeds available and levels that have been found to be satisfactory under specific conditions. The rations given here were designed to contain 10 to 15% roughage on a 10% moisture basis, and to allow steers to gain 2.7 to 3 lb. per head daily and heifers to gain 2.5 to 2.8 lb. per head daily under most conditions, and when the cattle are slaughtered as soon as they reach the choice grade. If feed consumption is above average then gains may be higher than this, but gains would be expected to be lower if feed consumption is reduced. Gains may also be reduced during extremely hot or cold weather or from poor lot conditions, when lower quality or improperly processed grain is used, and if one of the growth stimulating compounds such as MGA, Ralgro, or Synovex H or S is not used.

Recent studies suggest that the total protein requirement may be near 10% (100% dry matter basis) after the cattle have been on a high concentrate ration at least 60 days and have reached 75% of their optimum slaughter weight (fatness of low choice). This would be at about 750 to 800 lb. for average size feedlot steers and at about 900 to 1000 lb. for Holstein steers. This would mean the equivalent of about lb. of a 40% protein supplement could be removed from the ration at that time provided additional minerals and vitamins were provided to meet requirements.

These rations will not fit all situations because of differences in composition of feedstuffs and the amount and kind of feedstuffs available, types of cattle fed, and levels of roughage and rates of gain desired for economical gains under specific conditions. Also the ability to ensure all cattle get the same amount of roughage daily and from day to day must be taken into account. Those who do not have space for all cattle to eat at once or do not mix the roughage with the grain may have fewer problems when twice the recommended level of roughage is fed.

Type of Protein Supplement To Use

Protein supplements that contain nearly all of the protein equivalent from urea or other nonprotein nitrogen sources can be used in these high energy finishing rations under most conditions, with results similar to those where supplements high in all natural protein are fed. The following management factors are important, however, in obtaining satisfactory results with high urea supplements in these rations.

1. Best results are obtained from high urea protein supplements if they are completely mixed with the rest of the feeds in the ration. For this reason best results may not be obtained when complete mixing is difficult such as when small amounts (less than ¾ to 1 lb. per head daily) of a high urea supplement are used, or where these types of supplements are topdressed.
2. Cattle should be allowed to become accustomed to high urea supplements. Best results may be obtained when supplements containing little or no urea are fed to newly weaned cattle, and then the high urea supplement is gradually added into the ration to replace the starter supplement after 3 to 4 weeks or after they weigh about 600 lb.
3. Protein supplements containing high levels of urea must be properly formulated to provide the supplemental vitamins and minerals needed.
4. Problems in performance or health of the cattle due to management errors in feeding the protein supplement are less likely to occur where all natural protein sources are used. Thus whether or not high urea supplements should be used in these rations depend on relative costs of supplements and whether or not the proper management practices are used in feeding the protein supplement. Also it might be advisable to avoid feeding high urea supplements to sick cattle.

Mineral Supplementation

The recommendations with each ration for mineral supplementation are for force feeding various amounts of limestone and salt, as this is likely to be the most economical way to meet the requirements for the supplemental minerals needed in these rations. If free choice mineral mixes are used rather than force feeding the supplemental minerals as suggested in these guideline rations, then a mineral mix should be used that contains high levels of calcium and little or no phosphorus.

Ration 1

Roughage: 5 to 10 lb. of corn silage per head daily.

Grain: Shelled corn or barley (minimum of 46 to 48 lb./bu.) full-fed.

Protein supplement: The equivalent of one of the following protein supplements can be used to meet the need for supplemental protein in this ration.

Grain Used	*Lb. of a 32%*	*Lb. of a 40%*	*Lb. of a 64%*
Shelled Corn	2	1½	1
Barley	½	½	not recommended

If a mixture of shelled corn and barley is used as the grain, the amount of protein supplement should be adjusted accordingly.

Mineral Supplements:

A. Calcium. Supplemental Calcium is needed in this ration. If the protein supplement contains less than 1% calcium, then feed 0.2 lb. feed grade limestone per head daily. The following table gives the level of calcium needed in the supplement to completely balance the ration without additional limestone.

Lb. Protein Supplement To Be Fed Daily	*% Calcium Needed In Protein Supple.*
2	3½-4
1½	5
1	7

In most cases supplemental limestone should be force-fed to obtain desirable calcium levels in the ration. It would not be advisable to use a protein supplement that contains much more than 1% phosphorus if fed at the above levels in rations of this type.

B. Salt and Trace Minerals. 0.07 lb. of trace mineralized salt can be force-fed per head daily, or it can be fed free choice. Under most conditions plain stock salt can be used rather than trace mineralized salt if the protein supplement contains trace minerals.

C. Potassium. If shelled corn is used as the grain, it is suggested that the protein supplement contain approximately 2½% to 3% potassium when fed at 2 lb., 3½% when fed at 1½ lb., or 4% when fed at 1 lb. per head daily.

Vitamins: The vitamin A requirement can be met under most conditions by using the following table:

Lb. of protein supplement per head daily	*Minimum level of Vitamin A recommended per lb. of supplement*
2	15,000 I.U.
1½	20,000 I.U.
1	30,000 I.U.
½	60,000 I.U.

Feed Additives: Implant the cattle with one of the growth stimulating compounds.

Ration 2

Roughage: 4 lb. haylage or 2 lb. of hay (at least 75% alfalfa) per head daily. It is assumed in this ration that the hay was harvested by the early bloom stage with a minimum of losses due to weathering, harvesting or improper storage.

Grain: Shelled corn or barley (minimum of 46 to 48 lb./bu.) full-fed.

Protein Supplements: Supplemental protein is needed if corn is the grain fed, and can be balanced for protein by feeding 1¼ lb. of a 32%, 1 lb. of a 40%, or ½ lb. for a 64% protein supplement per head daily.

Lb. of a 32%	*Lb. of a 40%*
1¼	1

Mineral Supplements:

A. Calcium. If the protein supplement contains less than 1% calcium, then feed 0.13 lb. feed grade limestone per head daily. The level of calcium needed in the protein supplement to balance the ration is as follows:

Lb. Protein Supple. to Be Fed Per Head Daily	*% Calcium Needed In Protein Supple.*
1¼	3½
1	4½
½	7

It would not be advisable to use a protein supplement that contains much more than 1% phosphorous if fed at the above levels.

B. Salt and Trace Minerals: 0.07 lb. of trace mineralized salt can be force-fed per head daily, or it can be fed free choice. Under most conditions, plain stock salt can be used rather than trace mineralized salt if the protein supplement contains trace minerals.

C. Potassium: If shelled corn is used as the grain, it is suggested that the protein supplement contain approximately 4 to 4½% potassium when fed at 1 to 1½ lb. and approximately 5% potassium when fed at ¾ lb. per head daily.

Vitamins: The vitamin A requirement can be met under most conditions by using the following table:

Lb. of protein supplement per head daily	*Vitamin A needed per lb. of supplement*
1¼	25,000 I.U.
1	30,000 I.U.
¾	40,000 I.U.
½	60,000 I.U.

If barley is used as the grain and no protein supplement is fed, then feed 900,000 I.U. of Vitamin A in 1 lb. of ground grain per head once every month.

Feed Additives: Implant the cattle with one of the growth stimulating compounds.

Ration 3

Roughage: 4 lb. oat silage or 2 lb. of non-legume hay such as brome or timothy hay per head daily.

Grain: Shelled corn or barley (minimum of 46 to 48 lb./bu.) full-fed.

Protein Supplement: Same as ration 1.

Mineral Supplements: Same as ration 1, except no supplemental potassium is needed.

Vitamins: Same as ration 1.

Feed Additives: Same as ration 1.

Ration 4

Roughage and Grain: Mixture of equal parts of ground ear corn and shelled corn full-fed, or a full feed of whole shelled corn.

Protein Supplement: The equivalent of one of the following protein supplements can be used to meet the need for supplemental protein in this ration.

Lb. of a 32%	*Lb. of a 40%*	*Lb. of a 50%*	*Lb. of a 64%*
2	1½	1¼	1

Mineral Supplement:

A. Calcium: Same as ration 1.

B. Phosphorus: The protein supplement should contain about 1% phosphorus for this ration.

C. Salt and Trace Minerals: 0.07 lb. of trace mineralized salt can be force-fed per head daily, or it can be fed free choice. Under most conditions plain stock salt can be used rather than trace mineralized salt if the protein supplement contains trace minerals.

Vitamins: The vitamin A requirement can be met under most conditions by using the following table:

Lb. of protein supplement per head daily	*Vitamin A needed per lb. of supplement*
2	15,000 I.U.
1½	20,000 I.U.
1¼	25,000 I.U.
1	30,000 I.U.

Feed Additives: The protein supplement should contain levels of additives that will provide the recommended levels. Implant the cattle with one of the growth stimulating compounds.

Ration 5

Roughage and Grain: Ground ear corn full-fed. Supplemental protein, minerals, vitamins, and feed additives should be provided as in Ration 4. Daily gains can be expected to be about 10% lower than in Ration 4, however.