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Proteins for Livestock and Poultry

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Missouri farmers are aware that the present feed situation makes it extremely important to take advantage of every possible source of protein supplements in feeding livestock and poultry. Several departments of the Missouri College of Agriculture have united in presenting the following brief recommendations for making the most of available protein supplies.

Proteins for Beef Cattle

Shortage of protein supplements this season makes it impossible to supply all the protein needed. Beef cattle, though frequently wintered on roughage, need more protein than is supplied in corn stover, corn or sorgo silage, timothy hay, redtop hay, grass hays or other carbonaceous roughages.

Good fall and winter pastures and legume hays may supply part of these needs; in fact 3 to 4 pounds of legume hay per head daily to stocker cattle and 5 to 6 pounds of legume hay to dry beef cows will supply the necessary protein.

If legume hay is not available the usual recommendation is to feed 1 pound per head daily of a protein supplement (such as cottonseed, linseed or soybean meal) to dry beef cows and $\frac{1}{2}$ to 1 pound per head daily to stocker cattle. If fattening cattle are to make their most rapid and economical gains they need $1\frac{1}{2}$ to 2 pounds per head daily of a protein supplement when part of the roughage supplied is legume hay, or 2 to $2\frac{1}{2}$ pounds per head daily if only carbohydrate roughage is available.

Due to the shortage, the limited protein supplements available can perhaps be used most advantageously if fed to young growing calves, to fattening steers fed carbohydrate roughages, and to dry cows due to calve before April 15. Dry cows due to calve next summer can possibly come through in fair condition without protein supplements. Steers receiving legume hay alone as their roughage will make fairly good gains without supplement.

Proteins for Hogs

Young pigs and nursing sows should have first consideration when the supply of protein is limited.

Small grain (which should be fed ground) requires half as much protein supplement as corn.

Good early pasture will supply half the protein needed by hogs.

Include some protein of animal origin in the ration. Although there is a marked shortage of this type of supplement, available supplies can be made to go farther by limiting the amount of animal protein used to 25% of the total protein in the supplement, using vegetable proteins for the balance. An example is a mixture of 3 parts of either soybean, linseed, or cottonseed meal, or a combination of these with 1 part tankage or meat scraps. Such a mixture will contain upwards of 40% protein and, in general, 100 lbs. of the supplement will balance 25 or more bushels of corn fed to hogs on good pasture. Less than 2% of the entire ration then will be tankage or meat scraps, thus conserving the limited supply of these high efficiency feeds.

Self-feed a simple mineral mixture such as equal parts finely ground limestone, bonemeal and salt.

Proteins for Sheep

The best evidence indicates that breeding ewes need about 1/5 pound of digestible protein daily per 100 pounds live weight. But the protein shortage of this season makes it impossible in many cases to supply the full need.

Breeding ewes as well as fattening lambs may be supplied with about all the protein they need by good winter pasture or good legume hay. If neither is available there may be substituted a pound of wheat bran or 1/10 to 1/4 pound protein meal per 100 pounds live weight fed with enough home grown grain to keep sheep in good condition. A 20 per cent increase in protein from 6 weeks before lambing to 60 days after lambs are born is highly beneficial.

Proteins for Horses and Mules

If work horses and mules now in fair flesh can have legume hay as half their roughage or wheat bran as a third of an ordinary grain ration, they should get to spring work in fair condition.

Pregnant mares, coming yearlings and two-year olds will profit most by a daily allowance of one pound protein, or its equivalent in bran or legume hay, per 1000 pounds live weight.

Treatment for worms will help to bring all horses and mules up to spring work in good shape.

Protein for Dairy Cattle

As to the kind of protein required, cows are not as exacting as young calves, hogs, poultry and other non-ruminants. Any high protein concentrate—the one available locally and supplying protein most cheaply—may be used.

The amount of protein necessary will depend largely on the quality of roughage. This suggests three plans of feeding, as follows:

1. If good quality legumes are so plentiful as to supply all the roughage, high protein concentrate need not be more than 5 per cent of the ration—or may even be eliminated altogether. Home grown grains may be used for 70 to 75 per cent, or an even larger part of the ration if oats are included.

2. When good pasture, mixed hay, or legume hay and silage are fed, the grain mix may be farm grains (corn, barley, wheat) 60 per cent, wheat bran or ground oats 25 per cent, and any high protein concentrate 15 per cent.

3. If the cows receive only non-legume roughages, the proportion of high protein concentrate should be increased to 30 per cent and the farm grains reduced to 45 per cent.

Young calves should have the highest quality vegetable, animal or marine proteins available. Dairy calves require whole milk the first few weeks and then may be fed skim milk. It is possible to use limited milk at first and change to a suitable calf starter by the time the calves are 6 to 8 weeks of age. The calf starter should contain about 18 per cent crude protein of high quality with adequate amounts of vitamins A and D and calcium, phosphorus and salt.

Dry cows and heifers should be fed liberally, usually 3 to 7 pounds of grain mix, which may contain equal parts of corn, oats and wheat bran. About 10 per cent of protein concentrate should be added when little or no legume hay or good pasture is available.

Vitamins are ordinarily supplied by good pasture and legume hay. Likewise, with good roughages, there is not likely to be a deficiency of minerals, especially when at least one-third of the

grain mix is made up of wheat milled feeds or high protein concentrates. If pastures and legume hays are the principal roughage and little grain is fed it is well to add 1 to 2 per cent of steamed bonemeal or defluorinated phosphate. When non-leguminous roughage is used, calcium may be supplied in steamed bonemeal or ground limestone.

Salt must always be provided.

Providing Protein for Poultry

While grains and grain by-products constitute the major portion of poultry rations, these grains must be supplemented with protein concentrates in order to secure satisfactory growth or egg production. Poultry mash mixtures ordinarily contain approximately 20 per cent protein. With the exception of starter mashes they are fed in conjunction with grain.

Meat scrap, milk or milk products and soybean oil meal are popular ingredients for providing the extra protein necessary to balance the ration. Skim milk given as a drink in place of water will provide adequate protein.

Starter mash, to give satisfactory results, should contain 7 per cent meat scrap and 15 per cent soybean oil meal.

Laying mash should contain 10 per cent meat scrap and 11 per cent soybean oil meal. Smaller amounts of meat scrap may be used when adjustments for minerals are made.

Good poultry pastures will provide from 5 to 10 per cent of the total ration and reduce the amount of grain and mash consumed. Green succulent material supplements the ration so that deficiencies in the diet are less apt to occur.