

# A COMPARISON of PROTEIN SUPPLEMENTS in the WINTERING RATION of BEEF STEERS

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For many years beef cattle producers of the Black Belt have fed high protein supplements with grass hay for winter maintenance of their herds. Cottonseed meal has been the principal protein supplement fed, but some soybean and peanut meals also have been used. Johnsongrass hay has been the roughage generally fed.

Considerable interest has been shown in the use of commercial range pellets, a number of which are available on the market. Since the price of these pellets usually approximates that of cottonseed meal, the question arises as to whether their value as a concentrate supplement in a wintering ration is comparable to that of cottonseed meal. Also, since there is a considerable price range among pellets available, the question arises as to the relative nutritive value of various commercial pellets.

To compare range pellets with

cottonseed meal in a wintering ration, an experiment was begun in the winter of 1952-53 and continued the next winter. Pellets used were of two different prices, one representing the upper and the other the lower price range.

## PROCEDURE

Seventy Hereford steers ranging in weight from 700 to 1,100 pounds were used in this experiment. The steers in the first year's study were in the lighter weight range. They were divided into three groups for the feeding trials.

Oat straw was used as the roughage because of a shortage of Johnsongrass hay. The ration was balanced to provide protein requirements and to furnish enough total digestible nutrients to produce approximately one-half pound of gain per day. Both the low-priced and the high-priced pellets contained 20 per cent protein. The protein content of the cottonseed meal was 41 per cent. Salt and steamed bonemeal were fed free choice to all lots.

Each group of steers was grazed on approximately 1 acre of permanent pasture per steer during the

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feeding periods, but little forage was available during the wintering seasons. Rotation of pastures was practiced every 2 weeks to offset any variation due to pasture differences.

## RESULTS

The group of steers fed cottonseed meal received 3.06 pounds more oat straw per day than the other groups. The rations included either 1.79 pounds of cottonseed meal or 3.87 pounds of pellets.

Approximately the same daily gain per steer was made in all groups. Total gains per steer for the 76-day feeding period were 43.5 pounds for the cottonseed meal group, 49 pounds for the group fed low-priced pellets, and 54 pounds for the high-priced pellet group.

The average wintering cost per steer was \$10.36 for the cottonseed meal group as compared with \$15.24 and \$17.34 for the low-priced and high-priced pellet groups, respec-

tively. At the prices prevailing during this experiment, feeding a smaller amount of cottonseed meal plus additional roughage resulted in a cheaper winter ration.

## CONCLUSIONS

Protein is the most limited food element needed in a ration consisting of low quality non-legume roughage such as oat straw or low quality Johnsongrass hay. Therefore, when maintenance or a slight daily gain in beef cattle is desired during winter, low quality roughage can be utilized economically if enough protein concentrate is fed with the roughage to satisfy the protein needs of the animals. When such a feeding practice is followed, beef cattle get their energy requirements from the roughage.

Under these conditions, the amount and unit cost of the protein in the supplement should be considered when the most economical wintering of cattle is desired.

Comparison of Protein Supplements in the Wintering Ration of Beef Steers, Black Belt Substation, 2-Year Average, 1952-53 and 1953-54

Group	Daily ration	Steers per group	Gain per steer, 76 days	Cost of gain per steer, 76 days*			Refused straw per steer, 76 days
				Oat straw	Concentrate	Total	
	<i>Pounds</i>	<i>Number</i>	<i>Pounds</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Pounds</i>
No. 1	1.79 cottonseed meal pellet 13.96 oat straw	22	43.5	5.30	5.06	10.36	51.3
No. 2	3.87 low-priced pellet 10.90 oat straw	24	49.0	4.14	11.10	15.24	0.6
No. 3	3.87 high-priced pellet 10.90 oat straw	24	54.0	4.14	13.20	17.34	0.4

\*Prices of feed: oat straw, \$10 per ton; 41% protein cottonseed meal, \$74.39 per ton; 20% protein low-priced pellets, \$75.48 per ton; and 20% high-priced pellets, \$89.76 per ton.