

PROTEIN FEED REQUIREMENTS OF TEXAS LIVESTOCK

Reports of Committees

A & M College of Texas
February 1943

Estimated Requirements of Protein Supplements for
Beef Cattle, Sheep and Angora Goats in Texas
(1943-44)

Beef cattle, sheep and Angora goat production in Texas is very largely on a range basis and depends principally upon native vegetation throughout the major portion of the year. The ranges of the state generally are rather heavily stocked at the present time and are, under the present emergency program, rather intensively grazed in an effort to produce an increased tonnage of meat.

Texas, more than any state, depends upon cottonseed meal or cake as a protein supplement to properly maintain range livestock during seasons when the nutritive values of vegetation are low. Furthermore, this supplement is widely used in rations of fattening beef cattle and lambs in Texas feedlots. Producers of range beef cattle, sheep and Angora goats in Texas do not depend to any large extent upon grain for maintenance purposes. Lacking legume roughages but with a considerable tonnage of carbonaceous roughages, a supplement high in protein content such as cottonseed meal or cake is essential to afford the most efficient use. Cottonseed cake can be fed to range herds with a minimum of labor and less pounds of this protein are required in wintering on native pasturage than any other concentrate. Furthermore, this feed is higher in phosphorus content than the other important vegetable protein supplements.

With a shortage of protein supplements, range livestock of Texas may suffer severely, especially under adverse seasonal conditions. Death losses will be higher, calving and lambing percentages will be lower, and furthermore, meat production under such circumstances is likely to fall short of the established goal.

The following is an estimate of the requirements of 43 per cent protein cottonseed meal or cake or its equivalent for optimum production of beef cattle, sheep, and Angora goats:

Beef cattle,	430,000 tons
Sheep,	96,875 "
Angora goats,	10,300 "
Total,	<u>537,175 tons</u>

Committee:

D. W. Williams
A. L. Smith
J. M. Jones, Chairman

Estimate of Annual Protein and Total Grain Requirements
for Texas Dairy Cattle

Dairy cows (est.) 1,600,000	
Protein concentrates	292,000 tons
Other grain	584,000 "
Calves and heifers, 500,000	
Protein concentrates	18,000 tons
Other grain	54,000 "

These estimates are based on present average methods of feeding roughage. Assuming one-eighth of the roughage from green pasture and legume hay and the balance from carbonaceous roughage.

By increasing the use of temporary pasture and legume hay, including peanut hay to one-third of the roughage requirement, the protein concentrate requirement for cows could be reduced to 150,000 tons. While it is probably impossible to make this much change this year, it should be possible to reduce the requirement to 200 tons by proper emphasis on roughage feeding. Any such reduction would mean a corresponding increase in carbohydrate grains.

Committed:

E. R. Eudaly
G. G. Gibson
C. C. Copeland
C. N. Shepardson, Chairman

Estimated Protein Feed Requirements
for Hogs in Texas (1943-44)

In figuring the protein requirements to meet the swine production goal for 1943, the calculation is based on the report which estimates 350,000 sows to farrow in Texas in the spring of '43 and that the same number will farrow in the fall of '43. It is also estimated that each sow will require one ton of concentrate feed per year. By figuring 4 per cent of this amount as animal protein and 8 per cent as vegetable protein feeds, the 350,000 sows will require, during 1943, 14,000 tons of animal protein feed and 28,000 tons of vegetable protein feed. This totals 42,000 tons. It is also estimated that it will require one male for each 20 sows or a total of about 17,000 males. If each male requires one ton of concentrate per year, 4 per cent of which is animal protein feed and 8 per cent is vegetable protein, a total of 680 tons of animal protein feed and 1,360 tons of vegetable protein will be required for the 17,000 males. This gives a total for both sows and males of about 44,000 tons of protein feeds, 15,000 tons of which is animal protein feed and 29,000 tons of which is vegetable protein feed. Probably 4,250,000 hogs will be produced. This estimate, however, is based on 3,500,000 pigs.

Assuming that 3,500,000 pigs will be fed to a 225-pound market weight and that each pig will require 900 pounds of total feed, 4 per cent of which is animal protein feed and 8 per cent of vegetable protein feed per pig. This gives a total estimated requirement of 126,000 tons of vegetable protein feeds and 63,000 tons of animal protein feeds, or a total of 189,000 tons of both animal and vegetable protein feeds.

From these totals we get a requirement for sows, males, and market pigs, 155,000 tons vegetable protein feeds and 78,000 tons of animal protein feeds, or a grand total of 233,000 tons of protein feeds.

If it happens to be a year where green pastures of all kinds are plentiful, the above requirements could be reduced by at least 30 per cent. There will be also a large number of pigs, especially in East Texas and in sections where masts may be plentiful, that will probably get their first 75 or 100 pounds of growth under range conditions principally. As they go in the feed lots as feeder pigs, they probably will be carried to a greater weight than 200 pounds which will not in the long run decrease the protein requirements for this class of pigs to any great extent, especially if they are carried to a market weight of around 275 pounds.

Undoubtedly several hundred thousand pigs will be fed out at garbage feeding plants which are located near the Texas army camps. Although these pigs, after they are placed on garbage will not require any protein feed, a large number of these pigs are shipped into the state to begin with and the Texas pigs

that are used at the garbage plants will need considerable protein from birth until they go on the garbage feeding floors and the brooding animals that produced these pigs will also need protein supplement feeds, if they are to produce efficiently.

Committee:

E. M. Regenbrecht
F. I. Dahlberg
Fred Hale, Chairman

Estimated Protein Feed Requirements
for Poultry in Texas
(1943-44)

These estimates of poultry feed requirements are very conservative. They are secured by computing the real requirements by months of the different classes of poultry, using United States Department of Agriculture estimates. It was estimated that laying hens should have 8 pounds of high protein feeds annually, that fryers should have 2 pounds to produce 2 1/2 pound fryers, that pullets should have 2 1/2 pounds over and above that eaten during the fryer growth period, and that market turkeys should have 15 pounds of high protein feed to grow out a 15-pound bird. Since poultry in the state is not adequately fed, the committee used, in making up the requirements for poultry, only one-fourth of the estimated requirements for laying hens, one-third of the requirements for fryers and pullets, and one-fifth of the requirements for turkeys. If, for patriotic or economic reasons, the poultrymen, in their feeding, wish to approximate the requirements of poultry, these estimates will be too low.

The estimates on concentrated protein feeds are based on animal protein feeds containing a minimum of 50 per cent protein and vegetable protein feeds containing a minimum of 43 per cent protein. With this quality of feed, the committee recommends that animal protein may be used to make up one-third of the concentrated protein feeds and that high protein vegetable feeds will make up the other two-thirds of protein rich feeds. These estimates are for protein in addition to that supplied by grains and wheat mill feeds.

Committee:

D. H. Reid
E. D. Parnell
Geo. P. McCarthy
Ross M. Sherwood, Chairman

Summary Table of Poultry Feed Requirements
(1943-44)

Period	Protein Feeds#			Wheat	Grains	Total
	Animal	Vegetable	Total	mill feed		
	tons	tons	tons	tons	tons	tons
First three months	4,471.2	8,942.4	13,413.6	26,827.2	93,895.2	134,136.0
Second three months	7,545.4	15,090.8	22,636.2	45,272.4	158,453.4	226,362.0
First six months	12,016.6	24,033.2	36,049.8	72,099.6	252,348.6	360,498.0
Third three months	4,992.7	9,985.4	14,978.1	29,956.2	104,846.7	149,781.0
Fourth three months	3,768.7	7,537.4	11,306.1	22,612.2	79,142.7	113,061.0
Second six months	8,761.4	17,522.8	26,284.2	52,568.4	183,989.4	262,842.0
Total	20,778.0	41,556.0	62,334.0	124,668.0	436,338.0	623,340.0

#Animal protein feed minimum 50% protein

Vegetable protein feed minimum 43% protein

Total Annual Poultry Feed Requirements by Months
(1943-44)

Month	Concentrate Protein Feed				Other Feed		Total
	Laying Hens	Fryers & pullets	Turkeys	Total	Wheat mill feed	Grain	
	tons	tons	tons	tons	tons	tons	
January	3,502.9		159.3	3,662.2	7,324.4	25,635.4	36,622.0
February	3,327.8	938.3	159.3	4,425.4	8,850.8	30,977.8	44,254.0
March	2,977.5	2,189.2	159.3	5,326.0	10,652.0	37,282.0	53,260.0
April	2,627.2	4,065.8	212.4	6,905.4	13,810.8	48,337.8	69,054.0
May	2,101.8	5,629.5	212.4	7,943.7	15,887.4	55,605.9	79,437.0
June	1,839.0	5,629.5	318.6	7,787.1	15,574.2	54,509.7	77,871.0
July	1,839.0	4,378.5	531.0	6,748.5	13,497.0	47,239.5	67,485.0
August	1,926.6	2,189.2	743.4	4,859.2	9,718.4	34,014.4	48,592.0
September	2,101.8	312.7	955.9	3,370.4	6,740.8	23,592.8	33,704.0
October	2,276.9		1,062.0	3,338.9	6,677.8	23,372.3	33,389.0
November	2,977.5		1,062.0	4,039.5	8,079.0	28,276.5	40,395.0
December	3,502.8		424.8	3,927.6	7,855.2	27,493.2	39,276.0
Total	31,000.8	25,332.7	6,000.4	62,333.9	124,667.8	436,337.3	623,339.0

Table 1. Estimated Quantity of Vegetable Protein Feed Needed in Texas by Kinds of Livestock for Periods March 1, 1943 to August 1, 1943 and August 1, 1943 to August 1, 1944

Item	Mar. 1, 1943 to Aug. 1, 1943	Aug. 1, 1943 to Aug. 1, 1944
	tons	tons
Dairy	129,220	310,000
Beef	140,000	430,000
Sheep	20,000	96,000
Goats	3,000	10,000
Hogs	64,550	155,000
Poultry	24,000	42,000
Total	380,770	1,043,000

Table 2. Estimated Quantity of Vegetable Protein Feed Available in Texas for the Periods March 1, 1943 to August 1, 1943 and August 1, 1943 to August 1, 1944

Item	Mar. 1, 1943 to Aug. 1, 1943	Aug. 1, 1943 to Aug. 1, 1944
	tons	tons
Meal:		
Cottonseed	104,860	416,000
Peanut	21,980	132,000
Soybean	13,160	17,000
Total	140,000	565,000

Table 3. Difference Between Estimated Quantity of Vegetable Protein Feed Needed and Estimated Quantity Available for Periods March 1, 1943 to August 1, 1943 and August 1, 1943 to August 1, 1944

Item	Mar. 1, 1943 to Aug. 1, 1943	Aug. 1, 1943 to Aug. 1, 1944
	tons	tons
Needed	380,770	1,043,000
Available	140,000	565,000
Difference	240,770	478,000

Source of Information:

Table 1. Livestock Specialists

Table 2. Total feed figures for period March 1 to August 1, 1943, obtained from Cottonseed Crushers Association. August 1, 1943, to August 1, 1944, figures estimates of committee based on past acreages and yields.

Table 3. Calculated from Tables 1 and 2.

Table 4. Estimated Quantity of Feed Grain Needed in Texas by Kinds of Livestock for Periods March 1, 1943 to August 1, 1943 and August 1, 1943 to August 1, 1944

Item	Mar. 1, 1943 to Aug. 1, 1943	Aug. 1, 1943 to Aug. 1, 1944
	tons	tons
Dairy		638,000
Beef		100,000
Sheep		12,500
Goats		
Hogs		1,707,000
Poultry		436,000
Workstock		1,000,000
Total		3,893,500

Table 5. Estimated Quantity of Feed Grain Available in Texas for the Periods March 1, 1943 to August 1, 1943 and August 1, 1943 to August 1, 1944

Item	Mar. 1, 1943 to Aug. 1, 1943	Aug. 1, 1943 to Aug. 1, 1944
	tons	tons
Corn		1,940,400
Grain sorghums		1,411,200
Oats		480,000
Barley		74,400
Wheat	not included	not included
Total		3,906,000

Table 6. Difference Between Estimated Quantity of Feed Grain Needed and Estimated Quantity of 1943-44 Production in Texas for Periods of March 1, 1943 to August 1, 1943 and August 1, 1943 to August 1, 1944

Item	Mar. 1, 1943 to Aug. 1, 1943	Aug. 1, 1943 to Aug. 1, 1944
	tons	tons
Needed		3,893,500
Production		3,906,000
Difference		12,500

Source of Information:

Table 4. Livestock Specialists

Table 5. Calculated from estimated acreages in principal grain crops assuming 10-year average yields.

Table 6. Calculated from Tables 4 and 5.