

OKLAHOMA EXPERIMENT STATION,

STILLWATER, OKLAHOMA.

WHEAT FEEDING.

BULLETIN 13, DEC. 1894.

J. C. NEAL.

Bulletins of the Station Sent Free to All Making Application to the Director.

SENTINEL PRINT, STILLWATER, OKLA.

BOARD OF REGENTS

OF THE AGRICULTURAL AND MECHANICAL COLLEGE AND EXPERIMENT STATION.

HON. WM. C. RENFROW, Governor, Ex-Officio,	Guthrie, Okla.
HON. JOHN R. CLARK, President,	Stillwater, Okla.
HON. F. CARUTHERS, Treasurer,	Oklahoma City, Okla.
HON. H. E. GLAZIER,	Orlando, Okla.
HON. J. W. HOWARD,	Edmond, Okla.
HON. J. D. DE BOIS,	Guthrie, Okla.

J. C. NEAL, Director,	Entomologist.
A. C. MAGRUDER,	Agriculturist.
G. L. HOLTER,	Chemist.
F. A. WAUGH,	Horticulturist.

W. T. WEBSTER,	Machinist.
A. N. CAUDELL,	Assistant in Entomology.
B. J. CONLEY,	Farm Superintendent.
T. M. UPSHAW,	Secretary.

Wheat Feeding in Oklahoma.

J. C. NEAL, DIRECTOR.

The Oklahoma farmer is, or should be, very much interested in the experiments and studies that are now in progress over a considerable portion of the United States in feeding wheat or wheat products to cattle and hogs. The experience of the few years of culture of the soil of Oklahoma shows very plainly that wheat is to be the crop on which the farmer of these broad plains can place most dependence.

In this territory the climatic conditions as to growth and ripening of wheat are nearly perfect. There is little danger from freezing out, and the frequent winter rains, with mild weather, bring the plant up to the middle of April in fine shape, so that the usual interval without rain, extending past the period of harvest, ripens the grain, and allows it to be gathered and threshed with no danger whatever from moisture.

Taking into account all the conditions necessary, Oklahoma is almost a typical wheat country, and till lately wheat was a paying crop, needing but a slight outlay of money or labor to give munificent returns. Corn, its only rival as a food crop, has too many enemies in this mild climate, as insects, late frosts and extreme heat over a large proportion of the territory will make corn always an uncertain crop.

With so large a wheat crop, and prices so unsatisfactory, there has been a decided anxiety to ascertain some method to profitably utilize the surplus. Many inquiries have reached the Station as to the best manner of feeding to get the best results as well as the propriety of feeding wheat. This Experiment Station has had no opportunity to test this matter, but fortunately the subject

Oklahoma Experiment Station.

has been quite thoroughly investigated in other states, and from various reports and bulletins I take the liberty of making copious excerpts to answer an evident eagerness to learn what and how to do in the case.

Numerous experiments and analyses show the amount of the daily food given animals used in making flesh or fat, hence we have what may be called a standard ration to produce certain effects. Cows in milk and fattening steers need different rations, and these have been well established. For instance, a milk cow wants 2.5 pounds of protein or flesh forming material and 13.5 pounds of digestible starchy and fatty matter each day, if her gross weight is 1,000 pounds, and less in proportion to that weight, while fattening hogs want 4 pounds of protein and 24 pounds of starch and fat daily for the thousand pounds of weight.

A six months pig, weighing 125 pounds requires .54 pounds of protein and 2.71 pounds of fat making material daily, while a fattening steer weighing 1,200 pounds would need 3 pounds of protein and 18.6 pounds of starchy or fatty material as a daily ration.

Age and weight as well as the purpose of feeding all are factors in this complex problem, as well as exposure to storm and cold. Too many Oklahoma cows and hogs only have the shelter of a wire fence in a blizzard, so will not give the same results from the standard ration as they would if properly protected.

1,000 pounds of live weight require daily—

Oxen at rest,	protein,	0.7 pounds;	starch and fat,	8.37 pounds.
Oxen at work,	“	2.4 “	“ “	14.45 “
Oxen fattening,	“	3.0 “	“ “	16.55 “
Milk cows,	“	2.5 “	“ “	13.50 “
Young cattle,	“	2.5 “	“ “	15.00 “
Fattening hogs,	“	4.0 “	“ “	24.00 “

100 pounds of

Wheat straw contains,	protein,	0.8 pounds;	starch and fat,	36.69 pounds.
Oat straw	“	“ 1.45	“ “ “	43.41 “
Wheat	“	“ 9.3	“ “ “	60.13 “
Shorts	“	“ 13.26	“ “ “	52.70 “
Middlings	“	“ 13.35	“ “ “	57.62 “
Cotton seed	“	“ 17.10	“ “ “	65.52 “
Corn (Maize)	“	“ 6.25	“ “ “	67.59 “

With the above data we can approach the subject of wheat feeding intelligently. While in theory, rolled or coarsely ground wheat is a very nearly perfect stock food, a few points are very needful to be observed. It is a new and very agreeable food to most of our animals, and great care should be given at first to avoid over-feeding, which in the case of horses and cattle might lead to serious attacks of indigestion, founder or colic.

For some time, therefore, it should be given mixed with coarse food such as chopped hay, straw or oats.

While many think that feeding wheat alone is the better plan, and circumstances often make this a necessity, still the general weight of authority is in

favor of using it as the basis of a ration, adding other foods for variety and to balance the deficiencies, thus preventing waste.

Wheat and oats contain practically the same amount of protein and each has about a third more of this element than corn (maize), while corn (maize) has a larger per cent. of fat-making elements, making the mixing of wheat and corn better for finishing the fattening of animals than either food alone.

In Ohio 438 pounds of wheat made 100 pounds of increase in live weight of hogs, while in Ontario and South Dakota it took 486 pounds of wheat to produce the same result. It is more than probable than in Oklahoma it will take less food than in the colder locations that have reported, to produce this increase.

In Kansas it has been ascertained that in feeding hogs, one bushel of wheat made an average of 11 pounds of live pork as a fair return. It was also found that as an average, ten bushels of wheat as a yield per acre, cost 56.5 cents per bushel; 15 bushels yield cost 48 cents per bushel; 20 bushels yield made the cost 34.8 cents per bushel, and 25 bushels per acre made the cost 31 cents per bushel. The average for Oklahoma last year was reported by the government at 16.5 bushels per acre, which at the Kansas estimate would make the cost per bushel 43.6 cents per bushel.

This is much too high, as here the cost of the land, and the interest on its value, are not factors in the problem yet. It is only for us to ascertain if wheat, which is a certain crop and comparatively easily raised, can be made profitable in condensing it, as it were, into a salable and portable bulk.

It will be readily seen, that with live pork selling at 3.5 cents per pound, the farmer would realize 38.5 cents for each bushel of wheat fed; at 4 cents per pound he would get 44 cents per bushel; at 4.5 cents it would be 49.5 cents per bushel; at 5 cents it would be 55 cents, and at 5.5 cents he would get 60.5 cents per bushel.

Adding 5 cents per bushel as the cost of grinding or rolling the wheat before feeding, and with pork selling in the home market at 3.6 cents per pound, it is questionable if any profit whatever could be realized.

With the above statements any farmer can easily estimate the probable return for his locality, and be guided accordingly.

A ration of 2.5 pounds of crushed wheat and the same amount of shorts, mixed, given young pigs daily will be a capital food, while a year old hog will need a ration of 5 pounds wheat and 2 pounds shorts.

For a fattening steer 20 pounds of wheat, 5 pounds of bran and 10 pounds of good straw or hay make a good ration.

Where cotton seed can be cheaply obtained, it will pay to alternate wheat feeding with a mixture of cotton seed, wheat and wheat straw; thus for a milk cow weighing 750 pounds, the daily ration should be 9 pounds wheat, 7.5 pounds chopped wheat straw and 6 pounds ground cotton seed.

To get the best results in all cases wheat should be coarsely ground, to allow the digestive processes of the stomach full sway, as when fed whole fully one-fourth passes away undigested. Soaking the crushed wheat from 3 to 10 hours is also recommended, though it should not be allowed to become sour.

S U M M A R Y .

It may be stated now, as the summary of results of all experiments made in feeding wheat, that:

Wheat is perhaps the best of all foods for fowls in stimulating the production of eggs.

Fed to cows it is exceptionally valuable as a milk producer, much better than corn.

Mixed with bran, cotton seed, oil cake or corn it is a superior food for fattening cattle.

Mixed with oats, bran or corn it is better than either alone for work horses

For young cattle or hogs, it makes quicker growth than corn.

Fed to suckling sows or young pigs it is exceedingly valuable.

It is recommended to Oklahoma farmers as a food for all classes of stock, when the market price of wheat is less than 50 cents per bushel.

The subject of the best manner of feeding wheat to steers and hogs will soon be investigated by the Oklahoma Experiment Station. The experiment will begin January 1, 1895, and is designed to determine:

The value of wheat as a base of food for fattening cattle in Oklahoma.

The value of wheat combined with straw and fodder for fattening cattle.

Best condition of wheat for fattening; that is to say, whether dry, soaked, ground, cracked or whole.

Outside or corral feeding. One hog will follow each animal in the experiment.

The cattle will be grade shorthorn two-year old steers.

The results for this section will be given to the public in the near future.

For facts and data, thanks are due Bulletins of Kansas, Utah, Ontario, Oregon, U. S. Department of Agriculture, South Dakota, New Hampshire and the Report of the Kansas State Board of Agriculture for September, 1894, as well as many citizens of Oklahoma.

FREE.

BULLETIN 13.

Oklahoma Experiment Station,
STILLWATER, OKLA.

A handwritten signature in black ink, appearing to read "J. S. Neal". The signature is written in a cursive style with a large, looping initial "J" and a long, sweeping underline.

Director.