			Weigh	Misc			12	0 23	3.0		7.67	10.33	=	į
PHYSICAL AND CHEMICAL ANALYSES OF HOTEL RACK OF LAMB CARCASSES	Rufus F. Cox, D. L. Mackintosh, Ed F. Smith, J. S. Hughes	Table—(All weights are averages for the lots expressed in gram)	Percent	Total	Lean		32.63	34.03	07.00 08.10	07'00	36.37	33.21	33.59	,
			Weight	Total	Lean		776.33	778 33	17 51   976 67   98 16	010.01	774.67	19.15 728.33 33.21 10.33	824.33	
			Total   Weight   Percent  Weight   Percent  Weight   Percent  Percent   Weight   Percent   Weight   Percent	Bone Total			17.36	17.02	17.51	10.11	19.04	19.15	18.24   824.33   33.59   11	
				Bone			6.0 411.67 17.36 776.33 32.63	390 33 17 02 778 33 34 03 0 93	499	777	406.33   19.04   774.67   36.37	420	448	
				Total Rib-Eye Bone	Muscle	Fat	ı	0 25		5.5		5.2	4.9	
				Total	Fat		34.12	32.75	30.57	0.00	27.76	32.44	31.72	,
ALYSES	ckintosh	expresse	Weight	Total	Fat		811.33	752.33	745 67		592	717.67	785,33	
CAL AN	D. L. Ma	the lots	Percent	Eye   Outside Outside Total	Fat		21.76	338   14.78   495.33   21.17   752.33   32.75	19.73		350.01 10.10 395.67 17.99 592	21.84	21.13	
CHEMI	. Cox, ]	ges for	Weight	Outside	Fat		517	495.33	478	I C	395.67	484.67	525.33	
AL AND	Rufus F	re avera	Percent	Eye	Rack   Muscle   Muscle		13.9	14.78	14.23	27.11	97.61	14.27	15.54	
HYSIC/		eights a	Weight	Eye	Muscle		330.67	338	344.67	2000	220.01	313.67	382	
_		—(All w	Total	Weight	Rack		2378.67 330.67 13.9 517 21.76 811.33 34.12	2291	2425.33 344.67 14.23 478 19.73 745.67 30.57	10101	12121	2199.67 313.67 14.27 484.67 21.84 717.67 32.44	VI   2461.67   382   15.54   525.33   21.13   785.33   31.72   4.9	
		Table		o N			н	Ħ	H	111	۲ ا	>	M	

| अन्यन्त्र | . घ्रा

OBSERVATIONS

- 1. Lambs fed corn and alfalfa in medium concentration (crude fiber: digestible nutrient ratio of 1:4) gained more than lambs fed either more concentrated or more bulky combinations of the same
- 2. Lambs fed the ration of medium concentration also made more efficient gains, as measured by the gain per 100 pounds of digestible nutrients consumed, than lambs on more, or on less concentrated rations.
- 3. The carcass grading of the lambs, while revealing no great differences, was somewhat higher for those fed the rations of medium concentration.
- No consistent differences in dressing percentages was indicated in these different levels of feeding.
- The differences shown in tissue deposition did not appear to justify definite conclusions.
- The mechanical separation of lean and fat of the hotel racks and the chemical analyses of the rib-eye muscles gave no evidence that the lambs fed the more concentrated rations were any better finished than those fed the more bulky rations.

## Project 236: Relationship of Physical Balance and Energy Value in Sheep Rations.

Rufus F. Cox - J. S. Hughes 1948-49 Progress Report

#### INTRODUCTION

It has been demonstrated that the rate of gains and the efficiency of feed utilization by fattening lambs are associated closely with the physical nature of the ration. The manner in which physical balance affects feed utilization however is not known.

The objects of the experiments now in progress are:

- 1. To study additional factors associated with the physical balance of the ration, and,
- 2. To make further tests of the efficiency of bicarbonate of soda in reducing losses arising from the feeding of rations which are improperly balanced physically.

EXPERIMENTAL PROCEDURE

- Lot 1 Corn and alfalfa hay medium concentration. (Crude Fiber: Total Digestible Nutrient Ration - CF:TDN - 1:4)
- Lot 2 Corn and alfalfa hay highly concentrated. (CF:TDN Ratio 1:55.)
- Lot 3 Corn and alfalfa hay plus Bicarbonate of Soda (CF:TDN Ratio 1:55.)
- Lot 4 Corn and alfalfa hay (Lambs vaccinated against enterotoxemia) (CF:TDN Ratio 1:55)
- Lot 5 Corn and Pelleted alfalfa (CF:TDN Ratio 1:55.)
- Lot 6 Corn and Pelleted alfalfa plus Bicarbonate of Soda (CF:TDN Ratio 1:55.)

Results are being measured by weight gains and by observations of response to feeding. Clinical studies will be made of any cases of digestive disturbances which may occur.

Certain other determinations also are being made such as the pH of the blood, urine and rumen contents and the CO2 content of the blood as affected by the physical nature of the ration.

This experiment has not progressed sufficiently to justify any con-

clusion at this time (April 20, 1949). It is becoming evident however that the lambs which are receiving their roughage in pelleted form are ruminating little or none, in contrast to those which are receiving coarsely ground hay. They also are consuming less concentrated feed. Bicarbonate of soda appears to have stimulated the appetite of the lambs receiving corn and alfalfa pellets.

The old digestive disturbances which have occurred to date have been of a mild form, evidenced by vomiting of corn by the lambs in lot

2 receiving the highly concentrated ration without soda.

# Project 110: Swine Feeding Investigations

## EXPERIMENT I—SUMMER 1948

C. E. Aubel

# THE VALUE OF MUSTARD SEED OIL MEAL\* AS A PROTEIN SUPPLEMENT FOR FATTENING PIGS ON ALFALFA PASTURE

Last year at the Livestock Feeders' Day, results of experiments were given on the use of mustard seed oil meal as a protein supplement for fattening pigs on alfalfa pasture. The results showed that mustard seed oil meal was an excellent protein feed when mixed with tankage and other protein supplements and self-fed free choice. Generally the gains were as cheap or cheaper than where tankage alone was fed and the daily gain were somewhat more rapid with a lower feed consumption.

In the tests reported last year the mustard seed oil meal made up as much as 50 percent of the protein mixtures with tankage in some of the lots and at this level proved to be entirely palatable. The results of feeding it in such large proportions were so satisfactory that it was desired to ascertain whether it were possible to increase further the amount of mustard seed meal in the mixture with tankage and still get good results. Consequently two lots of pigs were fed this past summer with an increased percentage of the mustard seed oil meal.

## EXPERIMENTAL PROCEDURE

In the experiment reported herein, three lots of pigs were self-fed shelled corn, on a good stand of alfalfa pasture. Lot 1, the control lot, received 60 percent tankage self-fed. Lot 2 was self-fed a protein mixture of tankage 25 percent, mustard seed oil meal 75 percent. Lot 3 was self-fed a protein mixture of tankage 15 percent, mustard seed oil meal 85 percent. The alfalfa pasture was of excellent quality and ample at all times.

The following table gives a summary of the record of this experi-

ment:

### EXPERIMENT I—SUMMER 1948

THE VALUE OF MUSTARD SEED OIL MEAL IN PROTEIN FEED MIXTURES AS A SUPPLEMENT TO SHELLED CORN FOR FATTENING SPRING PIGS ON ALFALFA PASTURE

### C. E. Aubel

Ration	Tankage(Self-fed)	Tankage 25% Mustard Seed 75% (Self-fed)	Tankage 15% Miustard Seed 85% (Self-fed)
Lot number:	1	2	3
Number pigs in lot:	10	10	9
Average Initial Weight per pig:	54.40 lbs.	58.00 lbs.	59.11 lbs.
Average Final Weight per pig:	250.20	231.75	206.33
Average Total Gain per pig	195.80	173.75	147.22

1.84

6.41

347.03

\$16.11

22.98

.42

1.63

5.84

.12

.38

356.83

7.75

23.27

\$16.40

1.38

5.33

.06

.37

395.26

4.70

26.69

\$18.10

(June 10, 1948 to September 24, 1948—106 Days)

Shelled Corn (Self-fed) Alfalfa Pasture

FEED PRICES CHARGED: Shelled corn, \$2.40 per bushel; Tankage, \$110.00 per ton; Mustard Seed Meal, \$70.00 per ton.

Average Daily Gain per pig:

Average Daily ration per pig:

Mustard Seed Meal

Mustard Seed Meal

Feed Cost per 100 pounds gain:

Feed Consumed per 100 pounds gain:

Shelled corn

Shelled Corn

Tankage

Tankage

METHODS OF FEEDING: All lots were self-fed shelled corn. The protein supplements were mixed in the proportions indicated and self-fed in a separate compartment.

### OBSERVATIONS AND CONCLUSIONS

(1) Mustard seed oil meal when mixed with tankage at the rate of 75 percent mustard seed oil meal and 25 percent tankage and fed as a protein supplement did not make as rapid daily gains as was made by pigs receiving tankage as the only supplement. The tankage-alone fed pigs gained 1.85 pounds daily and the 75 percent-25 percent-supplement fed pigs gained 1.63 pounds. The amount of feed consumed per 100 pounds gain was larger with the 75-25 mixture than on tankage alone. The cost of gains likewise was a little greater becouse of this increased consumption. However, the gains were satisfactory.

(2) When the supplementary mixture consisted of 85 percent mustard seed oil meal and 15 percent tankage, the rapidity of gains was further decreased, and the feed consumption was increased with a

corresponding increased cost of 100 pounds gain.

(3) From the results of this experiment it can be said that although feeding mustard seed oil meal up to 50 percent of the protein mixture gave excellent results, increasing it further to 75 and 85 percent had the affect of slowing the daily gains and increasing the amount of feed required for 100 pounds gain and increasing the

<sup>\*</sup> The mustard seed oil meal used in this experiment was furnished through the courtesy of the Kansas Soybean Mills Inc., Emporia, Kansas.