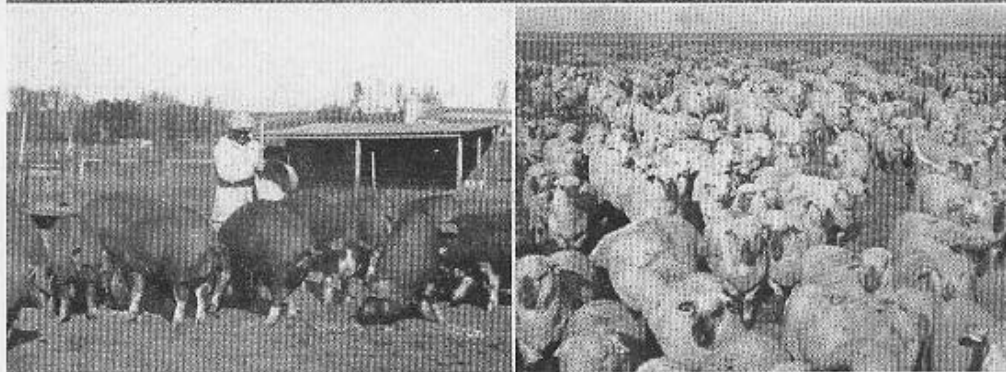


E. F. Smith

THIRTY-FOURTH ANNUAL

Livestock Feeders' Day

May 3, 1947



DEPARTMENT OF ANIMAL HUSBANDRY

Kansas Agricultural Experiment Station

Manhattan, Kansas

THIRTY-FOURTH ANNUAL LIVESTOCK FEEDERS' DAY

Kansas State College
Manhattan, Kansas

Saturday - May 3, 1947

8 - 9:30 a.m. - Inspection of beef cattle, hogs and sheep.

9:30 a.m. - General Meeting - North Pavilion.

Presiding - Fred Heine, Lucas, Kansas
President, Kansas Livestock Association.

Contributions of W. E. Campbell, A Pioneer Kansan, in the Development of the Livestock Industry - C. W. McCampbell, Professor of Animal Husbandry.

Results of Lamb Feeding Tests - Rufus F. Cox, In Charge of Sheep Investigations.

Outlook in Research - R. I. Throckmorton, Dean, School of Agriculture; Director of Agricultural Experiment Station.

Meeting the Problems of the College - A. R. Jones, Comptroller, Kansas State College.

Livestock and Meat Outlook - R. J. Eggert, Associate Director, Department of Marketing, American Meat Institute, Chicago, Ill.

Noon - Luncheon sponsored by the Kansas Livestock Association, and served by the Block and Bridle Club.

1:15 p.m. - Afternoon Program - North Pavilion.

Special Feature - Block and Bridle Club.

Presentation of Kansas Beef Production Contest Winners - Walter Atzenweiler, Agricultural Commissioner, Chamber of Commerce, Kansas City, Mo.; Phillip W. Ljungdahl, Extension Animal Husbandman; Lot F. Taylor, Extension Animal Husbandman.

Results of Cattle Feeding Tests - A. G. Pickett, In Charge of Pasture Utilization Investigations; A. D. Weber, Head, Department of Animal Husbandry.

Factors Influencing Rate of Gain, Quantity of Feed Consumed and Carcass Grade - F. W. Bell, Professor of Animal Husbandry; David L. Mackintosh, in Charge of Meat Investigations; A. G. Pickett.

Effects of Cattle Grub Treatment - F. W. Bell; George A. Dean, Professor of Entomology.

Results of Swine Feeding Tests - C. E. Aubel, In Charge of Swine Investigations.

Open Forum on Livestock Problems (Questions submitted by the Audience).

OUTLOOK IN AGRICULTURAL RESEARCH

R. I. Throckmorton

Never before has there been as much interest in research in the United States as at the present time. This increased interest in research is not limited to this country but is evident throughout the world. The general knowledge of the part research results played in the design and production of the implements of war stimulated research to a marked degree. Although the men in military service severely criticized the quality of their rations, as was their privilege, they were better fed than were our troops during any previous war, because of the results of research. Agricultural production reached unexpected heights during the war years, although there was a definite lack of man power and equipment, as a result of favorable climatic conditions for crop production and as a result of research. Through research, varieties of grain, forage, fibre and oil producing crops of high yielding capacity had been produced; types of livestock capable of rapid gains had been developed; improved feeding and management practices had been introduced.

These accomplishments were possible not because of the research that was conducted during the war but because of the basic and applied research carried on by industry, private research agencies, experiment stations, etc., over a period of many decades previous to the war. As a matter of fact, much of the research work, especially in agricultural fields, was materially reduced during the war and the men devoted their energies to production.

During the earlier days, much of the research work in agriculture was in the field, or applied research. That is, the projects were such as could be expected within a short time to yield results that could be applied to production. This type of research could be conducted by men of good but limited training, and the cost was not high. The agricultural industry has reached a point in development where its needs can no longer be met through the more simple types of applied research.

Research in agriculture must be based more on fundamental research in the future than it has in the past. This means research first in the basic sciences to establish facts and then application of the facts to research in agriculture. Through research in Chemistry and Genetics, the doors can be opened to vast fields of information that will lead to outstanding improvements in livestock and plant breeding, livestock and plant nutrition, and livestock and plant management and sanitation. Much of the basic information is available in many fields, but the time-consuming task of applying the basic information to applied research has hardly been started. This type of research upon which we must depend requires well-trained men who are well informed in the basic sciences and who have a thorough understanding and working knowledge of the phase or phases of the agricultural industry to which the research results are to be applied.

The agricultural research of the future will, in addition to requiring better-trained research workers, be more costly, require more special equipment, and in many cases require more time to obtain results than have many of the lines of research in the past. Some of the problems will of necessity because of their very nature, be approached on a regional basis and because of their cost will be financed by state and federal funds. A proposed beef cattle breeding project is an excellent example of this type of research.

One state experiment station could not be expected to have the facilities, trained staff and funds to finance such an undertaking. It is believed that this type of research would lead to results that would be of great value to the beef cattle industry by developing types of animals that would be better adapted to our environmental conditions than are the present types and also types that would make more economical gains than do the present types.

A beef cattle breeding project has been planned on a regional basis; when funds become available from the Flannagan-Hope Act, passed by the last Congress, it will be initiated.

New discoveries in nutrition point definitely to the need for expanded research in Animal Nutrition. This means cooperation between the nutrition chemist and the livestock man who is well-trained in both Animal Husbandry and Chemistry. In certain cases, the forage crops men and the soils men will be needed to aid in solving the problems. Methods must be developed whereby feeds will retain a higher percent of their vitamin content just as methods must be developed whereby livestock will have access to high vitamin feeds a higher percent of the time than they have at present. We must determine why feeds, including grasses, produced in certain areas are of lower feeding value than those produced in other areas, and how the deficiency may be overcome. Is the difference due to variations in the calcium, phosphorus, potassium, magnesium or nitrogen content of the soil? Is the difference due to deviations in the content of some of the less abundant elements as manganese, copper or iodine, the lack of which could influence the quantity and quality of feed crops?

The nutrition problems of the type mentioned will require a combination of field, feed lot and laboratory studies. Such projects have been planned, and we hope to conduct the studies in cooperation with other states and to finance the work with Flannagan-Hope funds when they become available.

The fact that many individuals and commercial organizations are supplying the Agricultural Experiment Stations with funds for the employment of research assistants to work on specific projects, or to cover the entire cost of a given research project, is further proof of an increased interest in agricultural research. This type of financial assistance, which existed in only a few special cases a few years ago, has grown to a point where it has materially strengthened our research resources.

The research needs are great and the problems which need to be solved through research are complex. Some of the problems need immediate attention and can be solved in a relatively short period of time after funds become available. Other problems will require several years of research work and the cooperation of several states and the United States Department of Agriculture.

The outlook in agricultural research is excellent because many of the basic facts relative to the problems needing attention have been determined, because men are being well-trained for research, and because the public is more receptive than ever before to the idea of obtaining facts through research.

CONTRIBUTIONS OF W. E. CAMPBELL, A PIONEER KANSAN, IN
THE DEVELOPMENT OF THE LIVESTOCK INDUSTRY

by

C. W. McCampbell

Wilbur Emery Campbell was a courageous, clean living, forward looking, public spirited, dynamic personality who made a notable contribution to the building of the firm foundation upon which the present greatness of Kansas rests.

He was born on a farm near Brownsville, Pennsylvania, January 26, 1847. While still a small child his parents moved to a farm near Knoxville, Iowa, where he grew into a rugged, resourceful, reliable farm lad and developed a great love for livestock.

On December 12, 1863, at the age of sixteen, he joined the third Iowa Cavalry with which he served until mustered out at Atlanta, Georgia, August 9, 1865. While serving in the Army he received three minor wounds and was captured twice but escaped each time and was soon back with his regiment.

Mr. Campbell came out of the Army only a boy in years, but a mature man in poise and self reliance. His first love was farming and livestock production, but being without capital he sought and found employment on the job of building the Union Pacific westward from Omaha. It was his crew that laid the rails into Cheyenne, Wyoming, November 18, 1867, and it was here that he heard a new market was being developed at Abilene, Kansas which would provide an outlet for hundreds of thousands of Texas Cattle. It was also here that he heard glowing accounts of the possibilities that southern and southwestern Kansas offered as a cattle producing area. These reports interested him greatly and early in 1868 he and a young friend landed in the then railroadless trading post of Wichita, Kansas. Later in 1868, Mr. Campbell settled on Cowskin Creek nine miles south of Wichita and two miles southeast of the present village of Catville.

The Chisholm Trail, famous in fact and fiction, lay only a short distance from the land on which Mr. Campbell settled and soon he was a trail driver as well as a Kansas farmer. He was one of the first, if not the first, to trail cattle from Texas and feed them on corn and hay before going on to Abilene, Newton and other early day cow town markets.

In the early 70's Mr. Campbell began the development of a ranch in the southern portion of Harper and Barber counties. Press reports indicate that at its peak the Campbell ranch consisted of 48,000 acres and carried 6000 cattle.

Several substantial citizens of that area met with him at Harper, Kansas August 2, 1884, and organized the Kiowa Townsite Company which purchased approximately 5000 acres off the west end of Mr. Campbell's ranch and located the town of Kiowa at the extreme west edge of this purchase but Mr. Campbell retained 320 acres approximately one mile from town for a new home and headquarters.

The first train came into the new town August 6, 1885 and Mr. Campbell shipped the first trainload of cattle from Kiowa on August 9, 1885 just 20 years to a day after he was discharged from the Army as an 18 year old boy.

As soon as the town of New Kiowa became a reality Mr. Campbell began the development of a ranch headquarters a mile east of town. This headquarters when fully developed included a fine residence, beautifully landscaped lawns, a large acreage of trees both fruit and forest, and probably the largest and most up-to-date barn in Kansas.

Mr. Campbell had planted a border of hardy roses along the driveways and when the headquarters was completed he named it Rosewood Park, the name under which it became well known throughout the Southwest.

In his earliest days as a ranchman Mr. Campbell was known as "Shorthorn" Campbell to distinguish him from several other Campbells in that area. Later he became known as "White-face" Campbell.

During his boyhood Mr. Campbell was associated with Shorthorn cattle and had developed the idea that they were far superior to all other breeds, but his experience with his first two Hereford bulls during the winter of 1879 - '80 and with the carload of Hereford bulls during the winter of 1880-81 together with the quality of the calves dropped in 1880 sired by the two Hereford bulls purchased in 1870 completely convinced him of the superiority of Herefords as range cattle and he decided to establish a herd of purebred Herefords at once, primarily for the purpose of producing purebred Hereford bulls for use in his own commercial herd. However, his purebred herd eventually became so large that he was able to offer for sale each year a considerable number of both bulls and females. His first purchase of purebred Hereford cows was made in 1861 and for the next few years the herd was enlarged rapidly but all purchases were made on the basis of quality. Mr. Campbell continued to produce good purebred Hereford cattle until he retired from ranching in 1903.

He showed Herefords for the first time in the fall of 1881. He also showed Herefords successfully in 1882 but he showed his Herefords more extensively in 1883 and more successfully than previously.

In those days, two of the leading fairs and livestock shows of the middle west were held in Kansas - one known as the National Western Fair sponsored by the Union Pacific Railroad was held at Bismark Grove near Lawrence; the other known as the State Fair sponsored by the Santa Fe Railroad was held at Topeka. Mr. Campbell showed at both these fairs. The "Kansas Farmer" of September 12, 1883, commenting on the Campbell showing at the National Western Fair stated that, "W. E. Campbell made a remarkably fine showing in competition with herds from Iowa, Missouri and Illinois." The next week practically the same herds met at the State Fair at Topeka. T. L. Miller in his "History of Hereford Cattle" states, "W. E. Campbell, an extensive ranchman and cattle raiser, of Caldwell, Kansas, exhibited at the Kansas State Fair a fine herd of Hereford cattle.....and the winnings of this herd was unprecedented." The Equinox 2758 standing at the head of the herd won first prize in the grand sweepstakes ring open to bulls of any age or breed in a strong field of eighteen show bulls representing the best Shorthorn, Hereford, Polled Angus, and Galloway herds of Iowa, Illinois, Missouri and Kansas.

Mr. Campbell has long been one of the principal advocates of a Fat Stock Show to be held at Kansas City and the first of such shows was held in November in 1883. It was here that Campbell cattle received their most favorable publicity and it was also here that Mr. Campbell gave Herefords their most effective advertising as range cattle they have ever received. The cattle he showed included what he referred to as his demonstration herd which consisted of six head under 18 months of age sired by a Hereford bull and out of little south Texas cows. This exhibit made a profound impression upon range cattle men. The "Breeder's Gazette" of November 8, 1883, referred to one of the animals of this group as follows: "The remarkable animal known as Texas Jane is to all appearances a model Hereford heifer finely marked, a slight show of black on one of her hind legs being the only apparent trace of alien blood." This "demonstration" exhibit won the \$100 Special offered by F. W. Smith for the best six half blood Hereford and Texas steers or heifers bred on the range by the exhibitor and not to exceed eighteen months of age. It also won the \$200 Special offered by Underwood Clark and Co. for the most valuable display of stock in the show. Mr. Campbell's winnings in addition to those just mentioned included; second on carload of three year old range cattle; first and second on carload of two year old range cattle; first and second on carload of yearling range cattle; second on yearling thoroughbred steer and first on the best grass fed steer or cow.

At the end of the show the heifer, Texas Jane, one of the Campbell demonstration herd, weighed 1280 pounds and was sold for \$150 to A. A. Crane & Co. of Osco, Illinois who kept her on exhibition at the Kansas City Stock yards for the next three years. Texas Jack, another member of the demonstration herd, was carried over until 1885 and shown in the carcass class of the Kansas City Fat Stock Show of that year. He weighed 1920 pounds and won first in the class for three year old steers in competition with a group of phenomenal steers, mostly Shorthorns, from Kentucky, Missouri, Illinois and other states as well as one from Scotland that had been winners on foot at several shows.

Mr. Campbell made a notable contribution to the improvement of the horses, as well as the cattle, of his day. About 1880 he decided to attempt the production of better cow horses than were available in his section of the country. His first move was to purchase seven hundred Indian ponies from which 50 of the best mares were selected for use as a basis for his improvement program. His next move was a trip to Kentucky where he purchased the Thoroughbred stallion Legal Tender to mate with these mares. He also recognized the facts, first, that buggies, carriages, buck boards and spring wagons provided the major means of human transportation locally and to a considerable extent over some distance and second, that experience had proved that Standard breeds (trotters and pacers) were the best adapted of all breeds for driving purposes. He had also observed that there was a strong demand for well bred horses for pleasure driving and that men of wealth had turned to harness horse racing as a sport and were willing to pay high prices for racing prospects as well as horses of proved racing ability. This opportunity for profit and pleasure appealed to him greatly and finally he decided to include the production of high class standardbreds in his horse breeding program so in 1887 he went to Kentucky and purchased three young standardbred stallions and several young standardbred mares and in the summer of 1888 he went to California in search of a young stallion by the then famous sire Electioneer owned by Leland Stanford. He secured a two year old at a cost of \$9,500 that was later registered as Campbell's Electioneer 11671. He arrived at Kiowa in September 1888 and with less than 60 days training lowered the Kansas two year old

trotting record 21 seconds. In 1889 Campbell's Electioneer made a light breeding season, was then put into training and raced from Kansas to Kentucky losing only one race. In 1890 he stood at Kansas City for a fee of \$200. A case of distemper prevented him from racing that year. In 1891 he again stood at Kansas City for \$200 and earned \$11,000 in service fees after which he again had a successful racing season.

In 1892 Mr. Campbell sold Campbell's Electioneer in a consignment sale at Lexington, Kentucky, for \$15,100. When Campbell's Electioneer was sold Alcolyte, one of the stallions purchased in Kentucky in 1887, was advanced to the position of head herd sire.

Symboleer 19869 foaled in 1892 who made a world's record for two year old pacers at Dallas, Texas, October 20, 1894, was the best horse bred by Mr. Campbell and the fastest horse sired by Campbell's Electioneer. Carmine foaled in 1896 and sired by Symboleer was the fastest horse bred by Mr. Campbell. Carmine made a record of 207½ at Columbus, Ohio, July 31, 1901.

When the Campbell horse breeding activities reached their peak the horse inventory showed some 400 head including 8 Standard bred sires, 1 Thoroughbred sire, 2 draft sires and 3 Jacks.

Mr. Campbell bred many fast and courageous race horses, a large portion of which was sold as prospects and made their records for their new owners. These records helped materially to secure good prices for the horses sold at home as well as those sold annually at auction in St. Louis, Chicago and New York. One shipment to New York averaged \$720 a head. Mules were also produced on the Campbell ranch in considerable numbers and usually found a ready market at profitable prices.

The depression of the 90's and the gradual reduction of the acreage of the Campbell ranch resulted in a reduction of the scope of the Campbell horse breeding activities. Reduction however meant rigid culling and when Mr. Campbell retired from ranching in 1903 he had only a small but a select group of mares headed by the young stallion Marvin Bell 34229.

When Mr. Campbell retired from ranching he organized the Campbell Land and Oil Company at Tulsa, Oklahoma and played an important part in the early development of the oil industry in that area. He died at Tulsa, Oklahoma October 26, 1907, and is buried at Kiowa, Kansas.

Mr. Campbell was a plain-spoken, aggressive, dynamic personality but at heart he was kind, generous, and sympathetic. He could not tolerate incompetence or dishonesty and abhorred liquor and gambling neither of which was ever permitted on any of his properties. He was a leader in the betterment of economic and social conditions of the communities in which he lived.

The many local improvements and developments in which he participated include: petitioning for the incorporation of Wichita as a town; the organization of the New Kiowa Town Company and the founding of the town of Kiowa; establishing the first bank, the first newspaper, the first school (private), the first hotel, the cemetery at Kiowa, and bringing both railroads to that town. He also built the first brick store building and opera house in Kiowa.

Mr. Campbell's formal education was limited to that offered by a pioneer Iowa country school yet he became a well-educated but self-educated man. He wrote well and was a frequent contributor to the leading agricultural publications of his day. He was a forceful and convincing speaker and his name appears on the programs of many early day livestock meetings and conventions throughout the southwest.

Through the years many stories have appeared in various types of publications attesting the fine character and unusual ability of W. E. Campbell but time will permit quoting from only a couple. In 1888 the Kiowa News carried an exchange item which read: "Mr. Campbell is a born stockman and clearly one of the most honorable, painstaking, and successful breeders in the country. He came to southern Kansas in 1868 without a dollar. He came before a furrow was turned south of the Arkansas River, and with many another brave, self-helpful boy contested with the red-handed savages for the mastery of this beautiful region. His trusty Winchester, steady nerve and ready tact have more than once been called into service for the protection of his home, his friends and his herds, from scarcely less savage white marauders of the early day. He has seen the dissipation of countless herds of buffalo; turned the green sword on many a virgin prairie, shared in the trials and triumphs of pioneer life; never forgetting his own fight with poverty he has been from first to last the friend of the poor man."

Early in October 1907, Mr. Campbell spent a few days in Wichita with Mrs. Campbell who was ill in a hospital. The editor of the Wichita Eagle learning of his presence in the city which he helped to incorporate nearly 40 years previously sent a member of the Eagle staff to interview him. The result of this interview was an interesting resume of the highlights of Mr. Campbell's eventful life which appeared in the October 6, 1907 issue of that paper, and it seems fitting to close this sketch with a portion of the last paragraph of that story. It reads--"W. E. Campbell has left deep footprints in Kansas---- He was a town builder, a county builder, a public spirited man, a public benefactor, a fighter, and always a good citizen. He improved the horses and cattle, the grains and the grasses, and the fruits and vegetables of his county. He was never afraid to risk either his life or his right for progress and upbuilding."

TABLE I

PHYSICAL BALANCE (PROPORTION OF CONCENTRATES TO ROUGHAGE)
IN LAMB FATTENING RATIONS

Rufus F. Cox

Average of Seven Experiments
Kansas Agricultural Experiment Station

1. Lot Number	1	2	3
2. Proportion (Concentrates to Roughage)	35% to 65%	45% to 55%	55% to 45%
3. Number of lambs per lot	37	37	36
4. Number of days on feed	106	106	106
5. Initial weight per lamb	65.46	65.53	65.54
6. Final weight per lamb	94.11	98.38	96.49
7. *Total gain per lamb	28.65	32.83	30.95
8. *Daily gain per lamb	.27	.31	.29
9. Feed consumed per lamb daily:			
Concentrates (Grain and Supplement)	1.01	1.27	1.46
Roughage (Air Dry Basis)	1.88	1.60	1.29
10. Feed per 100 pounds gain:			
Concentrates (Grain and Supplement)	384.08	416.14	510.67
Roughage (Air Dry Basis)	715.19	530.67	455.32
11. Dry matter per head daily	2.53	2.52	2.42
12. Total digestible nutrients per head daily	1.71	1.78	1.79
13. Gain per 100 pounds dig. nutr.	15.67	17.40	16.28
14. Required to make 100 pounds gain			
Days	394	329	355
Total digestible nutrients	218.41	186.81	204.17
15. **Carcass grades (Packers)			
% (1st grade)	37	41	50
(2nd grade)	51	53	41
(3rd grade)	10	4	7
(4th grade)	2	2	2
16. Dressing percent	47.2	46.9	48.1

*Weighted Average

**Carcass studies are for the first
4 experiments only

TABLE II
 PHYSICAL BALANCE STUDIES WITH LAMBS FED WOOD PULP
 AND PAPER PULP

Rufus F. Cox

Average of Two Experiments
 Kansas Agricultural Experiment Station

1. Lot number	1	2	3
2. Ration fed	Corn Cottonseed meal (1) Prairie hay (2) Paper pulp or Wood pulp	Corn Cottonseed meal (1) Prairie hay (2) Paper pulp or Wood pulp	Corn Cottonseed meal (1) Prairie hay (2) Paper pulp or Wood pulp
3. Ratio crude fiber to Total Digestible Nutrients	1:3.208	1:3.815	1:4.539
4. Number lambs per lot	15	15	15
5. Initial weight per lamb	69.65	69.11	69.30
6. Final weight per lamb	87.68	90.92	87.36
7. Total gain per lamb	18.03	21.81	18.06
8. Daily gain per lamb	.16	.19	.16
9. Feed consumed per lamb daily:			
Corn	1.25	1.25	1.25
Cottonseed meal	.25	.25	.25
(1) Prairie hay	.16	.16	.16
(3) Wood or paper pulp	.324	.222	.181
10. Feed per 100 pounds gain:			
Corn	801.66	651.88	780.22
Cottonseed meal	163.77	133.31	159.69
(1) Prairie hay	91.13	78.11	96.91
(3) Wood or paper pulp	255.35	161.68	147.89
11. Dry matter per head daily	1.92	1.83	1.76
12. Total Digestible Nutrients per head daily (4)	1.29	1.29	1.29
13. Gain per 100 pounds Total Digestible Nutrients (4)	12.36	14.76	12.42

- (1) Fed in limited amounts after first 36 days of first experiment only.
- (2) Biron Groundwood Screenings or Bleached Poplar Sulphite.
- (3) Dry Weight Basis
- (4) Excluding any nutrients which might be in the pulp.

SUMMARY - PHYSICAL BALANCE STUDIES WITH LAMBS

Rufus F. Cox

In several years of experimental studies of physical balance as a factor in determining the value of lamb fattening rations, more than 2000 lambs have been fed, and a wide variety of feeds have been employed. The experimental rations have been made up of feeds ranging from high palatability and nutritive value, such as corn, cottonseed meal, and alfalfa hay, to combinations which have definitely lower nutritive value, particularly the roughages of matured grain varieties of sorghums. Among the results obtained with a high degree of consistency regardless of the year or of the type of feeds used are the following:

1. Lambs fed rations composed of approximately 45% concentrates and 55% roughage, by weight, gained more than lambs fed either a less concentrated or a more concentrated ration.
2. Rations containing less than 35% concentrates failed to fatten lambs to a desirable market finish, while those containing more than 55% concentrates, if fed for an extended length of time, produced digestive disorders and death losses. (These extreme proportions were omitted early in the experimental studies.)
3. When allowed all the feed they would eat and restricted only in the proportion of concentrates to roughage in the ration, there was little difference in either the dry matter or the total digestible nutrients consumed by lambs receiving rations varying in physical balance (concentration and bulkiness).
4. The dry matter consumption was slightly highest for lambs receiving only 35% concentrates, and the digestible nutrient consumption slightly highest for those receiving 55% concentrate in the ration.
5. The efficiency of feed utilization as measured by the gains made per 100 pounds of digestible nutrients consumed, was invariably highest for lot 2 receiving 45% concentrates and 55% roughage. Lot 3 receiving 55% concentrates and 45% roughage ranked second in this respect and Lot 1, receiving 35% concentrates and 65% roughage ranked third in efficiency of feed utilization.
6. The lambs receiving the medium proportion of concentrates to roughage graded as well alive as those receiving more grain and were apparently as satisfactory to the packer buyers. The carcasses of those receiving 55% concentrates however appeared to grade very slightly better as revealed by the Packers carcass grading.
7. In the case of the lambs fed wood pulp and paper pulp as roughage, those receiving the medium ratio of crude fiber to total digestible nutrients, corresponding to the rations composed of 45% concentrates and 55% roughage, made more efficient use of their feeds than lambs receiving less concentrated or more concentrated rations.
8. From these experiments it is concluded first, that an optimum physical balance in rations for fattening lambs actually exists; that as bulky rations are increased in concentration the gains made and the efficiency of feed utilization by lambs increase up to a certain level, and then as the concentration is further increased, the gains and efficiency of feed utilization turn downward.

Another fact which seems to be amply demonstrated by these experiments is that the weight gains made by lambs are not always positively correlated with either the dry matter intake or the total digestible nutrients consumed, but appear to follow a certain balance between these two factors determined by the crude fiber-total digestible nutrient ratio.

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SWINE FEEDING EXPERIMENTS

Experiment I --1946-47

The Comparative Values of Foxtail Millet Seed and Shelled
Corn for Fattening Spring Pigs on Alfalfa Pasture

C. E. Aubel

In order to fatten pigs economically it is necessary to feed a large amount of concentrates in the form of grain and protein supplements. Corn is the grain usually employed. When the price of corn becomes very high in relation to other feeds, hog feeders look about for a substitute. In recent times corn has been high in price, and occasionally impossible to purchase. This was the situation a year ago when a purchase of Foxtail Millet seed was made to replace corn. With this seed on hand it was thought advisable to carry on a feeding trial to compare it with corn in efficiency, as the State might be in a position sometime to grow considerable millet. The information thus obtained would then be available and valuable to the swine feeder.

Experimental Procedure:

Foxtail Millet seed has a hard waxy outside covering and is quite small. To be usable for swine it must be run through a grinder; otherwise when it is fed much will pass through the digestive tract undigested. Consequently, this experiment was set up to determine two things; first, its efficiency as compared with corn, and second, the degree of fineness necessary to grind to get the best returns.

Two degrees of fineness of grinding were used in the trial. The grinding was done in a hammer mill using two different screens, one a 3/32-inch screen and the other a 1/16-inch screen. One lot of pigs was fed on each of these degrees of fineness and another lot was fed on one-half millet ground through a 1/16-inch screen and one-half ground corn.

The pigs were all self-fed on good alfalfa pasture. Tankage was self-fed in a separate compartment in all the lots.

The figures show the chemical feed analysis of the Foxtail Millet seed and the corn used in this experiment.

COMPOSITION OF FEEDS

Feed	Moisture	Protein	Fat	Fiber	Nitrogen Free Extract	Ash
Yellow Corn	12.8	9.6	3.9	2.3	70.0	1.4
Foxtail Millet Seed	8.44	11.50	4.37	9.25	62.55	3.89
Mustard Seed Meal	6.03	27.06	6.37	12.08	41.85	6.61
Digester Tankage 60%	7.8	61.3	8.8	1.4	1.5	19.2

The following table is a summary of the feeding records of the experiment.

EXPERIMENT I - Summer - 1946

The Comparative Value of Foxtail Millet Seed and Shelled Corn
for Fattening Spring Pigs on Alfalfa Pasture

C. B. Aubel

(June 26, 1946 to September 21, 1946 - 87 Days)

Ration	Alfalfa Pasture				
	Shelled corn Tankage (self- fed)	Course ground millet 3/32" Tankage (self- fed)	Fine ground millet 1/16" Tankage (self- fed)	¹ / ₂ " Corn Gr. Fine Gr. millet 1/16" Tankage (self- fed)	Fine Gr. Millet 1/16" Mustard Seed meal Minerals (self fed)
Lot No.	1	2	3	4	5
Number of pigs per lot	10	10	10	10	10
Average initial weight per pig	Pounds 78.25	Pounds 78.70	Pounds 77.60	Pounds 78.16	Pounds 80.80
Average final weight per pig	237.96	237.16	247.06	248.56	240.56
Average total gain per pig	159.73	158.46	169.36	170.40	159.76
Average daily gain per pig	1.83	1.82	1.94	1.95	1.83
Average daily ration per pig:					
Shelled corn	6.26	----	----	----	----
Millet ground	----	6.43	6.13	3.04	7.26
Ground corn	----	----	----	3.04	----
Mustard seed meal	----	----	----	----	.08
Tankage	.36	.36	.27	.32	----
Minerals	----	----	----	----	.036
Feed consumed per 100 pounds gain:					
Shelled corn	341.28	----	----	----	----
Millet ground	----	353.40	315.00	155.36	395.46
Corn ground	----	----	----	155.36	----
Mustard seed meal	----	----	----	----	4.38
Tankage	20.65	20.19	14.17	16.43	----
Minerals	----	----	----	----	2.00
Feed cost per 100 pounds gain:	\$12.38	\$12.46	\$10.96	\$11.04	\$13.15

FEED PRICES CHARGED: Shelled corn, \$1.90 per bushel;
Millet, \$1.85 per bushel of 56 pounds;
Tankage, \$80.00 per ton;
Mustard Seed Meal, \$50.00 per ton.

DISCUSSION OF RESULTS

1. Foxtail millet seed proved excellent for fattening pigs as compared with corn.
2. Foxtail millet ground through a $3/32$ -inch screen produced only slightly less efficient gains, about 3 percent, in feed consumed per 100 pounds gain, and only slightly less rapid gains than the pigs fed shelled corn.
3. Foxtail millet seed ground through a $1/16$ -inch screen made more efficient gains, about 7 percent, in feed consumed per 100 pounds gain; it made about 6 percent faster daily gains than shelled corn.
4. It is apparent that millet seed must be finely ground to give the most efficiency. In this test, $1/16$ -inch gave the best results.
5. Mixing finely ground millet seed with ground shelled corn in equal parts made the most efficient ration of the test; this was in feed consumed per 100 pounds gain. It produced also the most rapid daily gains in the trial.
6. The carcasses of the millet fed pigs were equal in quality to the carcasses of the corn fed pigs, and none was inferior in any way.

EXPERIMENT II - Winter - 1947

The Use of Mustard Seed Oil Meal As a Protein Supplement for Fattening Pigs in the Dry Lot

C. E. Aubel

Protein supplements are essential to profitable pork production whether it be the maintenance of the breeding herd, growing the pigs, or fattening pigs for market. Previous tests at this station have shown the advantage and profit in feeding tankage and other protein supplements with corn or other grains when pigs are fed in the dry lot or on pasture.

About a year ago the Department of Animal Husbandry was asked to conduct some experimental feeding tests with mustard seed oil meal. This meal was being produced in a Kansas seed oil extraction plant by expressing the oil from wild mustard seed. The seed had been shipped from northern wheat growing areas, where it had been separated from Spring wheat, which it contaminated very badly. There was a considerable potential supply of this seed and the meal or residue remaining from the oil extraction contained considerable protein, so it was thought that it might have considerable value as a protein supplement for livestock. Consequently the Department of Animal Husbandry became interested and carried on some feeding experiments.

By reason of the fact that no information was at hand concerning its use and palatability in pig feeding, it was thought advisable to feed a test lot along with last summer's experiment. The results for this are found under the data for Experiment I on a preceding page. Also on a preceding page is found the chemical analysis of the mustard seed oil meal and an analysis of the digester tankage with which it was compared.

The first time mustard seed oil meal was fed, it was used as the only protein supplement. The pigs, however, were on alfalfa pasture. It was clearly shown from this feeding that mustard seed meal could not be used as the only protein supplement, as the pigs would not eat it.

From these results it was clear that if the meal were to be used efficiently it would be necessary to mix it with other protein supplements. Consequently, last winter an experiment was set up to determine the value of the meal when mixed in different proportions with tankage and other protein feeds.

Experimental Procedure:

Since it had been demonstrated that mustard seed meal could not be fed alone as the protein supplement to corn in fattening pigs, it was decided to feed it mixed in different proportions with tankage, and to mix other protein supplements with the tankage and mustard seed meal in an attempt to determine how much could be fed in the ration. All lots were self-fed shelled corn. Alfalfa hay was self-fed in all lots except Lot 5. The protein supplement mixtures aside from tankage in the control lot, Lot 1, were as follows, all

Credit is due R. B. Cathcart for weighing and allotting the pigs used in this experiment.

The mustard seed oil meal used in this experiment was furnished through the courtesy of the Kansas Soybean Mills, Inc., Emporia, Kansas.

self-fed. Lot 2 received a protein mixture of tankage, 90 percent and mustard seed, 10 percent. Lot 3 received tankage, 75 percent and mustard seed, 25 percent; and Lot 4 received tankage, 50 percent and mustard seed, 50 percent. Lot 5 received a more complex protein supplement mixture of tankage, 40 percent; mustard seed, 40 percent; cottonseed meal, 10 percent; and alfalfa meal, 10 percent.

The following table gives a summary of the feeding record of this experiment.

EXPERIMENT II - Winter - 1947

The Comparative Value of Mustard Seed Oil Meal
in Protein Feed Mixtures As a Supplement to
Shelled Corn for Fattening Fall Pigs in the Dry Lot

C. E. Aubel

(December 20, 1946 to April 9, 1947 - 110 Days)

Ration	Shelled Corn (self-fed)				
	Tankage Alfalfa hay (self- fed)	Tankage 90% Mustard seed 10% Alfalfa hay (self- fed)	Tankage 75% Mustard seed 25% Alfalfa hay (self- fed)	Tankage 50% Mustard seed 50% Alfalfa hay (self- fed)	Tankage 40% Mustard seed 40% Cottonseed meal 10% Alfalfa meal 10% (self-fed)
Lot Number	1	2	3	4	5
Number pigs in lot	10	9	10	10	10
Av. initial weight per pig	Pounds 67.45	Pounds 67.00	Pounds 68.00	Pounds 68.10	Pounds 68.20
Av. final weight per pig	262.50	252.20	261.65	249.60	252.50
Av. total gain per pig	195.05	186.25	193.65	181.50	184.30
Av. daily gain per pig	1.77	1.69	1.76	1.65	1.67
Av. daily ration per pig:					
Shelled corn	7.12	6.35	6.47	6.34	5.97
Tankage	.45	.56	.49	.32	----
Protein supplement	----	----	----	----	.64
Alfalfa hay	.27	.30	.18	.31	.21
Mustard seed meal	----	.06	.16	.32	----
Feed consumed per 100 pounds gain:					
Shelled corn	401.84	381.50	372.67	385.50	356.59
Tankage	25.63	33.02	27.69	19.66	----
Protein supplement	----	----	----	----	38.25
Alfalfa hay	15.27	18.97	10.58	18.84	12.91
Mustard seed meal	----	3.66	9.23	19.66	----
Feed cost per 100 pounds gain:	\$11.77	\$11.85	\$11.33	\$11.53	\$10.61

FEED PRICES CHARGED: Shelled corn, \$1.40 per bushel; Tankage, \$120.00 per ton; Alfalfa hay, \$25.00 per ton; Mustard seed meal, \$50.00 per ton; Protein supplement, \$4.00 per hundred pounds, (used in Lot 5).

METHODS OF FEEDING: All lots were self-fed shelled corn; alfalfa hay was self-fed to all lots except Lot 5. 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 and other protein supplements and self-fed free choice proved to be an excellent protein feed for fattening pigs.
2. In all lots but one (lot 2) where the mustard seed meal was fed, the gains were somewhat cheaper than where tankage alone was fed; but the gains were not quite so rapid.
3. The mustard seed meal mixtures seemed equally palatable to the pigs at all times. None seemed to be in any way neglected nor did any mixture seem to be especially preferred.
4. The lot receiving the mixture of tankage, 50 percent and mustard seed, 50 percent made the smallest daily gain of all the lots, but made more economical gains than the lot receiving tankage alone.
5. The lot receiving the mixture 75 percent tankage and 25 percent mustard seed made almost as rapid gains as the lot receiving tankage alone, but at 44 cents cheaper per hundred pounds gain.
6. Lot 6, which received the more complex protein mixture with mustard seed meal, made the most economical gains of all. The daily gains were somewhat smaller than those of the lot receiving tankage alone as the supplement.

EXPERIMENT III - Winter - 1947

The Use of Loose Salt for Fattening Pigs on Corn,
Tankage and Alfalfa Hay in the Dry Lot

C. E. Aubel

The Department of Animal Husbandry has recently received a number of requests for information on the need of salt for fattening pigs when the ration was corn and tankage with alfalfa hay or pasture. The answer to these inquiries has always been that pigs did not need salt when they received tankage or some similar protein supplement of animal origin; but if most of the protein supplement was of plant origin as soybean meal, cottonseed meal, alfalfa meal, or linseed meal, salt was advisable.

So that no doubt could arise over the necessity of feeding salt when tankage was the protein supplement, it was thought advisable to feed one lot exactly like Lot 1 in the previous experiment, but to add salt. This was expected to provide an answer to the salt question.

The following table gives a summary of the feeding record of this experiment. (see next page.)

OBSERVATIONS AND CONCLUSIONS

1. Addition of loose salt self-fed free choice to pigs receiving shelled corn, tankage and alfalfa hay in a dry lot proved to be no advantage whatsoever.
2. Daily gains were lower and the cost per 100 pounds was greater with the lot of pigs receiving loose salt than with an identically fed lot which received no salt.
3. Of course the pigs ate salt when permitted to do so. However, its ingestion apparently aided in no wise the rapidity of gains and the economy of production.

Credit is due R. B. Cathcart for weighing and allotting the pigs used in this experiment.

EXPERIMENT III - Winter - 1947

The Use of Loose Salt for Fattening Pigs on
Corn, Tankage and Alfalfa Hay, in the Dry Lot

C. E. Aubel

(December 20, 1946 to April 9, 1947 - 110 Days)

Ration	Shelled Corn (self-fed)	
	Tankage Alfalfa Hay (self-fed)	Tankage Alfalfa Hay Loose Salt (self-fed)
Lot Number	1	2
Number pigs in lot	10	10
Average initial weight per pig	Pounds 67.45	Pounds 67.60
Average final weight per pig	262.50	251.70
Average total gain per pig	195.05	184.10
Average daily gain per pig	1.77	1.67
Average daily ration per pig:		
Shelled corn	7.12	6.78
Tankage	.45	.45
Alfalfa hay	.27	.21
Loose salt	----	.04
Feed consumed per 100 pounds gain:		
Shelled corn	401.84	400.48
Tankage	25.63	26.84
Alfalfa hay	15.27	12.83
Loose salt	----	2.46
Feed cost per 100 pounds gain	\$11.77	\$11.78

FEED PRICES CHARGED: Shelled corn, \$1.40 per bushel;
Tankage, \$120.00 per ton;
Alfalfa hay, \$25.00 per ton;
Salt, \$0.65 per cwt.

METHODS OF FEEDING: Both lots were self-fed free choice shelled
corn, tankage and alfalfa hay. Lot 2 only,
received loose salt self-fed in a separate
compartment.

Factors Influencing Rate of Gain, Quantity of
Feed Consumed and Carcass' Grade

F. W. Bell - D. L. Mackintosh - A. G. Pickett

PRELIMINARY REPORT

The two lots of heifer calves in this test were selected from 75 range bred heifer calves purchased last fall. The 75 heifers were a uniform group, all of which would be classed as good to choice feeder calves. The 10 heifers in Lot 1 of this test were selected as the least desirable, and the 10 heifers in Lot 2 as the most desirable of the 75 head. The sort was made on the evidences of probable gains and carcass grades as indicated by capacity for feed, chest room, bone, heads, muscling and general appearance.

Experimental Procedure:

The individual heifers in each lot were graded by using a standard feeder chart. The heifers in Lot 1 graded average good, and in Lot 2 low choice. Each heifer was also graded on a chart devised to furnish a record of apparent differences in body capacity, chest room, heads, muscling, bone and general appearance. These means were used to provide a record of the characteristics of each heifer as shown at the start of the test.

The heifers in each lot have received the same kinds of feeds consisting of ground corn, cottonseed meal and silage. Ground limestone has been fed at the rate of 1/10 of a pound per head daily. The amount of corn fed was increased gradually during the first 56 days until they were receiving a full feed of grain. Since that time both lots have been self-fed grain. Silage has been fed twice daily in the amount that the heifers would consume.

Observations To Date:

1. Both lots of heifers have consumed practically the same amount of corn.
2. The heifers in Lot 2 have consumed more silage than the heifers in Lot 1.

When these heifers are marketed the dressing percentage and carcass grade of each individual will be determined. When the trial is completed the following information will be provided for each lot.

1. Average rate of gain made by each heifer.
2. Quantity of feed consumed per 100 pounds of gain.
3. Market grades of the individual carcasses.
4. Dressing percentage of each heifer.

Factors Influencing Rate of Gain - Quantity
of Feed Consumed and Carcass Grade

F. W. Bell - D. L. Mackintosh - A. G. Pickett

Preliminary Report - December 5, 1946 to April 11, 1947 - 130 Days

1. Lot Number	1	2
2. Number of heifers	10	10
3. Average daily ration:		
Ground shelled corn	8.44	8.51
Atlas sorgo silage	10.18	14.15
Cottonseed meal	1.36	1.36
Ground limestone	.10	.10
4. Average Initial Weight	383.00	454.00
5. Average Final Weight	608.00	688.00
6. Average Gain	225.00	234.00
7. Average Daily Gain	1.73	1.80
8. Feed Cost for 100 lbs. Gain	17.26	17.25
9. Appraised Value per Cwt. May 3, 1947		

FEED PRICES: Ground shelled corn, \$1.40 per bushel;
Silage, \$5.00 per ton; Cottonseed meal,
\$90.00 per ton; Ground limestone, \$20.00
per ton.

EFFECTS OF CATTLE GRUB TREATMENT

F. W. Bell and George A. Dean

Five heifers in each of four lots of 10 head each were treated with rotenone dust December 11, 1945. The other five heifers in each lot received no treatment for grubs. At the time of treatment a careful count was made of the number of grubs on each of the 10 heifers in each lot. Thus the trial furnishes data on 20 heifers treated for grubs and 20 which were not treated, with all factors of feeding and management being the same in each lot.

Another check for evidence of any grubs which might not have been killed by the first treatment was made January 9, 1946. On this date all the heifers previously treated which showed any grubs not destroyed were dusted again with rotenone dust.

Each lot of heifers was marketed when they averaged about 850 pounds in weight. Since the feeding trial was to determine the results of different quantities of grain fed to finish the cattle, the dates of marketing the four lots ranged from May 31, 1946 to July 30, 1946.

Data Secured at Time of Marketing

The cattle were slaughtered at the Morrell Packing Company, Topeka, Kansas. The carcasses were examined at the time of slaughter, and again after chilling for any evidence of grub damage to the meat. No evidence of any such damage was found in any of the 40 carcasses, there being no difference in this respect between the carcasses of the cattle treated to destroy grubs, and those which were not treated.

However, a number of the carcasses of the treated cattle showed residues of grubs which had been killed and not completely absorbed. As would be expected, no such residues were found on the carcasses of untreated cattle, since all the grubs had emerged. The remains of dead grubs on the carcasses of treated cattle were not imbedded in the flesh, and washed off readily when the carcasses were washed before going into the cooler.

Evidence of Damage to Hides

The hides of the cattle treated for grubs showed several grub remains in the fatty tissue adhering to the hide. It was stated at the packing plant that these did not in any way affect the value of the hides.

Each of the 40 hides immediately after being removed from the carcass was laid on a table, hair side down, and examined carefully to determine if it showed damage from grubs. A count was made of all scars formed where grubs had punctured the hide. Then the customary check made by hide buyers was applied, which consists of trying to force a sharp pointed wooden skewer through the hide wherever it appears there may be a weak spot remaining from a grub puncture. If the skewer can be forced through it is counted a hole - if the skewer breaks in the attempt no hole can be claimed. In the hide trade, those hides which have five or more holes are classified as grubby and quoted at a

price about $1\frac{1}{2}$ cents lower per pound.

Of the 40 hides examined, eight were found to have five or more holes. These eight hides all were from cattle treated to destroy grubs - no hides from the untreated cattle having enough holes to be classified as grubby. The explanation of more holes being found in the hides from treated cattle is that the dead grubs under the hide acted as an irritant and thus retarded normal healing of the punctures. In the untreated cattle, grubs had emerged at the normal time and the holes had healed before the cattle were marketed.

Effect of Grubs on Rate of Gain

The possible effect of grubs on rate of gain is another question concerning which information was sought. In this trial the cattle treated to destroy grubs made an average gain during the feeding period of 344.25 pounds, while the cattle which received no treatment for grubs made an average gain in weight of 344.75 pounds.

Carcass Grades

All 40 carcasses were graded by a Government grader, and graded either choice or good. The 20 cattle treated for grubs yielded 7 choice and 13 good carcasses. The 20 cattle not treated yielded 8 choice and 12 good carcasses.

Results of trials during 1945-46 to determine the effects of treatment for grubs are summarized in the following table:

	<u>Treated</u>	<u>Not Treated</u>
Number of heifers	20	20
Average initial weight	521.00 lbs.	509.25 lbs.
Average final weight	865.25 "	854.00 "
Average total gain	344.25 "	344.75 "
Average number of grubs-December 11, 1946	17.3	8.7
Average number of scars in hides	19.7	8.3
Average number of holes in hides	3.2	0.25
Average weight of carcasses	493.75 lbs.	478.85 lbs.
Average dressing percent	57.91	57.16
Number of carcasses graded choice	7	8
Number of carcasses graded good	13	12

Conclusions

Since grubs normally emerge from cattle during late winter and early spring, the greatest damage to hides and carcasses would occur before, or at the time when the grubs emerge.

Since no carcass damage due to grub infestation was evident in the first lot of 10 heifers marketed May 31, it is indicated that treatment for grubs does not affect the carcass value of cattle marketed after that date.

Of the 40 hides, eight were classified as grubby, since they had five or

more holes. All of these hides were from cattle treated with rotenone dust.

Treatment for grubs had no effect on gains in weight, each group of 20 heifers making the same gain.

The evidence of this test should not be taken as an argument against treatment to control cattle grubs, but as information relevant to grub control. The greatest damage to carcasses and hides occurs before and at the time the grubs emerge. The growth of grubs results in damage to carcasses which requires trimming of some meat from carcasses of infested cattle which are marketed in the winter and early spring. There is also considerable damage to hides from the time grubs make the puncture through which they later emerge, and until sufficient time has elapsed after they emerge for the hole to heal.

INFLUENCE OF WINTER RATIONS FED TO STEER CALVES
UPON RETURNS FROM WINTERING AND GRAZING

A. D. Weber, F. W. Bell, and A. G. Pickett

Phase I - Wintering, January 17, 1946 to April 27, 1947 - 100 days.

Phase II - Grazing, April 27, 1946 to October 12, 1946 - 168 days.

1-Lot number	1	2	3	4	5
2-Number steers in lot	9	9	10	10	10
3-Wintering ration:	Pounds	Pounds	Pounds	Pounds	Pounds
Silage	31	---	---	15	23
Prairie hay	--	14	14	7	4
Cottonseed meal	1	1	2	1	1
4-Weight per steer:					
January 17, 1946	522	515	514	514	514
April 27, 1946	619	622	645	619	613
October 12, 1946	861	862	857	849	861
5-Gain per steer:					
Phase I - Wintering	97	107	131	105	99
Phase II - Grazing	242	240	212	230	248
Total - Phases I and II	339	347	343	335	347

OBSERVATIONS

Poor quality silage consisting of a mixture of normal Atlas sorgo and mature, volunteer Black Amber from which most of the grain had shattered, and bright, fairly green high-quality prairie hay, were fed in this test. The cottonseed meal was guaranteed to contain 41 percent protein.

Steers which made the largest winter gains tended to make the smallest pasture gains and as a consequence differences in total gains (wintering plus grazing) were of doubtful significance.

FATTENING HEIFERS FOR THE SUMMER MARKET

Experiment II - 1945-46

A. D. Weber and F. W. Bell

Phase I - Wintering, November 29, 1945 to April 18, 1946 - 140 days

1-Lot number	1	2	3	4
2-Number of heifers in lot	10	10	10	10
3-Level of grain feeding	Full feed	$\frac{1}{2}$ feed	$\frac{1}{4}$ feed	No grain
4-Average daily ration:				
Ground shelled corn	10.06	5.04	2.52	---
Atlas sorgo silage	16.75	25.94	29.65	31.66
Cottonseed meal	1.44	1.44	1.44	1.44
Ground limestone	0.10	0.10	0.10	0.10
5-Average initial weight	514	517	514	516
6-Average final weight	788	738	708	671
7-Average gain	274	221	194	155
8-Average daily gain	1.96	1.58	1.39	1.11
9-Corn consumed per heifer - bushels	25.15	12.59	6.30	---

Phase II - Full feeding, April 18, 1946 until marketed.

10-Lot number	1	2	3	4
11-Number of days in Phase II	42	75	75	100
12-Average daily ration:				
Ground shelled corn	13.37	12.85	11.69	11.89
Cottonseed meal	1.25	1.15	1.15	1.11
Atlas sorgo silage	4.81	5.53	6.75	5.84
Alfalfa hay	3.02	5.62	6.29	6.85
Ground limestone	0.10	0.10	0.10	0.10
13-Average initial weight	788	738	708	671
14-Average final weight	850	864	858	868
15-Average gain	62	126	150	197
16-Average daily gain	1.48	1.68	2.00	1.97
17-Corn consumed per heifer - bushels	10.03	17.22	15.65	21.24

FATTENING HEIFERS FOR THE SUMMER MARKET

Experiment II - 1945-46

A. D. Weber and F. W. Bell

Summary of Phases I and II

1-Lot number	1	2	3	4
2-Number of heifers in lot	10	10	10	10
3-Total feeds consumed per heifer:				
Gr. shelled corn - bus.	35.18	29.81	21.95	21.24
Cottonseed meal - lbs.	254.40	288.10	287.80	313.00
Silage - tons	1.27	2.02	2.33	2.51
Alfalfa hay - lbs.	126.80	421.60	471.90	685.10
Gr. limestone - lbs.	18.18	21.50	21.50	24.00
4-Date placed on test	11-29-45	11-29-45	11-29-45	11-29-45
5-Date taken off test	5-30-46	7-2-46	7-2-46	7-27-46
6-Date marketed	5-31-46	7-3-46	7-3-46	7-28-46
7-Duration of test - days	182	215	215	240
8-Total gain per heifer	336	347	344	352
9-Average final weight	850	864	858	868
10-Av. weight at market	815.6	859.5	851.5	854.0
11-Shrink in transit:				
Pounds per heifer	34.4	4.5	6.5	14.0
Percent	4.0	0.5	0.8	1.6
12-Dressing percentage	60.0	57.8	55.6	56.6
13-Carcass grades:				
Choice	5	6	2	2
Good	5	4	8	8

OBSERVATIONS

This was the second in a series of tests being conducted by the Kansas Agricultural Experiment Station in an attempt to develop a standard system of fattening heifers for the summer market. A third test is now in-progress. When a satisfactory dry lot system has been developed, it will be used as a check in developing a system of fattening heifers for the summer market which includes pasture.

The work done thus far has dealt with the quantity of grain that heifer calves should receive when they are to be fattened in the dry lot for the summer (June to September) market. Results obtained to date indicate that the most satisfactory system is to feed a limited grain ration ($\frac{1}{2}$ to $\frac{1}{3}$ feed) during the winter and then full feed grain for three to five months beginning about April 15.

FATTENING HEIFERS FOR THE SUMMER OR EARLY FALL MARKET

A. G. Pickett and A. D. Weber

Experiment III - 1946-47

1. Without pasture.
2. With pasture.
3. Mustard seed meal versus cottonseed meal.

INTRODUCTION

The two preceding tests with heifer calves were conducted without the use of grass. Varying amounts of grain and protein supplements were fed with silage during the winter season and then a full feed of grain was used to finish these heifers for the summer or early fall market.

Now that experimental pasture is available, plans are to develop a system of fattening heifers for the summer market or early fall market which uses grass to the fullest extent. Dry lot feeding will continue as a check.

EXPERIMENTAL PROCEDURE

All five lots of heifers, numbered 3 to 7 inclusive, received a full feed of silage, 1/10 pound of ground limestone daily, and salt. Lot 3 was full fed ground shelled corn; 1 pound of cottonseed meal was fed the first 35 days and then increased to 1 1/2 pounds. Lots 4 and 5 were fed a full feed of silage and 1/2 feed of ground shelled corn. The only difference was that the cottonseed meal was increased from 1 pound daily to 1 1/2 pounds daily in lot 4 at the same time it was increased on lot 3. Lot 4 will be fed out in the dry lot following this winter phase, but lot 5 will go to grass and be fed out later.

Mustard Seed Meal. Lots 6 and 7 were wintered on a full feed of silage, 1/10 pound of ground limestone and 1 pound protein supplement. Lot 6 received 1 pound mustard seed meal daily, while lot 7 was fed 1 pound of cottonseed meal daily. Both lots will be grazed and fed out later.

OBSERVATIONS

1. Lot 3 heifers were fatter at the close of the winter period than the other lots.

2. The extra 50 pounds of cottonseed meal, 1/2 pound daily for 100 days, received by lot 4 over lot 5, accounted for 25 pounds of extra gain. The heifers also showed a slightly greater degree of finish and more bloom.

3. While consuming only 25 percent as much grain as lot 3, lot 4 gained

approximately 80 percent as much as lot 3. Cost of gains in lot 4 was \$4.39 per cwt. less than in lot 3.

4. Mustard seed meal gave practically the same gains in lot 6 as did cottonseed meal in lot 7. More tests need to be made before definite conclusions are made but on the basis of this first test the mustard seed meal is equal to cottonseed meal.

5. Due to a lower cost price, mustard seed meal made cheaper gains than cottonseed meal.

6. A study of the table will provide details of this test.

*with grain at 2.00 - Silage or grass
was worth so much*

Feed cost /

Phase I - Wintering, December 5, 1948 to April 24, 1949 - 110 Days

Aug
July 29
check lot (wintered well) (Rounds wintered)

1-Lot number	<i>July 2</i>	<i>Aug 11</i>	5	6	7
2-Number of heifers in lot	11	11	11	11	11
3-Ration fed	Silage Ground corn Cotton seed meal Ground limestone Salt	Silage Ground corn Cotton seed meal Ground limestone Salt	Silage Ground corn Cotton seed meal Ground limestone Salt	Silage Mustard seed meal Ground lime- stone Salt	Silage Cotton seed meal Ground lime- stone Salt
4-Average daily ration:	Pounds	Pounds	Pounds	Pounds	Pounds
Silage	10.66	24.90	25.32	26.63	26.69
Ground corn	2.69	2.17	2.17	---	---
Cottonseed meal	1.39	1.39	1.00	---	1.00
Mustard seed meal	---	---	---	1.00	---
Ground limestone	0.09	.09	.09	.09	.09
Salt	0.05	.05	.06	.07	.10
5-Average initial weight	407	400	401	405	406
6-Average final weight	665	605	580	531	544
7-Average gain	258	205	179	126	134
8-Average daily gain	1.84	1.46	1.28	.90	.96
9-Feed required for 100 pounds gain:					
Silage	578	1701	1980	2959	2789
Ground corn	472	148	170	---	---
Cottonseed meal	75	95	78	---	104
Mustard seed meal	---	---	---	111	---
Ground limestone	5	6	7	10	9
Salt	2	3	5	8	11
10-Cost of feed for 100 pounds gain	\$16.68	\$12.29	\$12.78	\$10.28	\$11.74
11-Feed cost per heifer	43.02	25.18	22.89	12.95	15.77
12-Initial cost of heifers at \$17.40 per cwt.	70.82	69.60	69.77	70.47	70.64
13-Total cost per head to date	113.84	94.78	92.66	83.42	86.41
14-Necessary selling price per cwt. to pay for feed and initial cost	17.12	15.67	14.25	15.71	15.68
15-Appraised value per cwt. May 3					

wintering Ph

skip wintering & grazing

grass feed

FEED PRICES: Corn, \$1.40 per bu.; cottonseed meal, \$90 per ton; silage, \$5 per ton; oats straw, \$15 per ton; mustard seed meal, \$50 per ton; ground limestone, \$20 per ton; alfalfa hay, \$25 per ton.

INFLUENCE OF WINTER RATIONS AND GAINS ON SUBSEQUENT PASTURE GAINS

A. G. Pickett and A. D. Weber

1. The relative values of Atlas silage, oats straw and a combination of these two roughages.
2. One pound of cottonseed meal versus four pounds of alfalfa hay as a supplement to the above feeds.

INTRODUCTION

Many authorities and successful beef cattle producers have held the belief that the safest long-time beef production system was one that kept the producer in business 12 months of the year. This, of course, means wintering, grazing and under certain conditions, feeding some grain. In the past we have not been in a position here at the college to work out details of the various systems of beef production since experimental grazing land was not available. March 1, 1947 we gained possession of 1,143 acres of bluestem grass which will be used to develop the best systems of beef cattle production. Other problems dealing with grass utilization will also be studied.

Purchasing lightweight, young, good quality steer calves or yearlings in the fall, wintering, grazing and then selling as feeders or giving them a short grain feed and selling on the fall or early winter market, has proved profitable for many cattle men in Kansas. Feeding trials here at the college are being planned to work out details and modifications for such programs.

The use of roughage, protein supplement, and grain in a manner that will make for the most profitable utilization of grass is our main objective.

This year oats straw was fed as the only roughage and in a combination with silage as against silage alone in wintering steer calves.

EXPERIMENTAL PROCEDURE

Oats straw, Atlas silage and a combination of these feeds were compared when supplemented with 1 pound of cottonseed meal per steer daily in lots 1, 2 and 4 and with 4 pounds of alfalfa hay in lots 3 and 5. Silage was full fed to lot 1, and lots 4 and 5 received one-half as much silage as lot 1 consumed. Oats straw was full fed in all lots where fed. Some straw, especially the heavier part of the stems, was not consumed.

Range-bred Hereford steer calves from southwest Texas were purchased and used in this test. They graded good to choice and were a uniform lot of calves both as to quality and weight when the test started.

OBSERVATIONS

1. As reported in the past with prairie hay, about 3 pounds of silage were equal to 1 pound of oats straw in satisfying the steers' appetite for

roughage. On this basis lots 3 and 5, which received 4 pounds of alfalfa hay daily, consumed $1\frac{1}{2}$ to 2 pounds more roughage per head per day but of course did not receive the pound of cottonseed meal as did lots 1, 2 and 4.

2. Silage as a roughage increased salt consumption. Lot 1, with silage as the only roughage, consumed 0.14 pound salt daily while lot 2, receiving oats straw as the only roughage, ate only 0.04 pound salt daily.

3. Four pounds of alfalfa hay gave slightly better results than cottonseed meal when fed as the supplement to oats straw alone but where oats straw was fed in combination with silage, cottonseed meal gave a small increase in gain over alfalfa hay. These differences are small and more work should be done before any conclusions are made.

4. On the basis of prices used in this report, oats straw could not be profitably fed since wintering costs were approximately as high as where silage was fed and gains were much lower. Current prices should always be applied to results shown.

5. Silage and 1 pound of cottonseed meal in lot 1 gave larger gains, the steers were carrying more flesh and much more bloom than the other four lots.

6. Lots 2 and 3 receiving oats straw as the only roughage finished in rather rough condition but all steers appeared to be strong and thrifty. There was a definite tendency for steers in these lots to develop large, paunchy middles.

7. Steers receiving oats straw as a roughage and alfalfa hay as a supplement had a definite craving for the alfalfa hay and cleaned it up to the last stem. Some of the hay used was over-ripe and quite stemmy.

8. Feces from lots 2 and 3 receiving oats straw as the only roughage, were normal with no tendency toward constipation.

9. The table summarizing this test should be studied by those interested in the feeding value of these feeds.

Phase I - Winter, December 5, 1946 to April 24, 1947 - 140 days

1-Lot number	1	2	3	4	5
2-Number of steers in lot	10	10	10	10	10
3-Ration fed	Silage Cotton- seed meal Salt	Oats straw Cotton- seed meal Salt	Alfalfa hay Oats straw Salt	Silage Oats straw Cotton- seed meal Salt	Silage Oats straw Alfalfa hay Salt
4-Average daily ration:	Pounds	Pounds	Pounds	Pounds	Pounds
Atlas silage	27.46	---	---	13.75	13.75
Oats straw	---	9.18	7.31	4.81	2.20
Alfalfa hay	---	---	4.00	---	4.00
Cottonseed meal	1.00	1.00	---	1.00	---
Salt	.14	.04	.07	.08	.06
5-Average initial weight	411	411	411	410	412
6-Average final weight	546	461	466	516	510
7-Average gain	135	50	55	106	98
8-Average daily gain	0.96	0.36	0.39	0.76	0.70
9-Feed required for 100 pounds gain:					
Atlas silage	2847	---	---	1816	1965
Oats straw	---	2569	1861	635	314
Alfalfa hay	---	---	1021	---	571
Cottonseed meal	104	280	---	132	---
Salt	14	12	18	10	8
10-Cost of feed for 100 pounds gain	\$ 11.78	\$ 31.87	\$ 26.72	\$ 15.24	\$ 14.41
11-Feed cost per steer	15.91	15.94	14.71	16.17	14.12
12-Initial cost per steer	80.04	80.04	80.04	80.04	80.04
13-Total cost per head to date	95.95	95.98	94.75	96.21	94.16
14-Necessary selling price per cwt. to pay for feed and initial cost	17.57	20.82	20.33	18.65	18.46
15-Appraised value per cwt. May 3					

FEED PRICES: Corn, \$1.40 per bu.; cottonseed meal, \$90 per ton; silage, \$5 per ton; oats straw, \$15 per ton; mustard seed meal, \$50 per ton; ground limestone, \$20 per ton; alfalfa hay, \$25 per ton.

THE LIVESTOCK AND MEAT OUTLOOK

by
R. J. Eggert
Associate Director
Department of Marketing
American Meat Institute

SUMMARY

Economic forces of supply and demand have had a free reign in affecting livestock and meat values since the removal of OPA controls in October, 1946. Wholesale meat prices have dropped about one-fifth from the peak reached shortly after OPA controls were removed, and currently are about 10 per cent below those of early March. Various supply and demand factors affecting the outlook in the remainder of 1947 may be summarized as follows:

1. Meat consumption for 1947 is now estimated at 153 pounds per capita - the largest since 1909. This compares with 146 pounds per capita in 1946 and is about 15 pounds larger than the pre-war (1939-41) average consumption.
2. Per capita supplies of beef in 1947 are estimated at 71 pounds, up 11 per cent from 1946, and 26 per cent from pre-war. Pork supplies per capita are about the same as a year ago and off slightly from pre-war. Lamb supplies will be substantially less than a year ago and off sharply from pre-war.
3. A study of the probable distribution of the 153 pounds per capita consumption throughout the year shows that supplies will be relatively light in the second and third quarters, followed by relatively larger supplies of meat available in the last quarter of the year.
4. Demand factors are of major importance in the outlook. Reduced taxes, new wage hikes, strong unfilled demand for many durable goods, including automobiles and housing, increased consumer credit, large foreign demand for industrial goods, are all factors that will tend to help maintain the current demand for meat.

However, modifying forces include such factors as (a) the increased availability of durable goods, which will result in a larger part of the consumer's budget going for these items, leaving a smaller part for meat, (b) probable rent increases, (c) increasing inventories of many goods, and (d) the Government's announced policy to urge lower prices.

(See attached tables and charts for further details)

CONCLUSION

Livestock and meat values are expected to continue at high levels during the next few months, followed by greater than normal seasonal declines by the end of the year, according to an appraisal of the foreseeable economic forces that affect supply and demand.

Table I

PER CAPITA CIVILIAN CONSUMPTION - BY TYPES OF MEAT

1947 Compared With 1946 and 1939-41 Average ^{1/}

Item	1947		1946		1939-1941
	Annual	Per Cent Change From	Annual	Per Cent Change From	Annual
	Rate (Pounds)	1946 : Average	Rate (Pounds)	1946 : Average	Rate (Pounds)
Beef.....	71.0	+ 11%	64.0	+ 26%	56.5
Veal.....	10.0	+ 11	9.0	+ 33	7.5
Lamb and Mutton.....	6.0	- 14	7.0	- 10	6.7
Pork.....	66.0	same	66.0	- 3	67.7
Total Meat.....	<u>153.0</u>	+ 5	<u>146.0</u>	+ 11	<u>138.4</u>
Lard.....	12.5	+ 13	11.1	- 11	14.1

Table II

PER CAPITA CIVILIAN CONSUMPTION - ANNUAL RATE BY QUARTERS

1947 Compared With 1946 and 1939-41 Average ^{1/}

Item	1947		1946		1939-41
	Annual	Per Cent Change From	Annual	Per Cent Change From	Annual
	Rate (Pounds)	1946 : Average	Rate (Pounds)	1946 : Average	Rate (Pounds)
January-March.....	160	+ 4%	154	+ 17%	137
April-June.....	143	+ 8	133	+ 7	134
July-September.....	145	+ 10	132	+ 7	135
October-December.....	<u>165</u>	- 1	<u>166</u>	+ 11	<u>149</u>
Year.....	<u>153</u>	+ 5	<u>146</u>	+ 11	<u>138</u>

^{1/} Estimates by the American Meat Institute were developed chiefly from allocations and other data published by the United States Department of Agriculture and other Government agencies.

FEDERALLY INSPECTED AVERAGE WEEKLY MEAT PRODUCTION

1947 Estimates Compared With 1946 and 1939-41 Average

Item	1947*			1946	1939-41 Avg.
	Million Pounds	Per Cent Change From 1946	Change From Average	Million Pounds	Million Pounds
<u>BEEF</u>					
January-March.....	148.0	+ 25%	+ 64%	118.1	90.3
April-June.....	137.0	+ 76	+ 43	78.0	96.1
July-September.....	146.0	+ 39	+ 40	105.2	104.1
October-December.....	<u>154.0</u>	+ 15	+ 44	<u>134.1</u>	<u>107.3</u>
Total Jan.-Dec.....	<u>145.0</u>	+ 34	+ 47	<u>108.8</u>	<u>99.4</u>
<u>VEAL</u>					
January-March.....	13.5	+ 48	+ 39	9.1	9.7
April-June.....	13.1	+ 64	+ 19	8.0	11.0
July-September.....	14.6	+ 4	+ 27	14.0	11.5
October-December.....	<u>16.5</u>	- 13	+ 36	<u>18.9</u>	<u>12.1</u>
Total Jan.-Dec.....	<u>14.4</u>	+ 15	+ 30	<u>12.5</u>	<u>11.1</u>
<u>LAMB & MUTTON</u>					
January-March.....	13.8	- 30	- 3	19.7	14.2
April-June.....	12.7	- 16	- 2	15.2	13.0
July-September.....	13.1	- 10	- 4	14.5	15.6
October-December.....	<u>14.2</u>	- 11	- 1	<u>15.9</u>	<u>14.3</u>
Total Jan.-Dec.....	<u>13.5</u>	- 17	- 2	<u>15.3</u>	<u>13.8</u>
<u>PORK</u>					
January-March.....	146.0	- 5	+ 20	153.1	121.7
April-June.....	119.0	+ 1	+ 8	118.4	110.5
July-September.....	104.0	+ 16	+ 8	89.6	96.0
October-December.....	<u>165.0</u>	+ 11	+ 13	<u>148.9</u>	<u>146.5</u>
Total Jan.-Dec.....	<u>134.0</u>	+ 5	+ 13	<u>127.5</u>	<u>118.7</u>
<u>TOTAL MEAT</u>					
January-March.....	321.0	+ 7	+ 36	300.0	235.9
April-June.....	282.0	+ 28	+ 23	219.6	230.6
July-September.....	278.0	+ 24	+ 23	233.3	235.2
October-December.....	<u>350.0</u>	+ 10	+ 25	<u>317.8</u>	<u>280.2</u>
Total Jan.-Dec.....	<u>308.0</u>	+ 16	+ 27	<u>265.2</u>	<u>243.0</u>

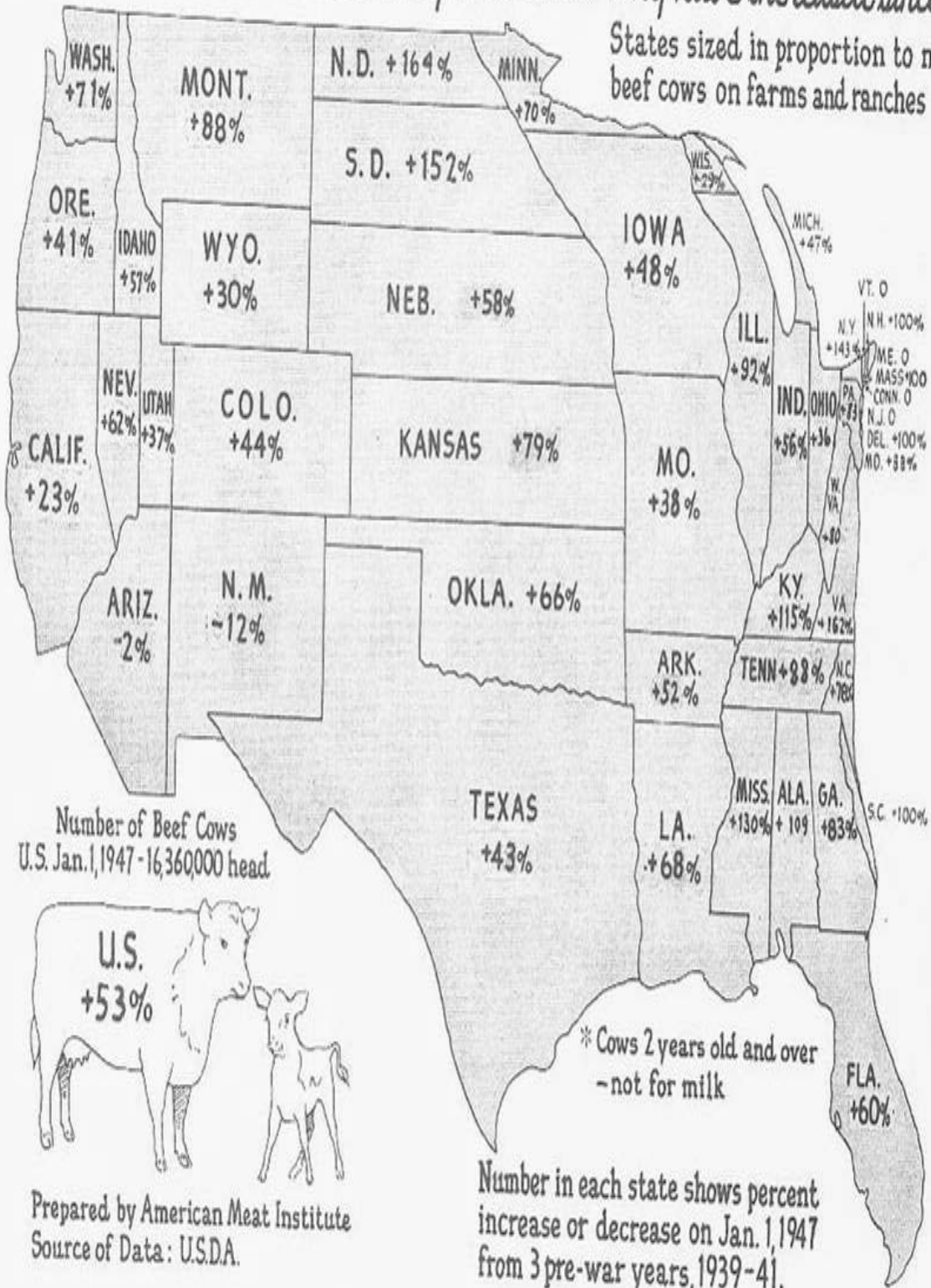
* Estimates by the American Meat Institute were developed chiefly from data published by the United States Department of Agriculture and other Government agencies.

Source: "Livestock, Meats, and Wool Market Statistics and Related Data, 1945" and "Livestock, Meats, and Wool Market Reviews and Statistics, 1946 Weekly Reports".

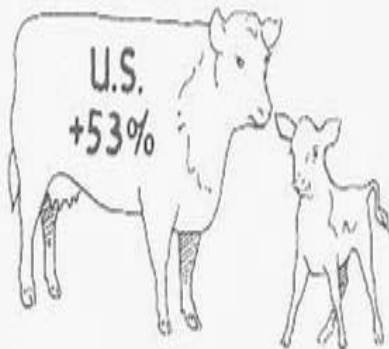
Department of Marketing
 American Meat Institute
 Table No. 138 Revised
 4-22-47

BEEF COWS* - Where they are... Now they have increased since pre-war

States sized in proportion to number of beef cows on farms and ranches



Number of Beef Cows
U.S. Jan. 1, 1947 - 16,360,000 head.



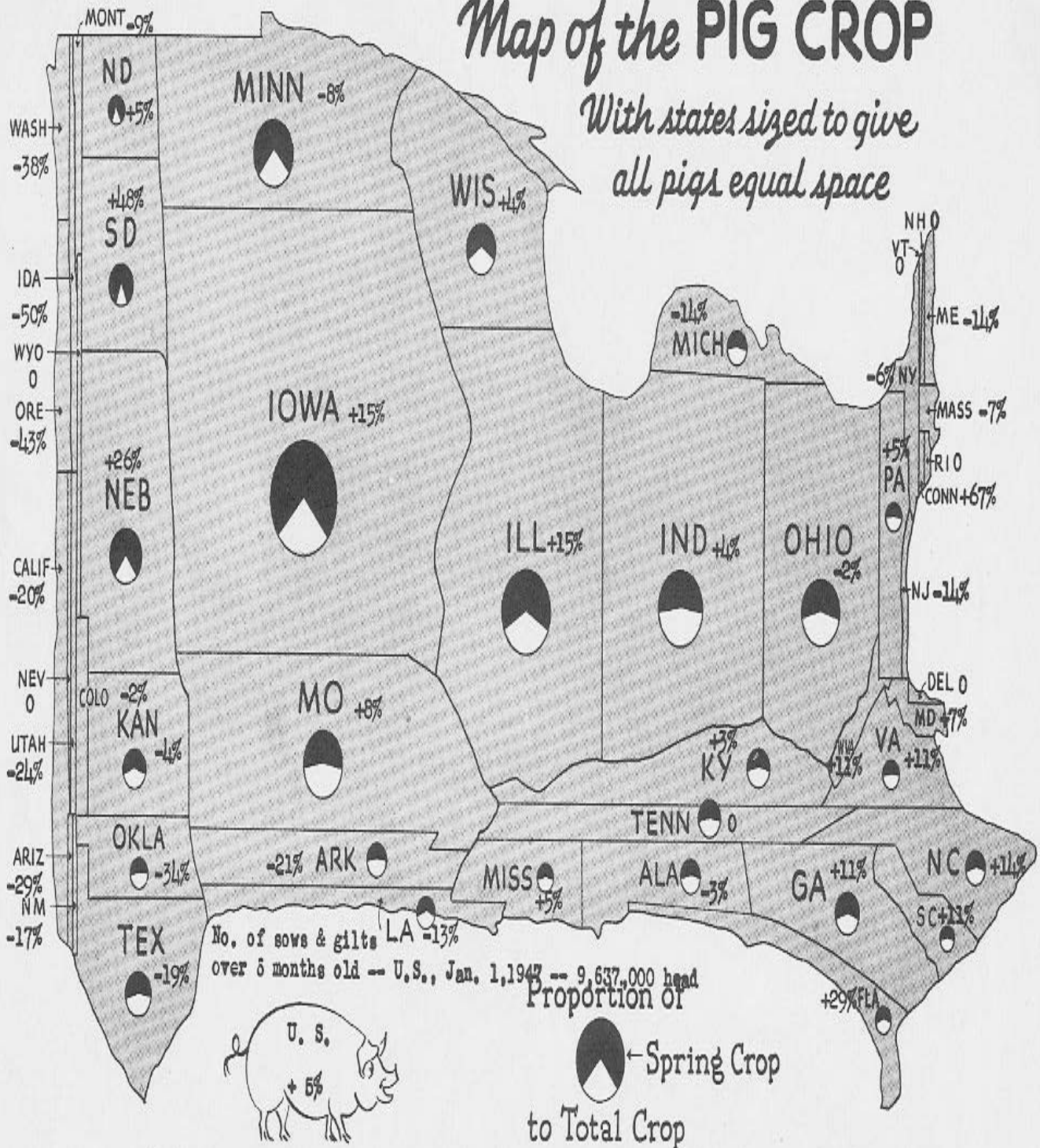
Prepared by American Meat Institute
Source of Data: U.S.D.A.

* Cows 2 years old and over
- not for milk

Number in each state shows percent
increase or decrease on Jan. 1, 1947
from 3 pre-war years, 1939-41.

Map of the PIG CROP

With states sized to give all pigs equal space



Number in each state shows per cent increase or decrease in number of sows and gilts over 6 months old on Jan. 1, 1947 from pre-war years 1939-41.

Prepared by American Meat Institute
Source of Data: U.S.D.A.

LIVESTOCK ON FARMS AND RANCHES - JANUARY 1

Table 1. All Livestock by Species
(Thousands of Head)

Year	Cattle and Calves			Sheep and Lambs			Total
	Not For	For	Total	On	Stock	Total	
	Milk	Milk		Feed	Sheep		
1939-41 Avg...	32,217	36,481	68,698	6,063	46,473	52,541	55,177
1930.....	27,921	33,082	61,003	5,988	45,577	51,565	55,705
1931.....	29,059	33,971	63,030	5,513	47,720	53,233	54,835
1932.....	30,436	35,365	65,801	6,220	47,682	53,902	59,301
1933.....	33,420	36,860	70,280	5,751	47,303	53,054	62,127
1934.....	36,381	37,988	74,369	5,259	48,244	53,503	58,621
1935.....	32,489	36,387	68,846	5,669	46,139	51,808	39,066
1936.....	32,395	35,452	67,847	5,701	45,386	51,087	42,975
1937.....	31,245	34,883	66,098	5,597	45,422	51,019	43,063
1938.....	30,475	34,774	65,249	6,091	45,119	51,210	44,525
1939.....	30,403	35,626	66,029	5,885	45,710	51,595	50,012
1940.....	31,877	36,432	68,309	5,841	46,266	52,107	61,165
1941.....	34,372	37,383	71,755	6,479	47,441	53,920	54,353
1942.....	37,188	38,837	76,025	6,867	49,346	56,213	60,607
1943.....	40,964	40,240	81,204	6,954	48,196	55,150	73,881
1944.....	44,077	41,257	85,334	6,512	44,270	50,782	63,741
1945.....	44,724	40,849	85,573	6,911	39,609	46,520	59,531
1946.....	43,341	39,093	82,434	6,837	35,599	42,436	61,301
1947 (Prelim.)	42,581	38,469	81,050	6,029	32,543	38,571	56,901

1947 - Per Cent Change From:

1946.....	- 2%	- 2%	- 2%	- 13%	- 9%	- 9%	- 7%
1945.....	- 5	- 6	- 5	- 13	- 18	- 17	- 4
1939-41 Avg...	+ 32	+ 5	+ 18	- 1	- 30	- 27	+ 3

Table 2. Cattle and Calves by Classes
(Thousands of Head)

Year	Not for Milk					For Milk			
	Cows & Heifers	Heifers	Calves	Steers	Bulls	Cows & Heifers	Heifers	Heifer	
	2 Yrs. & Over	1-2 Yrs.				2 Yrs. & Over	1-2 Yrs.	Calves	
1939-41 Avg...	10,676	3,401	10,974	5,531	1,635	24,998	5,401	6,042	
1930.....	9,162	2,799	8,885	5,508	1,467	23,032	4,851	5,199	
1931.....	9,809	3,015	8,915	5,798	1,522	23,820	4,962	5,199	
1932.....	10,439	3,113	9,744	5,560	1,580	24,896	5,020	5,449	
1933.....	11,346	3,414	11,241	5,765	1,654	25,936	5,250	5,574	
1934.....	12,678	3,656	12,326	6,069	1,752	26,931	5,382	5,675	
1935.....	11,151	3,362	10,980	5,323	1,673	26,082	4,995	5,280	
1936.....	11,048	3,493	10,574	5,637	1,643	25,196	4,772	5,484	
1937.....	10,632	3,229	10,395	5,325	1,614	24,849	4,899	5,305	
1938.....	10,132	3,136	10,053	5,555	1,593	24,466	4,608	5,500	
1939.....	9,987	3,058	10,572	5,192	1,594	24,600	5,122	5,904	
1940.....	10,678	3,357	10,936	5,283	1,625	24,940	5,525	5,967	
1941.....	11,366	3,789	11,413	6,119	1,685	25,453	5,676	6,254	
1942.....	12,578	4,055	12,219	6,596	1,740	26,313	5,869	6,635	
1943.....	13,980	4,547	13,239	7,361	1,837	27,138	6,067	7,035	
1944.....	15,521	4,971	13,768	7,849	1,963	27,704	6,352	7,201	
1945.....	16,456	5,069	12,871	8,339	1,999	27,770	6,307	6,772	
1946.....	16,319	4,854	12,565	7,715	1,888	26,695	5,803	6,595	
1947 (Prelim.)	16,360	4,659	12,572	7,149	1,641	26,100	5,611	6,758	

1947 - Per Cent Change From:

1946.....	Small%	- 4%	Small%	- 7%	- 3%	- 2%	- 3%	+ 2%
1945.....	- 1	- 8	- 2	- 14	- 8	- 6	- 11	Small
1939-41 Avg...	+ 53	+ 37	+ 15	+ 29	+ 13	+ 4	+ 3	+ 12

Table 3. Stock Sheep by Classes
(Thousands of Head)

Year	Lambs			On Year Old and Over			Total 1. Yr.	
	Ewes	Rams &	Total	Ewes	Rams	Wethers		and Over
		Wethers	Lambs		Lambs	Wethers		
1939-41 Avg.	7,074	1,432	8,506	35,721	1,535	911	37,967	
1930	7,274	1,250	8,523	34,614	1,233	1,196	37,043	
1931	7,205	1,371	8,576	36,514	1,268	1,342	39,144	
1932	6,983	1,349	8,332	37,095	1,315	1,060	39,470	
1933	6,635	1,218	7,853	37,012	1,318	1,120	39,450	
1934	7,455	1,360	8,815	37,042	1,322	1,065	39,429	
1935	7,357	1,196	8,553	35,285	1,315	986	37,586	
1936	6,468	1,127	7,595	35,516	1,303	972	37,791	
1937	6,800	1,699	8,499	34,713	1,269	941	36,923	
1938	6,578	1,493	8,071	34,835	1,235	930	37,048	
1939	6,946	1,475	8,421	35,036	1,301	953	37,289	
1940	6,931	1,598	8,529	35,707	1,335	905	37,937	
1941	7,545	1,422	8,967	36,410	1,379	876	38,674	
1942	7,864	1,778	9,642	37,361	1,443	897	39,704	
1943	6,928	1,643	8,571	37,303	1,434	888	39,625	
1944	6,142	1,951	8,093	33,991	1,345	841	36,177	
1945	4,782	1,313	6,095	31,280	1,354	770	33,314	
1946	4,773	1,533	6,306	27,680	1,100	513	29,293	
1947 (Prelim)	4,523	1,451	5,974	25,340	1,011	417	26,768	

1947 - Per Cent Change From:

1946	- 9%	- 5%	- 8%	- 8%	- 8%	- 19%	- 9%
1935	- 10	- 4	- 8	- 19	- 20	- 46	- 20
1939-41 Avg.	- 39	+ 1	- 32	- 39	- 24	- 54	- 29

Table 4. Hogs by Classes
(Thousands of Head)

Year	Under		Sows and Gilts	Other		Total Hogs
	6 Months Old	6 Months and Over		6 Months and Over	6 Months and Over	
1939-41 Avg.	27,161	9,148	9,148	18,870	58,177	
1930	24,685	9,640	9,640	21,380	55,705	
1931	24,338	9,776	9,776	20,721	54,835	
1932	27,340	9,769	9,769	22,193	59,301	
1933	29,719	9,975	9,975	22,433	62,127	
1934	27,581	8,654	8,654	22,386	58,631	
1935	15,425	6,073	6,073	17,563	39,066	
1936	20,024	7,714	7,714	15,337	42,975	
1937	21,234	7,104	7,104	14,745	43,083	
1939	25,111	9,460	9,460	15,441	50,012	
1940	30,044	9,413	9,413	21,708	61,165	
1941	26,328	8,565	8,565	19,460	54,353	
1942	31,090	10,699	10,699	18,818	60,607	
1943	39,401	13,334	13,334	22,146	73,881	
1944	42,337	10,825	10,825	30,579	83,741	
1945	27,212	9,223	9,223	22,896	59,331	
1946	30,035	9,411	9,411	21,855	61,301	
1947 (Prelim)	26,839	9,637	9,637	20,425	56,901	

1947 - Per Cent Change From:

1946	- 11%	+ 2%	- 7%	- 7%
1945	- 1	+ 4	- 11	- 4
1939-41 Avg.	- 1	+ 5	+ 8	+ 3
* 1938	21,035	7,560	15,940	44,535

CONSUMER DEMAND FOR MEAT

The following are some of the principal strengthening factors which are expected to affect the demand for meat through the remainder of 1947:

1. Employment continues at a high level -- 58 million now employed compared with 46 million in 1939.
2. Weekly earnings have nearly doubled since pre-war. In all manufacturing industries, workers received \$24.00 a week in 1939 compared with \$47.00 a week in February, 1947. Real earnings, after making allowances for the increase in the cost of living, have declined some, but are still up about one-fifth from pre-war, giving consumers more money to spend for items that are available.
3. Foreign demand for industrial goods - stimulated by loans of several billion dollars - will aid in supporting employment and consumer income. Foreign demand for meat may be active during the third and fourth quarters of 1947, since allocation and licensing power of Government expires on June 30, 1947, unless Congress should extend these controls.
4. Farm income of over 24 billion dollars in 1946, and up one-fourth (in the first quarter of 1947) over a year ago, will furnish purchasing power for a good supply of industrial commodities throughout the remainder of 1947.
5. Large backlog of liquid savings will help to maintain strong demand for durable goods. Bank deposits in January, 1947, amounted to over 135 billion dollars, and there were over 30 billion dollars worth of Series E United States Savings Bonds outstanding.
6. Government payments to veterans will continue large. 1947-48 budget calls for total expenditure of $7\frac{1}{2}$ billion dollars.
7. Further expansion in use of time credit and installment payments will aid in supporting demand for durable goods.
8. Reduction in income taxes, on basis of proposed schedule now before Congress, will result in increasing weekly earnings on the average by nearly one dollar a week for those with incomes of less than \$5,000 a year.
9. Some further increase in wage rates seems probable.

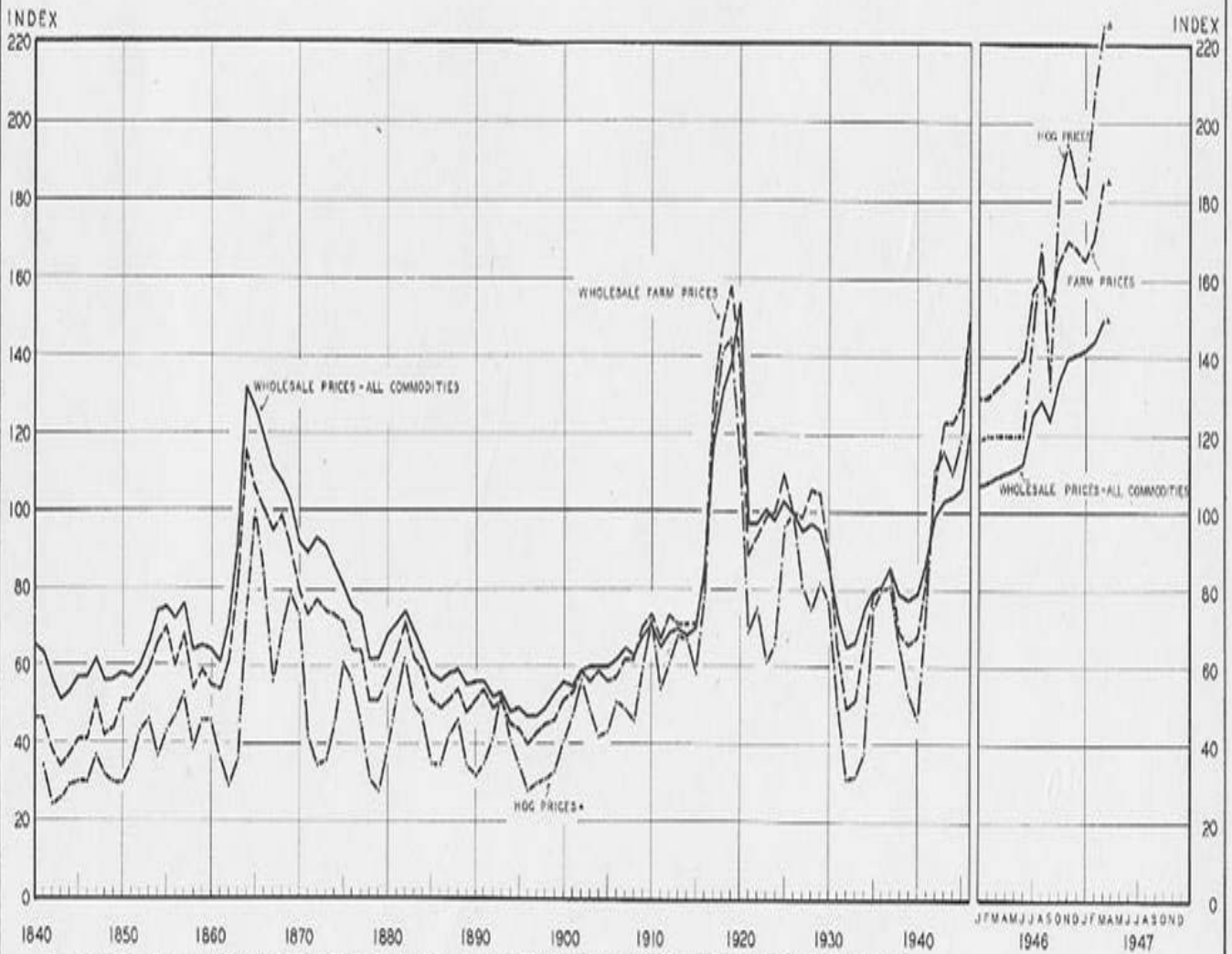
Other factors which are expected to modify somewhat the effects of the strong demand factors listed above are:

1. Increased availability of durable goods, including household appliances, automobiles, etc., which will absorb a larger part of consumer buying power, leaving less for meat and related items. This factor will become of growing importance throughout the remainder of 1947.
2. Probable rent increases, which will affect consumer buying power of almost one-half of the families in the United States.
3. Increasing inventories of goods in some lines which may result in temporary unemployment and reduced incomes of persons engaged in these industries.
4. Increased supply of both durable and non-durable goods will tend to lower prices, especially in some lines. The psychological effect of a downward trend in prices in some items may tend to encourage consumers to delay buying other items such as automobiles and homes.
5. Recently announced policy of the Government to urge companies in some industries to endeavor to bring about lower prices.

Source: American Meat Institute
April, 1947

PRICE TRENDS 1840-1947

INDEX 1926=100



* 1841-1870 AVERAGE PRICE OF CINCINNATI AND NEW YORK PACKER PURCHASES 1871-1947 CHICAGO PACKER AND SHIPPER PURCHASES * MONTH OF MARCH ESTIMATED
 SOURCES: INDICES OF ALL COMMODITIES AND FARM WHOLESALE PRICES; 'PRICES' WARREN AND PEARSON; 1840-81.5 HOG PRICES; SENATE REPORT 1334 BY MR. ALDRICH, 1893. U.S.D.A.