

Chapter 11

Extension Animal Science

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The information that follows focuses on some of the educational activities and programs in Extension Animal Science & Industry. It should not be viewed as a totally comprehensive review.

Early Animal Science Extension Program

Some of the first Extension work performed by Kansas State College in Animal Husbandry was when R. J. Kinzer was head of the department.

During 1905 and 1906, R. J. Kinzer and his assistant, George Wheeler, lectured at Farmers' Institutes and livestock meetings over the state.

They also judged livestock at the Topeka and Hutchinson fairs and at 17 county fairs.

In 1904, A. M. TenEyck gave an address to the Kansas Improved Stock Breeders' Association.

In 1906 and 1907, R. J. Kinzer reported the following lectures given at Farmers' Institutes: 1906-07, G. C. Wheeler, 16 lectures in animal husbandry; 1907-08, G. C. Wheeler, 42 lectures and R. J. Kinzer, 8 lectures in animal husbandry.

These early lectures included information on pork, sheep and wool production, and home preparation of meats.

Judging livestock at state and county fairs was also one of the early activities of the animal husbandrymen. In one of his letters, R. J. Kinzer wrote:

I went to Manhattan on September 1, 1903, and I recall that I had only been there a short time when I was sent out to do some county fair judging. Whether anyone had been called upon for this work previous to that time, I cannot say.

It was perhaps a couple of years later than this date that they began sending Animal Husbandry graduates and Animal Husbandry students out to judge county fairs.

Vern Albrecht of Smith County wrote:

I talked with my father and he said he remembered distinctly that C. G. Elling judged our fair the same year he bought a certain farm, that was 1906.

Fair judging and livestock judging demonstrations soon became a popular Extension program. Professor Kinzer coached the first College student livestock judging team to be sent to the International Livestock Show at Chicago (1903). Carl Elling, later to become an Extension Animal Husbandry Specialist, was a member of that team.

Expand Extension Livestock Program

After 1914, Smith-Lever appropriations enabled development of an enlarged animal husbandry program. As County Farm Bureaus were organized, additional County Extension Agents were employed.

Many more local leaders and cooperators were selected to work with the County Extension Agents and Extension Specialists to study the rural problems of the time and develop solutions to them.

Demonstrations on the farms of leading farmers showed the value of the newer and recommended livestock practices, so the close relationships with the Farmers' Institutes were continued.

The dreams and objectives of John Miller, the first director of Extension, were coming into reality.

First Extension Livestock Specialist

The first Extension Specialist in Animal Husbandry was George Wheeler, formerly an assistant in the

Department of Animal Husbandry. He served from July 1, 1909 to June 30, 1913.

Wheeler became an associate editor for the Kansas Farmer magazine in Topeka. He returned in April, May and July of 1921 to assist with the Better Sires Campaign.

The second Extension Specialist in Animal Husbandry was Charles Taylor, a graduate of the Animal Husbandry department at the University of Missouri. He served as Specialist in Kansas from January 1, 1914 to January 31, 1915.

From that position he became the County Extension Agent in Atchison County. Charles Taylor wrote one of the first Extension bulletins dealing with livestock, entitled "The Feeding and Growing of Swine."

During the 25 years that followed the publication of Taylor's 44 page bulletin, only two new swine production practices were developed--the place of vitamins in the ration and the importance of cleanliness in farrowing quarters as a preventive of many small pig ailments.

The third Extension Specialist in the department was Carl Thompson who graduated from Kansas State Agricultural College in 1904.

After farming and raising purebred Duroc hogs for several years, he joined the Extension Service on September 1, 1915 and continued until August 31, 1918. He accepted a position with the Animal Husbandry at Oklahoma A & M College.

On October 1, 1914, Carl Elling joined the Extension Service as a District Agricultural Agent, assigned to a nine-county district in the southeast corner of Kansas, with headquarters at Parsons.

Harley J. Bower, working in the area of crops and soils, had preceded Carl Elling and had established the interest and confidence of people in that area in

the Extension program.

Bower's program had demonstrated the value of barnyard manure in crop production. Consequently, farmers in that area of the state had a receptive ear for Carl Elling's program of improved production methods, better quality, and efficiency in feeding, rather than simply increasing numbers of livestock.

During the winter months, Elling held livestock schools, assisted with Farmers' Institute programs, and whenever possible, attempted to get his story to people.

Demonstrations were established with leading farmers, livestock judging schools were held for youth and adults, and assistance was given to individual farmers on their livestock production and management problems.

Carl Elling was transferred to Extension Animal Husbandry Specialist on October 1, 1917 to work in sheep and swine production.

Reorganize Extension AS Program—1952

In 1952, the Extension Animal Husbandry program was reorganized by assigning each Extension Specialist to lead a phase of the program in a district or group of counties.

The assignments were:

Wendell A. Moyer, Eastern and leadership in swine production.

V. E. McAdams, Northwest and leadership in sheep production.

Lot F. Taylor, Southwest and leadership in beef cattle production.

Philip Weiner was added to the Extension Animal Husbandry staff as a Meats Specialist, February 1, 1962.

An additional Animal Husbandry Specialist, Keith Zoellner, was employed and assigned to the Northeast District, September 1, 1962.

BEEF PROGRAMS

In 1909, George Wheeler, the first Extension Specialist in Animal Husbandry, started a Purebred Sires Campaign.

This campaign developed out of a research project at Fort Hays Station by the Department of Animal Husbandry, a research project conducted that compared production of the four major breeds of cattle.

More than 1,000 producers signed pledge cards to use only purebred sires in this program.

Extension AH Beef Program—1911

Kansas State Agricultural College representatives told the story in 1911 to many Kansas farmers, at 380 organized Farmers' Institute programs throughout the state.

The nine County Extension Agents employed at that time contributed greatly to the program. This was the beginning of the Extension Animal Husbandry beef cattle program in Kansas.

Roy Kiser, Extension Animal Husbandry Specialist from March, 1918 to March, 1926, was the first to establish livestock demonstrations with farmers.

The demonstrations were designed to determine the cost of maintaining the breeding herd, calculating the cost of raising calves, planning more efficient wintering, managing replacement heifers, and exploring the opportunities for beef cattle breeders associations.

During 1920 and the following years, the emphasis was on improved quality in beef cattle.

Assistance was given to community, county and state fairs. Purebred cattle breeders were organized to hold sales and stimulate interest in higher quality cattle.

The Atchison County Purebred Heifer Calf Club held their first sale on October 16, 1920. They sold 62 head of Shorthorn and Angus heifers.

Institutes that had exhibits of livestock and crops were more successful than those without such displays.

Livestock Improvement Assns—1922

At the Extension Conference on May 17, 1921, a committee developed a livestock improvement program for Extension.

During 1922, livestock improvement associations were organized in Allen, Barton, Butler, Cherokee, Ford, Jewell, Lincoln, Lyon, Marshall, Morris, Ness, Osage, Rawlins, Reno, and Washington Counties.

Cooperators consisted of those who asked for assistance. Several large commercial herd owners started to practice performance testing.

Through 1960 there was continued emphasis on the selection of a beef production system to fit each farm. Production records, 135 in 1961, showed that acceptable returns were being obtained from well planned beef production systems.

Extension Specialists gave ten percent of their time to livestock judging, and the selection of animals for use in a particular beef production system.

Grading demonstrations with stocker and feeder cattle were conducted at community sale pavilions and coordinated by the Extension Livestock Specialists with the Livestock Marketing Specialists.

Farmers present were given an opportunity to practice the principles they had learned. Performance testing expanded gradually, with 60 herds participating in 1960.

Beef Programs—1920's

In 1922, the Kansas City, Missouri, Chamber of Commerce provided \$2,000 for cash prizes to be awarded to counties in a Better Bulls Contest. The awards were based upon the number of scrub bulls replaced with purebred bulls.

Plans of work also provided for conducting livestock sales, tours, and feeding demonstrations; and for organizing Boys' and Girls' Calf Clubs.

Also, during 1922, marketing was included in the Extension program to improve the market for farm products. The Specialists helped County Extension Agents organize shipping associations.

A partial list included 160 such associations. Schools were held at the stockyards in Kansas City, Missouri, for the managers of the shipping associations.

Baby Beef Program—1923

During 1923, 1924 and 1925, the change from feeding big cattle to baby beef was in progress. Baby beef feeding demonstrations were established.

Cowherd Improvement Program—1926

When J. J. Moxley was employed as Animal Husbandry Specialist on August 8, 1926, emphasis was started on beef herd management to stimulate interest in good cow herds rather than big steers.

Demonstrations included livestock improvement, silage feeding, fattening calves using silage as a basic feed, and wintering beef cattle.

In 1927, 24 demonstrations with 1,545 cattle were used to encourage the use of good cow herds to utilize roughage and grass to produce calves that would use grain to make good quality light-weight beef.

County Show Herd—1936

In 1936, a new feature of the Extension beef cattle program was the county show herd for purebred breeders. The objective was to raise the quality of purebred cattle and create more interest by commercial producers.

County herds of ten head, from as many as five different owners, were shown at the State Fairs as well as County Fairs.

Cattle Production Systems—1940's

During the late 1940's, emphasis was placed on a beef program to fit the area of the state and the particular farm.

The Kansas Beef Production Contest, sponsored by the three beef breeds and the Kansas City Chamber of Commerce, demonstrated that the beef systems being developed did provide satisfactory returns.

Tours and other Extension program activities in the counties were focused upon the "system" being used rather than cattle only.

Beef cattle shows and sales (many for bulls only) were developed as a means of permitting breeders to compare their stock, to provide a ready opportunity for others to buy, and to generally give an incentive to further improve the quality of beef cattle herds.

Beef Operations Become Larger—1950's

By 1950, the beef cattle industry in Kansas had undergone certain significant changes. The number of small cow herds declined.

The shortage of labor during World War II caused many cow herd owners to abandon small herds and go to a steer pasturing and feeding program. The size of the remaining cow herds increased.

Grassland transferred to larger tracts under one ownership. The advent of commercial feed lots brought about a narrower feeding margin. The trend was toward large scale and specialized operations.

Yearling Cattle to Feedlots

One other change was the decline in the importation of three and four-year-old steers from Texas into the Bluestem area of Kansas for grazing during the summer. Cattle were moving to the feedlots as yearlings.

Beef Demonstration Records—1956

Performance evaluation was the objective of a Beef Demonstration Records Program. In 1956, the Extension Livestock Specialists began performance testing on a demonstration basis.

The program had these objectives:

- 1) To supply producers with information of value in culling low-producing cows.
- 2) To supply producers with information for selecting replacement heifers.
- 3) To help gather information which could prove the value of the producer's herd sire.

This program was based on figures collected from the Ramsey Ranch in Butler County. County Extension Agents in the principal cow production areas of the state assisted with this work.

Program Participants—1961

In 1961 there were 135 beef production records, 69 herds on performance testing, and 7,230 4-H beef projects.

Certified Feeder Calf Program—1968

In 1968, the Beef Demonstration Records Program was replaced with a Certified Feeder Calf program that incorporated many of the concepts of the previous programs, but required that a random sample of weaning calves be placed on feed to determine feedlot and carcass information.

Ten ranches producing commercial feeder calves in Kansas participated in the first Kansas Certified Feeder Calf Program.

The purposes were to help build sound herd improvement in commercial beef cattle production, prove superior performance in herds, and provide valuable sales data for feeders.

In 1973, the certified feeder calf program had two test pens of cattle, involving 20 producers, that were gain tested and carcass information obtained. This program was very instrumental in inspiring producers to do a better job in their selection and breeding programs.

Extension Beef Specialists assisted County Extension Agricultural Agents with their county meetings, in-depth schools, field days, and tours.

They provided information and guidance on beef improvement programs, crossbreeding programs, and herd replacement selection.

Register of Merit Show—1969

Beef improvement programs continued to receive major emphasis in Kansas at the state and county level, with increased participation by both purebred and commercial herds.

Purebred breeders took greater interest in the product they were producing by doing more within herd carcass evaluation.

In addition, Kansas Extension Specialists cooperated with the Kansas Hereford Association and the American Hereford Association in conducting the first Register of Merit Live Steer and Carcass Show in the United States, at the 1969 Kansas State Fair.

County interest in beef cattle improvement programs resulted in an increased number of cross-

breeding programs providing demonstrations using not only the present breeds of beef cattle, but also many of the newer exotic breeds.

Crossbred Cattle Program—1970

Although animal scientists at several universities in the late 60's had shown that beef cattle crossbreeding produced heavier calves at weaning, and a larger percentage calf crop than straight breeding, the economics of an analysis of crossbreeding beef cattle had not been conducted.

Extension Economists conducted a study and analysis on this subject in 1970. Valuing calves at 33 to 34 cents a pound, they showed that cow herd owners in Kansas could increase their net income by \$25 or more per cow — by crossbreeding instead of straight breeding.

Beef cattle crossbreeding analysis, and profit increase potential from crossbreeding was discussed in a publication, *Beef Production on a Business Basis*, by Wilton Thomas and Jay Treat, Extension Economists.

Crossbreeding was field tested with commercial producers and Extension meetings were conducted jointly by Extension Livestock and Economics Specialists. The cattle owners who participated supported the validity of the economic analysis.

Furthermore, cattlemen exhibited intense interest in beef crossbreeding and the potential increased income from this relatively new practice.

Kansas had 1,839,000 beef cows in 1970, of which it is estimated that no more than 10 to 15 percent were crossbred. This left at least 85 to 90 percent of the commercial beef cows in the state with potential for increasing income through crossbreeding.

Of the 1,839,000 beef cows in Kansas, 75 percent would represent 1,379,250 head of commercial beef cows that were not being crossbred. With a \$25 net income increase per cow, the beef cow herd men of Kansas would increase their net profit by \$34,481,000 annually!

It was realized that full potential is seldom accomplished. However, a very small percent of the \$34 million profit increase would be significant to cattlemen of Kansas.

In the 1970's and into the 1980's the merits of systematic crossbreeding were presented at county, multi-county, state and multi-state Extension events.

Bull Testing Station—1970

Beef cattle improvement was singled out for a major thrust, with specific emphasis on bull testing.

In 1970, a cooperative venture was undertaken between the Kansas Livestock Association's Beef Cattle Improvement Committee and the Kansas State University Extension Service.

A committee, comprised of prominent purebred beef breeders and Extension Beef Specialists, investigated the possibilities of a central bull testing station to be located in Kansas.

The committee selected the Solomon Valley Feedlot, Beloit, as the test station site. The initial facility handled 250 bulls and began operation in the spring of 1971.

Objectives of the bull testing station were:

- 1) To compare gainability and conformation of bulls and their sires.
- 2) To encourage herd improvement through the use of performance tested bulls.
- 3) To encourage and assist in the use of records as a means to more efficient beef production.

Beef Evaluation Clinics—1970

Also in 1970, there was considerable interest by cattle producers and feeders for improving their knowledge of cattle grades and quality when purchasing beef cattle.

Seven beef evaluation clinics were held for producers, where cattle were evaluated on foot and on the rail. Over 500 producers participated in these clinics.

In addition, a commercial steer show for feedlot operators was held. Commercial feedlots entered 134 head of cattle in an attempt to correlate live animal characteristics with the carcass traits that made up a top animal for the beef cattle industry.

This event evolved into the annual Garden City "Beef Empire Days" Live and Carcass Evaluation Show.

Feedlot Newsletter—1976

A very popular newsletter was initiated in 1976 called *Kansas Focus on Feedlots*. This newsletter combined efforts of the Extension and department staff members of Animal Sciences and Industry, Engineering, Economics, and Wildlife Damage Control.

It focused on costs of gains, beef cattle outlook, and feature stories on research regarding nutrition and management of beef cattle.

In 1976 it had a mailing list of 150 feedlots. In 1971 a mailing list of 750 based on requests, and in 1979, Focus on Feedlots newsletter coverage was expanded to reach 1,500 Kansas feedlot operators on a monthly basis.

Beef Demonstration Records—1950's-60's

The importance of gainability, weaning weight, and production systems was clearly demonstrated during the 50's and 60's.

In the early 60s, the importance of carcass grade and cutability was stressed with many producer meetings and youth programs. These incorporated live animal evaluation and subsequent carcass evaluation for grade and cutability.

Central Bull Tests—1974

By 1974, a total of five Central Bull Tests were operating in Kansas. Most of the test stations followed the recommendations and guidelines as set down in the Kansas Beef Improvement Program publication.

Interest in beef improvement programs extended so that over 300 herds of both purebred and commercial cattle participated in on-the-farm testing programs, involving over 40,000 head of cattle.

More Bull Test Stations—1970's

Long-term benefits accrued to the Kansas cattle industry from improved sire selection based on information generated by the Kansas Central Bull Testing Program. Two additional test stations were started at Potwin and at Colby.

Producer acceptance of performance tested yearling bulls remained strong. Breeder participation in test stations remained high in spite of reduced cow numbers in Kansas; 1,017 bulls per year - 1984 through 1988, 927 in 1980-1983, and 539 in 1972-1975. Through 1988, over 14,500 bulls had been tested in 64 tests.

New Findings/Recommendations—1970's

The test stations provided an opportunity for Extension to continue to encourage herd improvement through the use of performance tested bulls and to encourage and assist in use of records as a means to more efficient beef production.

As knowledge and techniques evolved, new information was added to the bull test requirements and reports. For example:

- 1) Ultrasound measurements for fat thickness and ribeye area was started in 1971.
- 2) In 1972, complete weaning information, i.e., adjusted 205 day weight, etc., was required for entry.
- 3) Started reporting frame scores in 1973.
- 4) Started taking scrotal measurement in 1974 as part of breeding soundness evaluation. Started reporting in sale catalogs in 1980.
- 5) Also started reporting birth weights in 1980.
- 6) In 1984, started using Estimated Breeding Value (EBV's) when available.
- 7) In spring of 1987, started publishing Expected Progeny Differences (EPD's) and in fall of 1987, it was made mandatory to have EPD's in order to sell in sales (providing breed associations computed them).

Bull test progress and final reports were mailed to over 4,000 beef producers annually in Kansas, keeping them abreast with not only the progress of bulls on test, but also some of the latest developments, such as EPD's.

Kansas Steer Futurity—1974

In 1974, the certified feeder calf performance program was modified to evaluate gainability and profitability of calves, and was called the Kansas Steer Futurity, with two test sites.

It provided both purebred and commercial producers an opportunity to test, on a limited basis, the profitability of retaining ownership by feeding out a representative sample of their cattle.

New steer testing demonstrations were added at Smith Center and Coffeyville in 1976, and attracted 304 head of steers from 41 producers. In 1977, seventy-six producers consigned 593 head of steers to the Steer Futurity feedlot programs.

One of the most striking discoveries in the demonstrations was the difference in steers value per day of age. It revealed that certain beef carcasses were worth \$200 more than carcasses of other animals of the same age and carcass grade.

Industry Acceptance—1978

Wider adoption of this beef improvement program through bull testing and calf performance testing, as Extension programs had demonstrated, meant millions of dollars in improvement in efficiencies to Kansas cow herd operators and cattle feeders.

The Kansas Livestock Association Beef Improvement Committee heralded this cooperative effort in beef improvement as one of the soundest livestock

programs ever developed in Kansas. Feedlot and carcass evaluation of steers continued to gain interest in Kansas in 1978.

Bull Test Stations—1978

Kansas Bull Test Stations continued to gain support and recognition in 1978, demonstrating the importance of performance testing programs.

In the previous year, 145 herds participated in the Kansas Bull Test program by testing 675 bulls. At that time, 4,711 bulls had been tested from approximately 200 different Kansas herds.

In 1978, the Kansas Bull Test operated two test stations; one at the Solomon Valley Feedlot at Beloit, Kansas, and the other at the Blackjack Feedyard, Yates Center, Kansas.

Both of these test stations were in commercial cattle feedlots and used the same ingredients and basic rations common to feedlots. This provided one of the major strengths to the program, in that the bulls were fed out under conditions in which their progeny had to perform.

Educational Materials—1980's

Materials included two publications, Kansas Steer Futurities and How to Use the Latest Beef Cattle Genetic Information.

Also used were AI Beef Sire Directories, Bull Test Station Reports, computer programs, newsletters, mass communications, videos and slide sets.

Purebred Breeder Seminars—1982

Purebred beef breeders of Kansas have long provided strong leadership to their respective breeds and to the entire beef industry, not only in Kansas but in the nation.

Purebred breeders had the same production problems that commercial producers confronted. However, they also had many unique problems.

To address their particular concerns, Extension, in cooperation with State Breed Associations and KLA, initiated special seminars for purebred breeders in 1982. The seminars addressed current situations in the industry in one-day workshops.

Nationally known speakers were invited from Extension, Research and industry to present material of current interest. The seminars were each held at two locations to make greater use of out-of-state speakers.

Topics included:

- 1) Merchandising.
- 2) Breeding programs.

- 3) Breeding systems.

- 4) Reproduction.

Each seminar was highlighted with producer speaker panels.

Seminars were held in 1982, 1984, and 1985. They were well received and widely attended, with 90-150 cattle breeders in attendance at each session.

Expected Progeny Differences (EPD)—1983

Expected Progeny Differences (EPD's) were introduced by breed associations in their National Sire Summaries and subsequently in their entire performance programs.

In the five year period from about 1983 to 1988, cattlemen were provided with the ability to use genotype rather than phenotype for selection and breeding decisions.

Several approaches were used in Kansas and are being used at the time of this report (1988) to educate producers on the use and interpretation of EPD's.

The Kansas Cooperative Extension Service received outstanding support and cooperation from Breed Associations, Artificial Insemination (A.I.) organizations, the Purebred Council of the Kansas Livestock Association, Bull Test Stations, and individual breeders in educational endeavors on EPD's.

Events held which included the use of EPD's in the four years since 1985 were:

- 1) Purebred Beef Seminars.
- 2) Beef Genetic Progress workshops.
- 3) Cow-Calf Seminars.
- 4) Kansas Livestock Association Cow-Calf and Stocker Meetings.
- 5) Sire Selection Schools: at Sale Barns, Field Days, and other public meetings.
- 6) KSU Cattlemen's Day.
- 7) Livestock judging and evaluation schools for youths.
- 8) Performance Bull Evaluation Contests.
- 9) Bull Test Station Sales.
- 10) 4-H Discovery Days

Over 2100 producers attended 12 workshops and public meetings in 1987 where understanding EPD's was highlighted.

National Sire Evaluation—Mid 1980's

To supplement the Steer Futurity program, and to help purebred producers and commercial cattlemen

identify those sire lines, the "National Sire Evaluation Program" was started.

The program was designed to work with national

and state breed organizations to provide feedlot and carcass data. Additional options were available to provide objective evaluation of tenderness and complete carcass cut-out data.

Beef Cattle Management

Five Year Program—1928

In 1928, a new five-year coordinated beef program was planned. The program included disease control, insect control, equipment, feed production, rodent control, marketing and farm management.

A series of two-day training schools for County Extension Agents and leaders was conducted. The goals of the coordinated program included the use of purebred bulls, culling of cows, an early uniform calving period, creep-feeding calves, and adequate winter feeding of the breeding herd.

Beef Demonstration Train—1931

In 1931, a special Santa Fe beef demonstration train was used to help spread information on the production of beef; principally by the creep-feeding method, the marketing of the finished product, the control of beef cattle diseases and insects, the selection and preparation of beef from the housewives' standpoint, the place of beef in the diet, and the development of rural boys and girls through 4-H Club work.

The train made 34 stops in 34 counties and reached 109,133 people. Information was given through a speaking program, exhibits of equipment, control measures and livestock.

The train was financed by the Division of Extension, the Kansas City Chamber of Commerce, the Kansas State Board of Agriculture, the Kansas Livestock Sanitary Commission, the Kansas City Stockyards Company and Exchange, Kansas City Producers' Commission Company, the Division of Agriculture of Kansas State College, and the St. Joseph Producers' Livestock Commission Company.

The Santa Fe Railroad provided the nine-car train and its operating expenses.

Depression and Drought—1934

By 1934, a severe drought had developed, coupled with low prices for livestock and other agricultural commodities. This contributed to less activity in the Animal Husbandry Extension program, as the Extension Specialist, J. J. Moxley, was assigned to emergency duties.

Emergency Federal Programs—1934

For the Corn-Hog program of the Agricultural Adjustment Administration, J. J. Moxley developed a handbook of information with answers to the many questions cooperators had about participating in the program.

By June of 1934, the drought had become so severe that a Government Emergency Cattle Buying program was established. J. J. Moxley was placed in charge of that program also. County committees were established, the County Extension Agent acted as county drought director, and county appraisers were appointed. The Bureau of Animal Industry furnished the inspectors.

The Kansas Emergency Relief Committee, acting as agents for the Federal Surplus Relief Corporation, accepted the cattle and arranged for their slaughter and distribution. State Canneries were set up so some of the meat was processed in the state.

By December 1, 1934, a total of 482,215 head of cattle had been accepted for purchase for food purposes. An additional 11,934 were condemned as unfit for food. During this time, \$7,124,769 was spent in Kansas for the cattle. A few were purchased after this date.

Extension Livestock Program—1935

During this time, the Extension beef cattle program continued, with 248 result demonstrations on beef herd management, winter schools in the counties and a state beef production contest to show the results obtained by the good cattlemen.

Special emphasis was placed on the new phase of handling light-weight cattle by the deferred system. A carlot demonstration of creep-fed calves was made at the American Royal Livestock Show in Kansas City.

Program Developments—1937

Through 1937 and 1938, the Extension program continued to emphasize the county show herd program, winter schools, demonstrations and tours. In 1937, 13,964 cattlemen were contacted through these methods.

Cattlemen began to work their way back after those years of drought and depression. Herds were established and rebuilt. An extensive pasture improvement program was fostered.

Use of ponds was emphasized, and as a result more deep ponds were dug than in any comparable time previously. Legumes were planted and thousands of temporary and trench silos constructed.

In 1938, an outgrowth of the county show herd program was a special sale of top quality breeding stock sponsored by the Kansas Hereford Association.

Practically all of the top cattle went to Kansas buyers. The overall objective was for Kansas cattlemen to produce top feeders.

Program in WWII Years—1940's

The program of upgrading the quality of beef cattle and the marketing of younger lightweight cattle continued into the war years of the 40's. To meet food needs during the war, cattlemen were encouraged to cull carefully and severely but to maintain high quality stock.

The Neighborhood Leader program was adopted by the Extension Service as a means of reaching the maximum number of people with specific agricultural information. Extension Specialists used this system in the beef cattle program.

Beef producers were kept informed with the latest information available on cattle numbers, feed supply, and feeding methods. The purpose was to use a maximum amount of rough feeds and a minimum amount of grain to produce a marketable animal for slaughter.

J. J. Moxley, Animal Husbandry Specialist, resigned December 31, 1944 to operate his ranch in Morris County. Moxley was succeeded by Philip Ljungdahl on March 16, 1945.

On January 15, 1946, Lot Taylor was added to the Extension animal husbandry staff.

Drought—1952-56

There was low rainfall again from 1952 to 1956, causing some decline in beef cattle numbers due to a shortage of grass and feed. Emphasis in the Extension program was placed on balanced rations, use of drought feeds, and the substitution of relatively cheap grain for costly roughage.

There were 6,381 demonstrations in the various phases of beef cattle production and management, with 48,756 cattle involved. The enrollment in 4-H beef projects was 6,435.

Agricultural Marketing Studied—1957

Starting with 1957, the supply of grass and roughage was very good. In Finney County, the County Extension Agent, Extension specialists, and a committee of farmers, studied a situation where 1.5 million bushels of milo had been shipped from the county instead of being fed, although one commercial feedlot with 10,000 head of cattle was operating in the county. A cooperative feedlot was considered but no action taken.

The retarding factors were given attention. It was anticipated that some would be overcome and others reduced to the point where more cattle would be fed home grown milo.

More commercial feedlots were being constructed each year, with 49 counties reporting 103 in 1961, all operating at full capacity.

Brucellosis Program—1950's-60's

Specialists also assisted with the program of testing for brucellosis. By 1961, 42 counties had been declared modified certified.

In-Depth Beef Schools—1960's

The success of Extension three-day county or multi-county in-depth schools for beef producers in 1962 continued through the late 1960's. The in-depth approach allowed Extension Specialists to teach not only "what," but "why."

The format of the schools allowed technical information to be taught in "workshop -producer" discussion sessions. In-depth topics varied, but usually included nutrition, reproduction, health, genetics, animal breeding, marketing, and economics. Most presentations allowed three to four hours per topic.

By 1969, virtually every county in Kansas had hosted, or at least participated in, one Extension in-depth beef school. Participation averaged between 20-25 producers per school.

In-Depth Training—1962

A significant development in 1962 was County Extension Agent and leader training in depth.

Two counties, Butler and Morris, selected a committee to plan a series of educational meetings for the presentation of more technical and detailed information than that usually given in a winter school.

A series of three meetings, on consecutive days or once each week, was held. An enrollment fee was charged to cover the expenses of non-Extension personnel assisting with the schools.

Beef Production in Kansas—1965

On January 1, 1965, Kansas had 5.2 million head of cattle including 1.6 million head of beef cows two years old and older. It ranked fourth in the nation for all cattle on farms and ranches.

Cash receipts from cattle sales in Kansas were \$743 million in 1964. In 1965, 857,000 fed cattle were marketed in Kansas.

The commercial feedlot industry was rapidly expanding in southwest Kansas, with its desirable weather conditions and the expansion of irrigation for feed grain and forage production.

The state had 18 million acres of native and tame grasses. With these resources and producer interest, Extension's opportunities in beef cattle production remained strong and were increasing.

Livestock Waste Control—1967

A Kansas agricultural and related waste control regulation law required that new livestock feedlots be registered on July 1, 1967, and all existing feedlots be registered by January 1, 1968.

Applications for registration were made to the Kansas State Department of Health, Environmental Health Services, which issued permits to producers meeting water pollution control standards.

Starting in 1967, the Cooperative Extension Service concentrated on informing feedlot operators and the public about the pollution problem associated with the livestock industry.

Producers were informed of their responsibilities under the regulations in effect, and cattle feeders were advised about the layout, design, and development of effective run-off control systems.

About 2,000 producers were contacted in 1969 through meetings, conferences, and result demonstrations.

Specific preliminary layout plans were prepared for six major feedlots with a potential capacity of 50,000 head of cattle, and for 15 smaller farm-size lots with a total capacity of 10,000 head. All plans included run-off pollution control systems.

Coordinated Extension Program—1960's

As a result of efforts by Extension Specialists in engineering, animal science, veterinary medicine, and plant science, and County Extension Agents, the program was favorably accepted and many steps taken for its smooth implementation.

By 1970, all major feeding operations had developed, or started, an effective water pollution control program. Approximately 75 percent of producers

required to register had done so. A favorable response, by livestock producers, to State personnel who checked the facilities, was reported in over 90 percent of the cases.

Extension education support for this program had speeded the acceptance of the regulations and of the progress made with this important problem.

Feedlot Feasibility Program—1968

In the late 60's, considerable interest existed in the expansion and building of more feedlots, particularly in southwest Kansas. This prompted local interest in feedlot feasibility studies in 1968.

Extension Animal Science and Resource Development Specialists proposed a joint publication outlining "Guidelines to Commercial Feedlots in Kansas."

Following this publication, about a dozen counties requested and received assistance in preparing summaries for groups of investors and community leaders.

In several counties the leaders formed associations and raised money based on the information presented in the studies.

New feedlot facilities with a capacity for at least 74,000 cattle were added to the feeding industry in Kansas as a result of these Extension feasibility efforts.

Many additional feedlots were constructed that did not directly involve Extension Specialists, but used feasibility data.

Economic Spin Off—1969

The new feedlot facilities generated additional income in the areas where they were located. A 10,000 head lot employed about 10 people, and would generate about \$6.4 million for the local economy.

Added income was generated in Kansas as new packing facilities were built and expanded. A new packing plant was located in Liberal as a result of the expanded feeding industry.

Several alfalfa dehydrating plants were built as more locally grown feeds were utilized.

Cattle feeding in Kansas continued to increase, and reached an all time high of 1.64 million head of grain fed cattle slaughtered in Kansas in 1969. This was a six-fold increase over 1957.

Of the total cattle on feed, 65-75 percent were fed out in commercial feedlots of 1,000 head or more.

To facilitate the cattle feeding industry, a handbook on calculating net energy and a computerized program for least cost ration formulation were developed.

Also emphasized in 1969 was the use of wheat as a feed grain, since it provided one of the most promising opportunities for reducing ration costs. Including wheat in the finishing ration continues today when price effective.

It was estimated there were 9,000 feedlots in Kansas in 1970. From them, 1.89 million head of grain-fed cattle were marketed.

There were 8,868 feedlots with a one-time capacity of less than 1,000 cattle that marketed 495,000 head.

There were 132 lots with a capacity of 1,000 head or more that marketed 1,395,000 cattle.

Beef Field Trials—1970's

Greater emphasis in the 1970's was placed on beef field trials, since sophisticated research dealing with minute details did not provide information necessary to successfully manage Kansas livestock operations.

Changing Cattle Markets—Late 70's

More favorable cattle prices in 1978-79 created greater opportunities for the Kansas cow-calf producer and new challenges to stocker-feedlot operators.

To capitalize on the higher calf prices, cow-calf operators shifted emphasis from low-cost production to improving weaning weights and reproductive performance.

In contrast, higher calf prices meant stocker-feedlot operators had to re-evaluate feeding and managerial strategies.

In 1978, fluctuating cattle prices and feed costs continued to create both opportunities and challenges for the entire beef cattle industry across Kansas.

The industry consisted of 1.8 million head of beef cows, in excess of two million stockers, and a feedlot industry that finished in excess of three million head of fat cattle.

Therefore, beef cattle Extension activities continued as an important part of the Extension Animal Science program.

Modified Extension Methods—1970's-80's

To bring the latest information on cattle management, in excess of 100 beef cattle schools, meet-

ings, and tours were conducted in various areas of Kansas in 1979.

Sale barns were used as an effective meeting location for many of the meetings having in excess of 100 people.

Special conferences, such as the O-K Cattle Conference held in Hutchinson, Kansas, attracted over 225 people.

Newsletters such as Beef Tips and Focus on Feedlots reached in excess of 4,000 cattle producers on a monthly basis.

Impregnated Ear Tags—Late 70's

In the late 70's, insecticide impregnated ear tags became available to producers, to control face flies and horn flies on cattle during the summer months on pasture.

In 1981, several Integrated Pest Management field demonstrations were established to evaluate the effectiveness of ear tags on beef production.

The face flies not only caused stress by damaging the animal's eyes during feeding, but were linked to the transmission of pink eye and Infectious Bovine R (IBR).

Horn flies, with their constant biting and blood sucking, caused reduction in weight gains.

Demonstrations were established in five counties to investigate the effectiveness of tags for controlling these flies. Each demonstration involved local Extension personnel in planning and coordination.

Fourteen ranchers and farmers cooperated by providing cattle to be tagged as well as providing assistance in tagging and weighing cattle.

Insecticide impregnated ear tags showed great promise for the control of flies on grazing cattle where flies were a problem, thus increasing the income of livestock producers.

Data indicated the use of the ear tags allowed yearling cattle to increase summer gains by 15-19 pounds per head, and suckling calves by 20-30 pounds.

Additional gains translated into approximately \$11.75 and \$17.50 additional income per head, for yearlings and calves respectively. The use of this technology added millions of dollars to the livestock industry of Kansas.

It also pointed out the need for additional research in the control of face flies, and the need to further investigate the chemical resistance of horn flies.

Growth-Promoting Implants—1974

Extension livestock specialists, starting in the fall of 1974, initiated programs to stimulate greater and more effective use of growth-promoting implants.

These demonstrations involved implanting suckling calves to improve weaning weights. The average improvement in these weaning weights was 15 pounds additional weight per calf implanted.

In addition, 30 cooperating producers conducted implant demonstrations on yearling steers and heifers, showing a 20-pound advantage from implanting.

In the 105 Kansas counties in the 1975-76 year, over 125 county demonstrations were established to demonstrate the technique of beef cattle implanting and the improvement in gains as a result of the implants.

The initial demonstrations showed producers that they received \$8-10 profit in added gains from each dollar they invested in implants. This increase in beef gains resulted in a multi-million dollar return to beef producers at a time when they were undergoing financial stress.

The widespread use of demonstrations of implants in improving beef cattle gains in all Kansas counties was a true Extension accomplishment.

IRM Surveys—1975-80

Preliminary producer-completed surveys from Kansas beef herds representing 14,968 cow years indicated the mean calving rate of cows and heifers exposed for breeding was 91.3 percent.

Mean weaning rate was 81.2. The difference between calving rates and weaning rates (10.1) reflected preweaning death loss.

The Kansas Extension Service sponsored integrated special emphasis schools so producers could gain knowledge about factors associated with low reproduction. Major areas of emphasis centered around:

- 1) Calving losses, calf survival, and calving difficulty.
- 2) Heifer development and breeding.
- 3) Re-breeding.
- 4) Bull reproduction.

To establish benchmark data for IRM, an in-depth survey of reproductive performance and management practices was conducted in 1984 and 1985 so that progress could be measured.

In the survey production records were evaluated of 169 herds, involving 24,359 breeding age females.

The average herd size was 144 cattle. All surveys were conducted on an individual basis to increase the accuracy of the information collected.

The reproductive evaluation indicated that 85 percent of the cows exposed to bulls weaned a calf. Thirty eight percent of the calves were born the first 28 days, and 66 percent the first 40 days.

The average incidence of calving difficulty on first calf heifers was 25.2 percent, with 3.8 percent of the calves dying within five days of birth.

Based on pregnancy evaluation, 4.2 percent of the mature cows, and 8.4 percent of the yearling heifers were open.

A higher incidence of reproductive problems occurred in first calf heifers, with 9.9 percent of them being open.

Only 47.3 percent of the producers surveyed did pregnancy testing and 59.6 percent used semen evaluated bulls.

In terms of production, the average weaning weight of steer calves was 513.7 pounds. and the average weaning weight of heifer calves was 473.1 pounds.

Eighty-seven percent of the producers were cross-breeding and 84 percent identified calves at birth.

The survey data also indicated that less than 10 percent of the producers kept accurate information on the cost of production.

By reducing the annual cost of production by \$10 a cow, the average saving for each of the producers involved in the survey would have been \$1,440.

For the 169 herds, this equaled over \$240,000 and for the state of Kansas over \$14,000,000.

In 1986, cowherd owners, County Extension Agents, Extension Specialists in Animal Science, Veterinarians and Extension Specialists in Agricultural Economics cooperated in various aspects of optimizing reproductive efficiency.

Financial assistance was obtained from USDA-CES and the National Cattlemen's Association for an Integrated Resource Management Program.

These funds provided for Extension Assistants, paraprofessionals and student labor in various aspects of the program.

Funds or products were also provided by pharmaceutical companies, feed manufacturers, and AI associations.

Over 90 special interest meetings were held from 1984-87 for producers, bovine practitioners, ag lenders and County Extension Agents.

Over 12,000 attended meetings that stressed reproductive efficiency, with emphasis on heifer development, bull breeding soundness evaluation, improving sire selection using EPD's, and enhancing herd health, nutrition, and management.

Beef Field Demonstrations—1976

Beef cattle Extension Specialists, Area Livestock Specialists, and county Extension Agents established demonstrations in 1976 that involved over 2,500 calves and 50 cooperating producers.

Beef cattle operators had been in an economic stress for over five years dating up to the summer of 1978. Producers had to use every scheme and trick to survive.

Extension livestock specialists had a great opportunity to assist beef cattle producers in the use of crop residues to more economically maintain cow herds, implants to improve cattle gains, and performance data to improve quality and efficiency of beef production.

County Cow-Calf Schools—1979

In 1979, 34 county cow-calf schools were held to bring the latest in cow-calf management and research information to cow herd operators. Many schools were dual or multi-county.

New Extension bulletins were prepared on the subject, and television and radio programs broadcast new information to producers.

State-wide meetings such as the KSU Cattlemen's Day program were used to bring information to the cow-herd operator.

Field Research—1970's and 80's

In the late 1970's and 1980's, studies went beyond the demonstration state. Field research trials were conducted at many Kansas feedlots and ranches, in conjunction with the resident research staff.

The research trials generated data for Cattlemen's Day reports and research abstracts for National Animal Science meetings.

Continued emphasis on beef cattle demonstrations and field trials proved to be an effective method of bringing new information to beef cattle producers. Topics included:

- 1) Studying new methods of controlling flies on grazing cattle.
- 2) Studying new methods of improving forage quality and storage.
- 3) Continued field studies on effective use of growth promotants, anthelmintics, abortifacients, etc.
- 4) Evaluating creep rations for nursing calves.
- 5) Evaluating causes of calving difficulty.
- 6) Evaluating time of feeding on when calving occurs.
- 7) Evaluating ways of supplementing cattle on native grass.
- 8) Studying ways of utilizing synchronization drugs in improving cow herd reproduction and making AI a more viable management tool in commercial and purebred cattle operations.
- 9) Evaluating bull libido as an evaluation criteria in selecting beef bulls.
- 10) Grazing and performance of spayed heifers.
- 11) Evaluation of milk production and its relationship to milk Expected Progeny Differences (EPD's).
- 12) Evaluation of pelvic size of heifers and bulls and their relationship to calving ease EPD's.

Feedlot Seminars—1981

In 1981, a series of quarterly Feedlot Manager's Seminars were developed and jointly sponsored by KSU Extension Animal Science and the Kansas Livestock Association.

Contents included "The Future of the Cattle Feeding Industry in the High Plains," "Computer Applications in the Feedlot," "Successful Lean Beef Programs."

University staff, feedlot managers, and agribusiness leaders from Kansas and surrounding states were utilized on the programs.

Integrated Reproductive Mgmt (IRM)—1982

An Extension Integrated Reproductive Management (IRM) thrust in 1982 was the adoption of more efficient management practices and breeding systems in Kansas beef cow herds.

USDA reports showed that only about 75 percent of the cows exposed to bulls in the Great Plains weaned a calf. Profit from cow-calf operations was dependent upon calf crop percentage and weaning weights of calves.

The recognition of losses and knowledge of factors associated with low fertility, stimulated the

adoption of more efficient management practices and breeding systems.

IRM Surveys—1986

Survey results in 1986 from 150 producers with 13,068 cows showed that 90 percent of their cows exposed to bulls weaned calves. This figure represented an increase of 15 percent over previous surveys conducted in earlier years (1975-80).

With calves at \$70/cwt, this represented added income of \$4,345 for the average size herd of 87 cows, or \$50 per cow.

An analysis of field records from 94 herds, however, showed that calving sequence remained a problem.

An analysis of 33,208 weaning records from another 94 herds showed an accumulative percentage calving efficiency was stressed in eight demonstration herds. Cowherd size ranged from 200 to 2500 cows.

Typical improvements were illustrated in one herd of over 400 cows that had 58 percent of the cows calved in period one in 1985 and 60 percent in 1986.

This compared to state-wide figures of 27.3 to 38.0. In the same demonstration herd, using over 100 yearling heifers, first 21-day pregnancy rates were 74 percent in 1986 compared to 53 percent in 1985 and 27 percent in 1982.

The importance of early calving was dramatically illustrated in the analysis of the 33,208 weaning records mentioned earlier. The mean cumulative decline in weaning weight for periods two through seven was 26, 49, 75, 97, 113, and 137 lbs per calf, respectively.

In a 100-cow operation with calves selling at \$70/cwt, \$1,100 additional income would be re-realized if all cows calved in 63 days.

Processing Specifications—1987

By 1987 Specification Production, and branded beef products, along with a consumer perceived desire for consistent high quality beef, enhanced the concern about product form and quality.

It was evident that Extension needed to work with the packing and processing industries and producers to encourage all segments of the industry to assume more responsibility for the kind and quality of beef produced for the consuming public.

District Cow-Calf Clinics—1980's

District cow-calf clinics were held in Kansas for progressive cattlemen interested in improving their

cowherd programs. The purposes of these clinics were to answer specific questions, discuss new developments, and solve producer problems.

The two-day sessions were presented by the Extension Beef Specialist and the Extension Veterinarian. Summaries of latest research at K-State and other experiment stations were prepared.

Practices were changing rapidly, creating additional pressure on producers to keep current.

Major topics included:

- 1) Utilization of low quality roughages.
- 2) Use of liquid non-protein nitrogen supplements in the beef herd.
- 3) Crossbreeding and crossbreeding systems.
- 4) Beef cow management.
- 5) Care of the newborn calf.
- 6) Reproduction diseases.
- 7) Health programs for the cow herd.

In all, 270 cattle producers from 43 counties attended the seven district cow-calf clinics. These producers represented herds with less than 50 head of cows to herds of over 1,000 head.

Survey questionnaires provided an opportunity to evaluate the type of livestock operations present at the sessions for program planning.

O-K Cattle Conferences—Mid 1970's

The second Oklahoma-Kansas (O-K) Cattle Conference held at Stillwater, Oklahoma was attended by 250 cattle producers from the two states.

This Extension-sponsored activity alternated each year so that producers had an opportunity to hear about research from both states, regarding cow-calf stocker production and management.

BEEFpro—1980's

Through the use of a computer software program developed in Kansas referred to as BEEFpro, an accurate evaluation of the cost of production was made available for cow/calf producers.

Two modules for beef production were developed. These modules were an "expert management program" and an "economic return program."

Twenty-eight County Extension Agents were trained to run the program that had been test run with 40 beef producers.

In addition, 87 other County Extension Agents and Extension Farm Management Fieldmen had been exposed to the BEEFpro series.

Additional modules were developed to add to BEEFpro as they were completed. BEEFpro was to provide beef producers with a comprehensive

computerized herd analysis with several "what if" alternatives to provide flexibility to meet current conditions.

Personnel and Program Development

County Agricultural Extension Agents and County 4-H Club Agents were being given special training in all phases of beef production in the 1940's and 50's, the newer results of research, and judging.

Extension Specialists—1947-1961

Philip Ljungdahl resigned June 30, 1947 to become fieldman for the Angus Association. M. Bass Powell was employed September 1, 1949 and served until September 30, 1951, at which time he became manager of a commercial feedlot at Garden City.

Wendell Moyer became an Animal Husbandry Specialist on July 1, 1951, following the retirement of Carl Elling. V. E. McAdams was appointed June 1, 1952.

At that time the Extension Specialists in Animal Husbandry were: V. E. McAdams, Wendell Moyer and Lot Taylor.

Lot Taylor died April 9, 1961. His position is filled, August 1, 1961, by Herman Westmeyer, a former Ford County Agricultural Extension Agent.

County Program Projection—1960's

The Extension Livestock Specialists took an active part in meetings of county program projection committees when invited. These committees studied the many factors affecting the beef cattle program in their counties.

The Specialist was able to point out developments with which the farmers were not familiar and also to suggest possible solutions to problems agreed to by the committee.

Live Grading/Carcass Evaluation—1960's

County Extension Agents and leaders were trained in live grading and carcass evaluation. This training was given at the central markets, at some smaller slaughter houses, and even at some of the larger locker plants.

Coordinated Programs

For many years, the Extension Specialists in Animal Husbandry, Agronomy, Veterinary Medicine, Marketing and Economics cooperated in the presentation of the Extension educational program to Agents and farmers of the state.

Specie Specialists—1967

Although Extension winter, county livestock schools continued strong through the late 60s, many changes were taking place in beef production in Kansas; including methods, location, and technology.

The vast changes in technology in the animal science field, and changing needs of producers, prompted a shift in assignments of Extension Livestock Specialists.

In 1967 Extension Livestock Specialists were designated as specie specialists, with responsibility for their program throughout the state.

Extension Planning Committee—1969

In 1969, KSU Extension established committees to evaluate and make plans for the 1970s.

An Animal Production and Utilization Committee was composed of Extension State and Area Livestock Specialists, County Extension Agents and Extension Specialists in Veterinary Medicine, Agronomy, Economics and Communications. The committee decided to place major emphasis on the beef industry in the 1970s.

Coordinated Programming

Improving efficiency, profitability, and competitiveness in the beef industry was a multi-disciplinary Extension thrust from 1984 to 1989.

The overall objective of this thrust was to improve beef cattle production efficiency and profitability through the increased use of sound, research proven feeding and management practices.

Specifically, to inform and encourage producers and related agribusiness and news media to:

- 1) Improve forage quality.
- 2) Employ efficient grain and forage handling, storage and feeding system.
- 3) Utilize nutritionally balanced, least cost rations.
- 4) Take advantage of approved growth promoters.
- 5) Develop a sound health program.
- 6) Minimize adverse environmental effects on performance.

7) Become more business and marketed minded.

Personnel involved in these multi-disciplinary endeavors include Extension Specialists from Animal Science and Industry, Agricultural Economics, Veterinary Medicine, Grain Science, Agronomy, and Agricultural Engineering.

Programs that were conducted include:

Beef Profit Conferences.
KSU Cattlemen's Day.
Ag Lenders Conference.
Experiment Station Field Days.

Field Demonstrations.

Research Trials.

Telenet Seminars.

Forage Quality Meetings.

Stocker-Feeder Seminars.

County Beef Tours.

Nutrition and Management Conference for Feed Representatives.

"Beef Tips" and "Focus on Feedlots" newsletters.

Numerous County Extension meetings.

Beef Cattle Nutrition

The first demonstrations in creep feeding calves were established in 1927. Henry Lumb of Wakefield conducted a creep feeding demonstration with 40 calves. The creep-fed calves showed an advantage of \$9 per head above feed costs.

Livestock Feed Shortage—1935

The severe drought of 1934 extended into 1935. This was a major catastrophe in the Kansas cattle industry.

In addition to the thousands of cattle liquidated, a shortage of feed for those retained was a real problem. The Extension Specialist and the County Extension Agents assisted with feed distribution.

Since commodity prices were low, only cheap feeds could be considered by the cattlemen. An estimated 279,000 tons of Russian thistle hay and 40,980 tons of Russian thistle silage were used for feed. Some baled cornstalks were shipped in from Iowa and Illinois.

The railroads provided special low freight rates for the emergency feed. Assistance was also given in moving cattle to areas where pasture was available.

Cattle Feeding Industry—1967

During the late 50's and 60's, a tremendous growth occurred in the cattle feeding industry in Kansas occurred.

The Kansas Cooperative Extension Service initiated a program of service to the industry in 1967 by adding a Beef Cattle Nutrition and Management Specialist position to the Extension Animal Husbandry program.

This specialist had major responsibility to the cattle feeding industry in Kansas to develop programs of

economic importance to their operations.

Cattle Nutrition Conference—1967

Nutrition conferences for cattle feeders were developed during visits to feedlots and with County Extension personnel. Three, 2-day conferences were held in 1967 throughout the state during the early winter.

These conferences were attended by stockmen who represented the management of approximately 200,000 head of feedlot cattle annually.

Mailing lists were compiled and used, along with news releases, to keep cattle feeders informed of new developments in nutrition, management, marketing, diseases, and health regulations, which directly concerned them in their decision-making process.

The livestock feeder in Kansas was a highly intelligent "businessman" who needed straight-forward, accurate answers to his questions and looked to Kansas State University for the information.

Ensiled Grain—1960's

In 1967, less than 100,000 bushels of high moisture, ensiled, milo and corn were stored in southwest Kansas in bunker-type silos. In the fall of 1969, over 10 million bushels were stored in this manner. The practice of storing grain ensiled became popular throughout the grain-producing states.

High-moisture storage was encouraged by Area Extension Crops and Livestock Specialists at their meetings in 1967 and 1968.

During 1969, more than 80 percent of the new commercial cattle feedlots started in southwest Kansas were built to feed high-moisture ensiled grain.

Reasons for the rapid acceptance of this agricultural practice were:

- 1) Better yields per acre due to reduced field losses of five to ten percent in harvesting.
- 2) More flexibility in harvesting time. Harvesting starts when grain contains up to 30 percent moisture.
- 3) No grain drying costs.
- 4) Feedlots were built without expensive mill costs.
- 5) Smaller feeders could operate competitively with larger feeders because gains from high-moisture ensiled grain were comparable to gains from steamed and flaked grain.

Least Cost Rations For Small Feeders—1970

Electronic computers for least-cost ration formulation had been used several years in feedlots of 10,000 head or more by 1970. But many of the smaller lots were not able to employ this technique for ration formulation.

The need, or value, of the least-cost ration formulation for small feeders was not known, so a pilot study was initiated in 1971.

Ammoniated Hay—1970's

Numerous University research trials in the 1970's showed that treating crop residues and various hays with anhydrous ammonia would increase digestibility 8-15 percentage units, double the crude protein content and boost voluntary intake 15-25 percent, as well as preserve wet forages during storage.

However, most producers had not taken advantage of this profitable technique due to a lack of knowledge regarding the practical application of ammonia to roughages under typical farm conditions.

A series of 20 field demonstrations were organized and conducted by the Area Extension Livestock Specialists, County Extension Agents, and State Extension staff, in cooperation with producers across Kansas, to illustrate the "how to" of ammoniating forages.

Field days, county beef and range tours, local meetings and the news media were used to publicize

and illustrate this simple technique, while stressing the importance of handling ammonia safely.

These demonstrations attracted a great deal of interest and attention by producers nation-wide and increased the use of this economical technique to improve the feeding value of dry forages.

Numerous producer contacts indicated that this technique was being used by beef, dairy, and sheep producers as a result of the Extension demonstrations and publicity.

Economic analysis suggested that ammonia treatment added \$20-\$35/ton in feeding value to grass hays and crop residues for a cost of \$9-\$11 per ton.

The favorable impact of this technique on the local and state-wide economies of livestock producing areas in the U.S. was substantial.

Reduced Costs Programs

Research knowledge of nutrition feeding and cultural techniques in cow-calf production provided many opportunities for the livestock producer to reduce costs of production.

Considerable emphasis was placed both at the state and county levels to reduce cost of production and improve efficiency.

Kansas cow-calf producers were encouraged to develop sound nutritional programs for their cow herds by paying particular attention to winter feed costs and nutrient levels of their rations after calving time as well as at or near calving.

Rumensin Field Trials—1980's

Four demonstration field trials were also established with cooperating cattlemen to look at the effect of Rumensin on improving gain of cattle while grazing and also a means of incorporating Rumensin into grazing cattle.

Crop Residue Field Days—1976

Six crop residue field days presented by Extension Beef Specialists were popular in 1976.

Because of depressed calf prices and higher feed costs, beef cow herd owners showed interest and need for the information on methods of harvesting crop residue and on its nutritional value. Producers looked for means of maintaining their cattle more cheaply.

Youth Livestock Programs

4-H Club members raised many excellent calves. In 1947, for example, 5,419 4-H members fed 6,513 beef animals.

Fall shows and sales of deferred fed beef cattle were used to develop further interest in the system of beef production.

Judging Schools/Teams—1922-1988

The enthusiastic acceptance of district judging schools, started in 1922, prompted livestock breeders and 4-H supporters to sponsor additional training schools.

The number increased so that by 1965, nineteen district judging schools were held with participation by over 5,200 4-H members.

District judging schools all followed a similar pattern. Type demonstrations and discussion periods were held by an Extension Livestock Specialist. Several classes of each species were then judged, with the Extension Specialist acting as the official judge.

In the 1965 contest at the State Fair, the three high judging teams placed as follows in national contests:

Sedgwick County, first place team in the state contest, was third high team in the International contest at Chicago.

Harvey County, second team at State Fair, was high team in the National Western contest at Denver.

Linn County, third in the State contest was fifth high team in the American Royal contest.

Active support of 4-H livestock judging came from many cooperating groups in Kansas. Numerous livestock breeders, invited and welcomed 4-Hers to their farms and ranches for annual workouts. Various breed associations held judging workouts at their field days and annual sales.

Active support was provided by the Kansas Farm Bureau, as sponsor for a team to the National Western at Denver; and by the Kansas State Fair Board, as sponsor of the high team at the State Fair, to the National contest.

Without the support of livestock breeders, agencies and others, many 4-H members would be deprived of the competitive opportunity of livestock judging.

As an educational program, livestock judging not only provided an opportunity to appreciate good livestock, but also training in making decisions, defending those decisions, and getting along with others; all helped provide 4-H club members with a more fruitful livelihood in their future.

The State Fair livestock judging contest continued to be the focal point for the county Extension 4-H livestock judging program.

The top three winning teams represented Kansas through 1988 at the three major shows: the National 4-H Livestock Judging Contest at Louisville, Kentucky; the National Western 4-H Roundup in Denver; and the American Royal in Kansas City.

DAIRY PROGRAMS

Early Dairy Development

The earliest dairy Extension work was conducted by members of the staff of the Department of Dairy Husbandry, Kansas State Agricultural College. This work consisted largely of participation on Farmers' Institute programs.

With the coming of milk skimming stations and, later, the farm cream separator, Kansas farmers began to have a more interest in more dairy cows and more information about dairying.

In those years, in addition to Farmers' Institutes, much work was done in special campaigns, many

times with the cooperation of other agencies such as the railroads who operated a dairy train in 1911 and a silo campaign train in 1914.

Dairy Before Smith-Lever Act—1909

The first Extension men doing dairy work were given the title, "Lecturer in Dairying." Those employed before the Smith-Lever Act were:

C. H. Hinman, Lecturer in Dairying; July 1, 1909 to June 30, 1910.

George Hine, Lecturer in Dairying; July 1, 1910 to July 12, 1912.

A. S. Neale, Lecturer in Dairying; January 1, 1913 to April 1, 1918.

Smith-Lever Act—1914

After passage of the Smith-Lever Act on May 8, 1914 there was a rapid expansion in Extension activities in Kansas.

On March 12, 1915, the Kansas Farm Bureau law was approved by the Kansas legislature. This law permitted County Farm Bureaus to employ full-time County Extension Agents.

Dairy work in many of the counties that were organized for Extension work was soon conducted on a project basis and an increased demand for Specialist help was evident.

The Extension Dairy Specialist and members of the Department of Dairy Husbandry, were speakers on the programs of Farmers' Institutes, conducted

schools in dairy cattle judging, gave cream grading demonstrations, and conducted Extension schools on feeding, breeding, selection and management.

Judging dairy cattle at fairs also provided excellent demonstrations of dairy cattle selection.

Extension Dairy Program—1920

County Agricultural Agents made it possible to conduct dairy work on a project basis. Following passage of the Smith-Lever Act, the Extension Dairy Specialist did most of his work in the counties with County Agents.

In 1920, C. R. Gearhart, Extension Dairy Specialist, identified definite problems and developed objectives for work in the dairy program.

Thus 1920 became the beginning of an organized Extension dairy program in Kansas.

Dairy Herd Improvement Association

The first dairy organizations were created for the purpose of helping dairymen carry on testing programs.

Cow Testing Association—1912

In 1912, the first cow testing association was organized in Dickinson County. Interest at the College was stimulated by O. E. Reed, Head of the Dairy Department.

He was assisted by F. H. Scriber, United State Department of Agriculture representative. Dickinson County dairymen who provided leadership were George Lenhart and E. S. Engle. The Abilene Creamery assisted by furnishing some equipment.

Information pertaining to management constituted a major part of the subject matter presented at Extension Schools, institutes, and farm demonstrations.

Records on the performance of milking herds which would reflect differences in herd management had been kept by some dairymen.

W. T. Crandall, Extension Dairy Specialist, reported in 1922 that few records were being kept for summarization. The tendency for cooperators not to keep complete records indicated the need for more dairy record associations operated on a cooperative basis.

Dairy Herd Improvement Assn. —1912

Cooperative cow testing associations later furnished records on the entire farm business as well as the milking herd. The associations, known as

Dairy Herd Improvement Associations (DHIA), had an erratic growth in Kansas.

The first association was organized in Dickinson County in 1912. Three more started to operate in 1917.

By 1919, 15 associations were reported. The number reached 55 with 792 herds participating. The 25,000 cows in the program averaged 10,045 pounds of milk and 390 pounds of butterfat in 1961. The return above feed cost was \$257.

In 1936, the cow testers (DHIA supervisors) were given the title of Assistant County Agent and paid at the rate of \$300 per year from Federal and State funds then available.

This financial contribution to the testing program continued until 1947 when it was discontinued because of lack of sufficient funds.

Each Dairy Herd Improvement Association operated under the guidance of a board of directors of five men. These 275 dairymen, directors of 55 associations, gave direction to the program in Kansas in 1961.

Association Supervisors (cow testers) were employed by the association directors, and approved and trained by the Extension Dairy Specialists.

Over \$200,000 was invested each year in the Dairy Herd Improvement program by the dairymen of Kansas.

In 1961, 963 Kansas dairymen were in the National Dairy Herd Improvement program. This number included 430 herds on the Standard Dairy Herd Improvement work, 362 herds and 14,992 cows on the IBM system, 121 herds on the Owner-Sampler program and 50 herds on the Weigh-A-Day-A-Month program.

Increase Milk Production Per Cow

From 1952 to 1961, the average production per cow on test increased from 8,863 pounds of milk to 10,045 and 346 pounds of fat to 390.

But the value of the product dropped from \$492.00 in 1952 to \$421.00 in 1961 and the return per cow above feed cost decreased from \$280.00 in 1952 to \$257.00 in 1961.

Official Testing Program—1951

The Official Testing program became a part of the Extension Dairy program in 1951. In 1961, there were on official test 71 Holstein herds, 23 Ayrshire herds, 11 Guernsey herds, eight Jersey herds, five Brown Swiss herds, and two Milking Shorthorn herds.

Official testing was being carried on in cooperation with the Dairy Herd Improvement supervisors in each association.

The official testing program made available a tool to evaluate the breeding worth of a sire. During 1961, proved-sire records were tabulated on 234 Holsteins, 54 Brown Swiss, 46 Ayrshires, 13 Guernseys, 11 Jerseys, and 20 Milking Shorthorns, for a total of 378 dairy bulls.

Several of these bulls moved into artificial breeding studs at very good prices.

IBM Calculating System—1961

The IBM (electronic) system of calculating production records was presented to DHIA directors in 1961. The value of this system to provide much additional production data was realized and steps were taken to use the IBM system in future years.

At the end of 1963, 242 herds and 10,841 cows were on the Hand-Calculated Standard DHIA Program; 532 herds with 22,619 cows on the DHIA - IBM system; and 91 herds with 2,705 cows on the Owner-Sampler program.

Dairy Cattle Improvement

Import Sires—1920's-30's

Replacing scrub sires by good purebred sires, and later the use of either proved sires or their sons, were the major points given major emphasis in the dairy cattle improvement program.

"Better Bulls" campaigns of various kinds were used in the 1920's and 30's. For example, in 1922 the Kansas City, Missouri, Chamber of Commerce gave away \$2,000 to the four counties that replaced with purebred sires the greatest number of scrub sires during the campaign period. Many bull campaigns were conducted on a county basis.

During the 1920's, Extension Dairy Specialists assisted with the importation of good purebred and grade dairy cattle. Most of those cattle came from Wisconsin, Michigan and Ohio.

When shipments of the cattle arrived, and they were distributed to their new owners, Extension Specialists used the opportunity to demonstrate selection and to discuss management practices.

In 1922 alone, help was given in the importation of seven carloads of purebred dairy cattle and 18 carloads of grade dairy cattle.

During 1929 and 1930, there were 200 head of dairy 4-H Club animals brought into Saline County.

District Shows by Breed—1930's

In the late 1930's, James Linn, Extension Dairy Specialist, developed interest among the Kansas dairymen for district shows in the various breeds.

A dairyman with a rather small number of dairy cattle, often of outstanding quality, did not feel that he could show his cattle at the larger fairs.

The development of one-day district shows resulted in better bulls, more testing, and a general increase in breed-improvement interest.

In 1938, six breeds cooperated in the spring show program. There were nine Holstein breed shows; six Jersey; five, Ayrshire; four, Guernsey; and four Milking Shorthorn shows.

Approximately 14,000 people saw 430 Kansas exhibitors show 1,383 cattle. Cattle from 24 of the 28 shows later exhibited at the State Fair.

In this manner the small breeder had an opportunity to exhibit good cattle and compare them with others being exhibited.

By 1957, the records show that 37 shows were held, eight for the Holstein breed; six for Ayrshire; five for Brown Swiss; six for Guernsey; six for Jersey; and six for Milking Shorthorns.

The 328 exhibitors showed 1,313 cattle to approximately 6,000 people.

Representatives from 28 of the 37 district one-day shows also showed their cattle at the Kansas State Fair later in the fall.

Spring dairy breed shows continued with less assistance from Extension Dairy Specialists and more responsibility taken by breeders and County Extension Agents.

Judging contests for youth and adults were a feature of each show. Chambers of Commerce and dairy equipment manufacturers contributed liberally to these events.

Purebred Dairy Cattle Association—1941

In 1941, the five breeders associations: Ayrshire, Brown Swiss, Guernsey, Holstein and Jersey, organized the Purebred Dairy Cattle Association.

Inter-Breed Purebred Dairy Council—1945

In 1945, the Inter-Breed Purebred Dairy Cattle Council was organized. The Milking Shorthorn Breeders joined the other five breeds in the Dairy Council.

Membership in the Council was composed of the presidents and secretaries of each of the breed associations, plus members at large. The first officers of the Inter-Breed Dairy Cattle Council were:

President	T. Hobart McVay, Nickerson
Vice President	W. G. Ransom, Homewood
Secretary	Ray R. Smith, Hutchinson

The first problem pursued by the Inter-Breed Council was to improve the standards of the sales, particularly the breed association sales in Kansas.

Later, the organization made contributions to the Kansas State Fair. In 1958, the organization worked on the brucellosis problem and milk inspection control in the state.

The Inter-Breed Council was also active in studying needed legislation and working for the passage of legislation to support the interests of the dairy industry in Kansas.

Artificial Breeding Program—1950

A state-wide artificial breeding program for dairy cattle was started in 1950. A breeding service unit was established by the Department of Dairy Hus-

bandry at Kansas State College and county artificial breeding associations were organized.

In 1952, 89 counties reported 11,178 herds participating in an artificial breeding program. Two commercial organizations offered this service in addition to Kansas State College.

By 1961, 97,633 dairy cows were bred artificially by service from the different sources as follows: Kansas Artificial Breeding Service Unit, 49,783; American Breeders Service, 33,909; Curtis Stud (Illinois), 11,116; Nebraska ABA, 2,805; and NOBA, Inc. (Ohio), 20.

Production records of females sired by KABSU bulls showed moderate increases in milk and fat production.

Extension Dairy Specialists encouraged and supported herd and individual animal classification by the breed associations. This work brought attention to other dairymen and the availability of high quality animals from herds within the State.

Balancing Rations/ Roughage—1950's

Instruction in the balancing of rations and how best to make use of home-grown feeds was an important part of the Extension dairy program year after year.

The proper method of storing such feeds as hay and silage, particularly as insurance against drought years, was also given major emphasis.

In the late 1950's, attention was given to the quality of roughage for dairy cattle feeding. Many dairymen were not conscious of how low the quality of the roughage being used was. Many were not cutting their alfalfa hay early enough. High moisture in silage was another problem.

In 1961 the Extension Dairy Specialists reported that they and the Dairy Science Department of Kansas State University had developed a roughage evaluation program.

Net energy was determined by the Dupray-Peterson Laboratory at Hutchinson. These data were then used by the DHIA supervisors for herds on the new IBM record program.

A publication, A Feeding Guide for Dairy Cattle for Use When Roughage Has Been Analyzed, was prepared and made available to dairymen for use in the roughage evaluation program.

Many commercial feed companies started to use roughage evaluation in their feeding suggestions.

"Teaching in Depth" Schools—1963

During the early 1960's, much emphasis was given to feeding and management. In 1963, for example, intensive schools on dairy cattle feeding were held in several counties, and were known as "Teaching in Depth" schools.

Seven districts were devoted to feeding problems including roughage evaluation, minerals, energy of feeds, vitamin needs of dairy cattle, and substitution of grain for roughage. Information from the Analysis of IBM data processing feed records in DHIA were used to give sound feeding facts.

4-H Club Work in Dairying

Early in the 1920s, 4-H Club members were enrolled in dairy projects, dairy heifers or producing cows.

Instruction in dairy judging, the holding of dairy judging contests, and assistance with demonstrations in the use of dairy products have been given 4-H Club members through the years.

Many adults have been interested in dairy improvement practices through their observation of the successes of 4-H Club members.

In 1960, the enrollment in dairy projects was 2,739. Enrollment was stimulated by the breed associations who offered baby calves as prizes to 4-H members.

The number of animals in the 4-H projects in 1960 was 3,937. The calves were valued at \$462,565, making a profit of \$312,516.

4-H Dairy Production Contest—1950

A 4-H Dairy Production Contest was started about 1950. In 1960, 186 4-H members participated in the production contest.

Dairy Production Testing

After 75 years, in 1988 the production testing program of the Dairy Herd Improvement Association (DHIA) continued to offer invaluable assistance to producers who wished to attain maximum efficiency and profitability.

Changes in Testing—1964-88

During the 25 year period, two noteworthy changes occurred:

- 1) Producers assumed administrative control of the program with the incorporation of Kansas DHIA.
- 2) Electronics became an everyday tool in the programs operation, from sophisticated milk component analysis (% fat, %protein and somatic cells) to electronic data gathered on a main frame at Iowa State University.

In addition, producers with computer capabilities had access to all of their management information and

could generate summary data upon command.

Pressures on DHIA—Late 1980's

The decline in dairy cow population provided cause for concern in the late 1980's about the future of the Kansas DHIA in providing services, without major changes in fee structure.

Prior to the dairy diversion program in 1983, about 60,000 cows were enrolled in the DHIA program.

The production testing program data over the period were:

<i>Year</i>	<i>Production per Cow</i>	<i>No. Herd</i>	<i>No. Cows</i>	<i>% of Pop'n</i>
1964	11,821 lb	684	29,627	10
1988	16,705 lb	706	48,214	48

Dairy Cattle Improvement

Three factors that greatly enhanced improvement of production and conformation of dairy cattle for the 25 years, 1964 through 1988, were:

- 1) Progeny testing of highly selected young sires by artificial insemination (AI) organizations.

- 2) Development of modified contemporary comparison (MCC) as the method to evaluate the genetic ability of bulls for production and conformation traits.
- 3) Wide spread adoption of AI by Kansas dairy producers with 86 percent utilizing this tool to some degree. Practically all AI is performed by the producer or an employee (do-it-yourself)

Ranking of Dairy Sires

The percentile ranking of sires allowed the producer to make selections based upon the goals of the herd.

Single trait selection (milk only) continued to be the mating program of choice without appreciable losses in negatively correlated traits--percent milk components.

Computer Mating Systems

The development of linear trait evaluation for conformation provided computer mating systems which most AI organizations offer to their patrons.

Producers are encouraged to cooperate with AI studs by sampling several young bulls limitedly in order to assure a continued supply of superior genetics in the next generation.

Dairy Nutrition

"Better bred than fed..." has long been an axiom in the dairy business. Feeding and management systems have progressed to the point where some producers are in fact challenging the genetic potential of the cow.

The top production herd in 1988 averaged 703 lb. protein and 23,448 lb. milk while the top butterfat production was 847 lb.

Even when nutrition is adequate, the limiting factor in production is the cow's appetite or dry matter intake, especially in early lactation.

Summit Mile Yield (SMY)

Lead feeding, two to three weeks pre-partum, has provided the opportunity to move cows onto high energy-protein density rations quickly after calving to enhance summit milk yield (SMY). SMY is highly correlated with yearly production.

Buffer Additives

Buffers (sodium bicarbonate) have been beneficial in getting cows on full feed in early lactation and minimizing lactic acidosis. Forage quality remained the prime factor in obtaining high milk yield.

Acid Detergent Fiber (ADF)

The adoption of acid detergent fiber (ADF) analysis in forage evaluation provided a better assessment of the nutritive value of forages, especially alfalfa which remains the forage of choice in Kansas.

Revision of NRC Requirements

National Research Council (NRC) requirements for feeding dairy cattle were revised in 1966, 1978 and 1988.

Milk Quality

The quality of on-farm milk has always been a concern for both the producer and processor.

Somatic Cell Count (SCC)

Quality was improved in the 1980's by emphasizing the somatic cell count (SCC). SCC was shown to be negatively correlated with daily milk yield and cheese yield.

SCC was adopted by all marketing agencies and Mid-Am initiated a premium payment for bulk tank milk of less than 500,000 which met other quality standards.

The legal limit for SCC in bulk tank milk was lowered from 1.5 million to 1.0 million in mid 1980's Some

states lowered the maximum SCC to 750,000.

Electronic SCC Service

Electronic SCC service was provided to all producers through the DHIA program. In eight years, 77 percent of the cows were enrolled in this option. The average SCC for Kansas herds dropped by 150,000 during this interval.

Milk Protein Testing—1980's

Anticipating a change from fat to protein differential in selling milk, Kansas DHIA initiated protein testing in the early 1980s as a standard feature.

Producers in northern Kansas shipping to Mid-Am's Central States Division, received consideration

for protein content as a part of the overall quality premium program.

Pre-Incubation (PI) Testing

Pre-incubation (PI) testing became another standard of milk quality along with standard plate count (SPC), sediment, and routine screening for growth inhibitory substances.

The Delvotest P for screening for the beta lactams was implemented on many farms to confirm withdrawal times on treated cows.

Antibiotics in Milk

Antibiotics in milk remained a sensitive point in the industry, especially for drugs not labeled for lactating cows.

Dairy Marketing

The cream station method of procurement made it difficult to effect an improvement program for quality in Kansas cream.

Numerous campaigns were conducted with cream improvement as the goal and with various degrees of success.

For example, V. M. Williams, Extension Dairy Specialist, reported in 1923 that the year's campaign had secured an increase in those buying cream on a graded basis from one to 75 percent.

In 1924, Williams reported that the buyers were again purchasing cream as they did before the campaign.

In 1936 following another campaign, the industry again started buying cream on a graded basis and continued to pay three cents per pound less for number two than for number one cream.

Establish Cooperative Creameries

Cooperative creameries were the most successful in solving the Kansas cream marketing problems. The Washington County Cooperative Creamery at Linn was the first to start a program.

After that, successful cooperative creameries were established at Sabetha, Moundridge, Arkansas City, Hutchinson, Hillsboro, Everest, Russell and Baldwin.

Federal marketing agreements were in operation at Wichita, Topeka, Kansas City and Leavenworth.

Additional discussion of the marketing of dairy products was included in the record of the Extension Dairy Marketing Specialist who was first employed in 1936.

Market Sources—1980s

The majority of milk was marketed through Mid-Am and AMPI. Lesser supplies were procured by National Farmers Organization, Southern Milk, independent processors and the remaining cheese plants not affiliated with the cooperative agencies.

All dairies that marketed milk did so under license and inspection by the State Board of Agriculture.

On January 1, 1989, 1,129 farms produced Grade A milk and 377 farms produced Manufactured Grade. A few small dairies sold milk independently to local customers.

Marketing policy fell to the larger cooperatives who were politically active through their organization - National Milk Producers Federation.

Federal Milk Marketing Order—1960's

Most milk in Kansas was marketed under the auspices of a federal milk marketing order that was in effect from the early 1960's.

While occasionally challenged, the marketing orders allowed a fair and equitable distribution of milk, which favored both consumer and producer.

Midland United Dairy Industry Association (UDIA), an outgrowth of American Dairy Association (ADA), actively promoted milk in Kansas along with the National Dairy Board which came into being with the favorable milk check-off referendum.

Efforts to unite these two organizations into one national group were not successful.

Dairy Organizations

Kansas Interbreed Dairy Cattle Council, Kansas Dairy Technology Society, and the Kansas Dairy Fieldmen's Association continued to serve special interest groups within the industry.

During the 25 year period, 1964 through 1988, the Kansas Mastitis Council and the Kansas Dairy Herd Improvement Association (DHIA) were organized.

In 1988, the Kansas Forage and Grassland Council was incorporated to encourage more efficient production and utilization of roughages.

While each of these organizations is dedicated to improving the industry from their respective viewpoint, the Kansas dairy industry does not have one unified group that speaks for the entire field of dairying.

Dairy Faculty at KSU

Dwindling dairy cow numbers resulted in fewer university staff with responsibilities towards the industry, in the last 25 years prior to 1989.

Dairy Manufacturing Staff

In the manufacturing area, four positions remain from a faculty of five, and the emphasis has shifted from dairy manufacturing to "food science."

Production Staff

Of the resident staff in the production field, three faculty positions remained from seven positions in 1964.

The Extension staff has remained constant at two positions since the late 1940's

Reorganization of Dairy at KSU

The dairy-poultry departments were merged and moved from Waters to Call Hall in 1963. A further merger combined all animal departments into an animal sciences group in 1977.

The dairy teaching and research herd was moved off campus in 1977, and expanded from around 100 to 200 head, thanks to donations from the industry.

Extension 4-H Dairy Programs

The traditional 4-H projects—calf, heifer, cow and the production, were supplemented with dairy beef, and bucket calf projects during the 25 year period prior to 1989.

In 1988, 1,203 4-H dairy projects were carried in Kansas. In the calf and heifer projects there were 685 boys and girls enrolled; in cow and production, 411; and in dairy beef, 107.

In the bucket calf project, 2,121 boys and girls were enrolled, but no designation was made as to whether the calves were beef or dairy.

The latter project, beef dairy, provided an animal rearing-experience to many youth who did not come from a livestock farm background.

The project de-emphasized "winning" and placed great value on "learning."

Summer Youth Dairy Show—1964

A summer youth show (Salina Junior Dairy Show) was established in 1964 for all youth who participated

in 4-H, FFA or junior breed associations.

An immediate success, the two-day event attracted more than 200 entries annually.

With support from the breed associations, 4-H dairy production winners within breed received a trip to Madison, Wisconsin each year to participate in the National 4-H Production Program and the World Dairy Exposition.

Dairy Show at State Fair

To encourage greater participation in the 4-H Division at Kansas State Fair, 4-H and FFA joined forces in 1986 to sponsor a youth show and lowered the participation age.

Since state fair was held after primary and secondary schools opened, competition for time reduced the number of exhibits, especially in 4-H dairy judging.

Kansas Dairy Industry Chronology—1964-88

Accomplishments for the Kansas dairy industry during the past 25 years (1964-88) include:

- 1) Cow number declined from 285,000 to 104,000.
- 2) Average yearly cow productivity increased from 6,400 lb milk to 11,923 lb.
- 3) Production tested (DHIA) cows increased from 11,512 lb to 16,705 lb.
- 4) Income-over-feed cost increased from \$263 per cow in 1964 to a record high of \$1,182 in 1987.
- 5) Herd size (DHIA) increased from 42 to 68 cows on average.
- 6) Cheese plants decreased from ten to five.
- 7) Only six fluid processors remained in business along with three ice cream plants, one processed cheese operation and one UHT canned milk manufacturer.
- 8) Consolidation of milk marketing cooperatives resulted in formation of Mid-America Dairymen, Inc. (Mid-Am) and Associated Milk Producers, Inc. (AMPI)
- 9) Milk check off program to sponsor promotion and research through National Dairy Board (NDB) significantly increased consumption. Ivan Strickler, Iola, served as NDB president.
- 10) Milk diversion program (1983-84) and Dairy Termination Program (1985) effectively reduced milk surpluses in the short term.
- 11) Production testing records (DHIA) were converted to data processing with on-farm data analysis.
- 12) Producers assumed administrative control (1969) of the production testing program (Kansas DHIA).
- 13) In the national sire summary program, modified contemporary comparison (MCC) was instigated to estimate genetic ability of sires (Predicted Difference).
- 14) Programmable calculators, and later, micro-computers became commonplace on the dairy farm and processing plant.
- 15) On-farm milk quality was significantly improved by implementation of the somatic cell counting program (SCC) and premium quality payments began by Mid-America Dairymen, Inc
- 16) Milk protein testing becomes universally available.
- 17) There was total conversion to on-farm bulk tank shortage and pipeline milking systems.
- 18) Percentage of cows enrolled in production testing increased from ten to 48 percent.
- 19) Eighty-six percent of surveyed dairy producers used artificial insemination performed by owner-herdsman inseminator (do-it-yourself).
- 20) Embryo transfer technology became practical but expensive.
- 21) Post milking teat dipping became wide spread and reduced new infections by 50 percent.
- 22) Computer feeders became economically feasible with 25 percent adoption.
- 23) Extension delivery systems shifted from the generalized "crops and dairy" school to intensified "in-depth" teaching technique.
- 24) Territorial areas for specialists were replaced with subject matter responsibilities.
- 25) Greater cooperative effort commenced between specialists.
- 26) The telephone became the number one means of communication.
- 27) Dry cow management, especially lead or "challenge" feeding, enhanced greater levels of milk production.
- 28) Improved feeding and management techniques began to challenge the genetic potential of dairy cows.
- 29) Ranking proved bulls by calving ease enhanced AI of heifers.
- 30) On-farm classification replaced the show ring as the best method of evaluating cows for conformation.
- 31) By-product feeds (cotton seeds, distillers' by products) find their way into the Kansas dairy nutrition program.
- 32) Acid detergent fiber became the standard method of estimating forage quality.
- 33) Rumen buffers became universal adopted in rations for early fresh cows.
- 34) In DHIA, electronic barn sheet (EBS) rapid provided greater flexibility in on-farm management information.
- 35) Pre-dipping of teats became a common practice in the continued effort to reduce new infections and lower SCC.

HORSE PROGRAM

Early Horse Programs

In 1926, a field project was established in horse work for the first time.

J. J. Moxley, Extension Animal Husbandry Specialist, cooperating with the Horse Association of America, held 17 Big Hitch demonstrations with a total attendance of 2,318 farmers.

Those demonstrations emphasized correct hitches and methods of driving teams of four, five, six, eight, twelve and eighteen horses.

The method of driving was known as the "bucking back and tying in" system. Only two lines were used on the leaders. The hitches used were the Talkington hitches.

4-H Colt Shows—1910-1930

During the years 1910 to 1930, draft horse production was stressed through colt shows and colt club work. Enrollment in the 4-H Club colt project in 1961 was 1,218 from 103 counties.

Agricultural leaders were anxious to see that farmers used and produced horses for their own power. The leaders felt entirely too much money was paid out for machinery and oil, especially for the medium-sized to small farms.

Horse Driving Demonstrations—1927-28

Demonstrations showed the ability of one man to drive ten to twenty horses with two lines and to plow one acre per horse per day.

In 1927, J. J. Moxley gave 23 demonstrations with 2,535 farmers attending. The new method of hitches were adopted by 268 farmers. The hitches eliminated side draft, equalized the pull, permitted horses to work more freely, and made driving easier.

Most of the farmers adopted the four, five and six horse hitches. In 1928, County Extension Agents reported that 178 farmers adopted the hitches.

No further field work was developed in this work as it was felt that the farmers were acquainted with the big hitch method. Publicity and illustrative materials were continued.

Decline in Horse Program—1930's-70's

From about 1930 through the 1970's very little horse production work was done by Extension Specialists, other than judging saddle and quarter horses at county fairs.

Extension Horse Program—1980

The horse industry has long been a viable business in Kansas, with an estimated horse population of 200,000 in the 1980's. However, it was not until 1980 that a long-range Extension plan was initiated to help meet the needs.

This plan began with Dennis Sigler on the teaching-research facility in the Department of Animal Science and Industry, appointed to full time responsibilities in the areas of horse teaching and research at KSU.

In 1982, Pete Gibbs became the first Extension Specialist, Horses, and began working with Area Extension Specialists, County Agricultural Extension Agents and Extension 4-H Agents in the state.

Equine Extension efforts centered on developing programs for horse industry people that were based on current research and practical applications of knowledge.

Horse Extension programs were designed to reach both horse producers and youth interested in horses.

Goals Of Horse Program—1982-83

Educational programs for producers in Kansas were quite varied. State, Area and County Extension personnel worked together with producers to identify industry needs and design programs to meet such needs.

Two major goals established in 1982-83 were:

- 1) To improve efficiency of horse production through research supported management practices.
- 2) To help horsemen achieve maximum utilization with their existing horses.

The two primary program components were nutrition/management and on-horse training programs.

Horse Producer Program—1980's

The major objective of producer programs was to help Kansas horsemen increase profits by decreasing feed costs and increasing reproductive performance.

Emphasis was placed on balancing rations to prevent over feeding of expensive nutrients while

minimizing incidence of bone and joint disorders commonly referred to as epiphysitis.

A condition score system for brood mares was introduced to help producers insure optimum reproductive performance. Horse producer oriented programs established in 1982-83 included the following activities.

Multi-County Mare/Foal Schools—1980's

These clinics addressed mare and foal management, with emphasis on reproductive efficiency, feeding, methods of creep feeding and weaning, and practical use of a condition score system in managing both open and pregnant mares.

Horsemen's Conference—1982

Started in 1982 and held annually on the campus at KSU, it was designed to provide producers with up-to-date information on feeding, breeding, marketing, management and training of horses.

Horse Show Judges' Seminar—1982

The seminars provided an opportunity for horsemen interested in judging open shows and fairs the opportunity to actually judge halter and performance classes. Discussion of standards and procedures preceded each class, followed by an official placing and critique.

Horse Nutrition/Management—1980's

Designed to provide a broad overview of nutritional considerations for all horses. Included nutrient requirements, feedstuff selection, ration formulation and nutritional management points.

Feedlot/Ranch Horse Seminars—1980's

Topics included feeding, hoof care, parasite control, etc., of horses used on ranches and in feedlots.

There was information on bit selection and proper biting techniques to develop quieter, more responsive horses that could be used for effective moving and sorting of cattle.

All programs were the result of joint participation among County Agricultural Extension Agents, Area

Extension Livestock Specialists and State Extension Staff.

Program offerings were reviewed or adjusted over time to strive for the most effective and informative means of meeting producer needs.

From 1983 to 1986, a total of 72 meetings, seminars and short courses were conducted to make this type of information available to 3,935 horsemen. Similar acceptance of these programs continued into 1988.

4-H Horse Program—1970's -80's

Educational programs for youth horse enthusiasts remained a major area of Extension effort.

A great deal of time was spent by County Extension 4-H Agents, Area Extension 4-H Specialists, and State Extension Youth and Horse Specialists in developing programs for horse project members.

The 4-H horse project alone provided youth the opportunity to have fun, to interact with other youth of similar interest, to learn decision making and problem solving and to measure their progress in horse-related activities.

The major objective of the on-horse training programs was to help horsemen understand specific methods for achieving maximum usefulness with their horses.

Extension Assistants helped State Extension Specialists conduct one, two, or three day horsemanship schools at the county level.

A total of 136 such schools reached 4,454 youth, parents, and leaders from 1983 to 1988 in 56 different counties.

Other Cooperative Extension Service functions included the development of printed material and video tapes covering various topics of the horse industry.

Significant efforts were given to the development of video tapes covering various aspects of horse management, training and use by 4-H youth in their own counties.

MEATS PROGRAM

Early Meats Program

The meats program at Kansas State College received enthusiastic support from H. J. Waters about 1910.

At that time, Tom Patterson, a Minnesota graduate, developed a strong meats program in the KSC Department of Animal Husbandry.

With the aid of what was then considered a new and well-equipped meats laboratory, practical information was developed and presented at various farm meetings by Professor Patterson. He was a master in giving demonstrations in butchering swine, sheep and cattle, and in giving demonstrations on cutting and curing meats.

In 1914, A. M. Patterson, a brother of Professor Tom Patterson and a graduate of Kansas State College, was placed in charge of the sheep and meats work in the Animal Husbandry Department.

Neither Tom Patterson or A.M. Patterson had an appointment in Extension, so they were not Extension Specialists.

Professor Patterson conducted demonstrations at Farmers' Institutes and soon became a popular judge of sheep at County and State Fairs.

Cutting and Curing Demonstrations—1921

In the 1921-1922 report made by Carl Elling, Extension Animal Husbandry Specialist, demonstrations on meat cutting and curing were mentioned for the first time. He said:

Last winter a dozen demonstrations on butchering and cutting and curing pork were conducted by the Extension Division of Kansas State College in cooperation with the United States Department of Agriculture and the County Farm Bureaus.

In the 1922-1923 annual report, photographs were used to report this program on a larger scale. The 1925-1926 annual report for the first time gave a "methods of procedure" written for this project. The project was reported regularly in Carl Elling's reports from 1921 to 1938.

Freezer Lockers—1940's

About 1940 freezer lockers became available for family use. These brought about a reform in the methods used by a family for storing home produced meat. In his annual report for 1946, Carl Elling said:

This program was presented in a series of 18 district meetings during January. Local leaders from 93 counties participated. The cold storage plants are rendering a real service by aiding farmers to do almost perfect butchering and meat cutting jobs.

In many instances this service is done completely through the regular cold storage plant service at a very reasonable cost on a pound basis to rural families. There are about 295 well equipped cold storage plants in Kansas.

The cold storage facilities are very materially improving the family meat needs on the farm with respect to quality, convenience and expense.

Program in 1950's

During the 1950's, a comparatively small amount of work was done on meat preparation by Extension Animal Husbandry Specialists.

The services of Professor D. L. Mackintosh, in charge of the meats program in the Department of Animal Husbandry, were obtained to meet special requests from some of the counties.

The Consumer Information program in the Department of Extension Home Economics emphasized the use of low-cost cuts of meat in addition to proper preparation of all meats for table use. The use of lamb was encouraged continually in the sheep program.

Expand Meat Program—1962

Philip Weiner was employed as the first Extension meats Specialist on February 1, 1962, in response to increasing demand on resident meat faculty and graduate students to meet off-campus educational commitments for carcass evaluation and other meat programs.

Weiner immediately developed an educational program in meats with livestock producers, processors and consumers.

To achieve this goal he used carcass contests, meat exhibits, demonstrations, discussions, radio and television programs, news items, meat judging schools for juniors, and worked with retailers and frozen food locker managers.

Carcass Contests—1962

Several swine and beef carcass contests were conducted in Kansas in 1962. The first was in conjunction with the Kansas National Junior Livestock Show in Wichita, with 54 steers.

The two top hog carcasses at the Mid-America Fair were put on display to show producers the kind of hog carcasses the market wanted in 1962.

The top barrow in each class at the Kansas State Fair was slaughtered and its carcass placed on display in a new meat display cooler.

The top four lambs were slaughtered and the two top carcasses placed on display. Demonstrations were held each hour at the Mid-America Fair and the State Fair to explain dual grading.

Meat Judging Schools—1962

During 1962, three meat judging schools were

conducted to aid 4-H and FFA judging teams develop the skills of meat judging.

These were followed by a state contest from which the top 4-H meat judging team went on to win the National 4-H Meat Judging Contest.

Full-Time Position—1972

The conversion to a full-time Extension Meats position in 1972 made it possible to service more of the educational needs of small to medium-size commercial meat businesses.

This was in addition to the ever growing needs by producers for carcass merit information, and demands by consumers for value, label, handling and use information in a rapidly changing market.

Carcass/Meat Quality Programs—1965-88

With George Ahlschwede's appointment to the half-time Extension Meats position in 1965, and the simultaneous national adoption of USDA Beef Yield

Grade standards, considerably more emphasis was given to county and district live and carcass evaluations of both cattle and swine.

Continuing and growing support was received from the Market Livestock Foundations at the St. Joseph, Kansas City and Wichita terminal markets as well as many of the meat packing companies.

Among many others who helped in this process were Gene Francis and Larry Steckline at the St. Joseph and Wichita stockyards, respectively.

The state Extension Beef and Swine Specialist team of Zoellner, Westmeyer and Moyer were also frequently involved, as was Ken Boughton from the Marketing Division of the State Board of Agriculture.

A major industry problem was too much fat under the hide for a changing consumer palate. Leading producers seemed eager to learn about the genetic, feeding, and management practices that would affect carcass and meat value traits.

Meat Testing/Evaluation

On-Farm Boar/Bull Testing—1967-90

On-Farm Testing of breeding stock by weighing and ultrasonic scanning for carcass traits of young breeding stock was established to supplement genetic improvement testing that was being done at the Boar and Bull Test stations.

This fee-based service should be virtually self-supporting. It generated sufficient revenue to cover costs of the Extension Assistant, travel, secretarial support.

Jerry Sleichter, Willard Olson, and Marc Neal have provided the technical service for this program whose popularity and use has increased and decreased through the years.

Livestock Carcass Evaluations—1950's-88

Swine/Pork: Several primary state livestock events provided an avenue for sampling the top live placing swine, followed with carcass evaluation through the 1960's, 70's, and 80's.

These included the Wichita Barrow Show at that terminal market, the Kansas Spring Barrow Show at Arkansas City, the Mid-America Fair/Sunflower Expo at Topeka, the State Fair at Hutchinson, and the Junior Livestock Show in Wichita.

However, the Wichita Barrow Show ended in 1976 with Cudahy's closing. The Spring Barrow Show

and carcass show was discontinued in 1981 after 21 years. The Sunflower Expo Barrow and Carcass show continued until 1982.

In 1986, after 20 years, the Kansas Junior Livestock Show discontinued its "terminal" show status for beef and sheep, and the carcass show competition for all species.

Ultrasonic scanning of swine at the Junior Livestock Show was supported in 1987 and 1988. In 1988 and 1989, all State Fair open class and futurity barrows were evaluated for carcass merit.

Beef: In 1969, through the efforts of Gene Francis, SWArea Livestock Specialist, Al Maddux, Finney Co. Agent, and John Dohogne, Farmland Beef Packing plant manager, a plan was drawn to develop a live-carcass evaluation of feedlot cattle.

These initial plans evolved into the main event of Beef Empire Days, a regional celebration of beef's importance to the High Plains region.

Today several thousand people attend the four day event in early June. All steers and heifers entered are evaluated individually live and in the carcass.

From 70 head in 1969 to 387 head in 1988, this event has grown to the largest of its kind anywhere in the world.

Competition is fierce. The best of several million animals on feed in the six-state area are intensely scrutinized both live and in the carcass by well over a thousand beef producers.

Interestingly, the first year 46 percent of the 70 head graded U.S. Prime, and 51 percent graded U.S. Choice. Twenty-five percent were fat yield grades four and five. Thirty-three percent were yield grades one and two.

Many were too fat, but entries were brought that seemed to be the preferred show ring type up at that time. The live Grand Champion chosen by Don Good was also the Champion Carcass.

Later that year, Good named a muscular, trim crossbred steer Grand Champion at the Chicago International Livestock Show, the first time a crossbred steer was chosen. That event was a significant turning point for the beef cattle industry in the U.S.

In 1970, Beef Empire numbers had increased to 134 head with 20 percent Prime, 60 percent Choice, only 17 percent yield grades four and five and 42 percent ones and twos.

By the third year, 1971, the transition to a preferred-type, modern beef had been made. Of 157 entries only 2.5 percent graded Prime, 82 percent Choice, only four percent were Yield Grades four and five, 60 percent were ones and twos.

In the 1980's as cattle entered have been ever younger, leaner and more muscular, the percent grading Choice or better has gradually dropped from the mid 50's. to the mid 80's.

Major contributors to the continuing success of the Beef Empire Days event include Extension's Gene Francis, Dave Schafer, Ray Purdy, Danny Simms, Larry Henry, Otis Griggs, Dean Whitehill, and numerous local, KSU Animal Science, and State Board of Agriculture Marketing Division volunteers.

Lamb: Only a few attempts have been made at producer clinics to evaluate lambs live with a carcass follow through. One was following the 1972 State Fair.

In 1973 and 1974, Sheep Expos were held, more along the Futurity format. Ultrasonic scanning was done to evaluate fat thickness and loin eye sizes.

Futurities—1970-89

To learn more about whether excellent carcasses could be achieved from animals with highly efficient growth performance, a futurity test program was designed to measure these two economic trait.

All livestock were gathered at one location for the feeding test period, to assess true genetic potential under conditions that minimized environmental effects.

This was first done with barrows at KSU in 1970 and 1971 under the leadership of Wendell Moyer. The KSU Meat Lab slaughtered the pigs and measured the carcasses.

To get greater public exposure and more County Agent involvement, the format was changed in 1972 so little pigs were identified and weighed on the producer's farm in the County Agent's presence.

The barrows were then raised on the producer's farm until State Fair time. Of the ten that were nominated, three could be exhibited at the Fair.

Ten to 17 producers have brought from ten to 39 barrows each year to be judged on live wt. gain per day (40 percent), live soundness (20 percent) and carcass merit (40 percent), along with the overall best combination of traits.

Steer futurities at central test feedlots were started in 1974, with several district or county futurities later modeled somewhat on the "state" model where sire groups of five steers were entered.

Over the years, Extension personnel have invested considerable time and effort to conduct steer futurities for beef producers' information. Included are Keith Zoellner, Gene Francis, Frank Schwartz, Frank Brazle, Danny Simms, Patsy Houghton, Dave Schafer, Willard Olson, Beloit bank representative Doug Johnson, and several County Agents.

Ultrasonic Scanning—1967-89

Ultrasonic Scanning for fat and muscle composition of livestock is a major component of the On-Farm Testing and Bull/Boar Testing Programs.

The increasingly sophisticated instruments used in the Kansas program were the Branson Model 12, AnScan and Technicare 210 DX.

At one point in the 70's, well over 3000 swine and 700 bulls were scanned annually.

Packer/Processor/Retailer Programs—1971-88

KMPA: The sole remaining state organization representing meat processors is the Kansas Meat Processors Association (KMPA), with membership of over 125 plants in state-inspected meat plants.

In 1940, as a result of educational meetings on proper processing, packaging, and frozen storage techniques for meat, fruits and vegetables held by KSU professors Davey Mackintosh (Meats) and George Filinger (Horticulture), KMPA was organized and named the Kansas Frozen Food Locker Assn.

At the high point, well over 200 of these locker plants existed across the state. In 1989, about 170 continue. Over the intervening years, KMPA has continued to look to KSU and Extension for new and useful information for their businesses.

KIMPA: As a result of the 1967 Wholesome Meat Act's new requirements, packer/processors found a need to organize and strengthen trade associations to address common problems. This environment provided new opportunities for education on meat science and technology.

Don Kropf, of the KSU meat faculty, served for a time as the secretary-treasurer of the Kansas Independent Meat Packers Association (KIMPA) until their dissolution in 1974.

By that time, these mostly medium-size plants had adapted to new meat inspection requirements and the motivations for many of them to unify had passed.

Midwest Meat Processor Seminar—1971-88

The Midwest Meat Processors Seminar held on the KSU Campus was first organized in 1971 by members of the meat faculty (H. J. Tuma, Don Kropf and Dell Allen) and leaders in the Kansas Frozen Food Locker and Provisioners' Association (particularly James Macomber, president 1970-71). It has been held annually for 19 years since.

A full-day Saturday programs have since each been organized by David Schafer, Extension Specialist with assistance from the Kansas Meat Processors Association Executive Board and KSU meat faculty and graduate students.

Programs have provided a blend of new technology, business management, regulatory changes and public issues. Attendance has held quite consistent in the 85-110 person range with 30-40 plants represented.

All available papers are prepared into a proceedings prior to the Seminar. So participants have a hard copy of the speakers' ideas to refer to, and take home with them.

At various times, a few other states (Illinois, Minnesota, South Dakota, Oklahoma) have patterned meetings for meat processors after this model.

Processed Meat Short Courses—1980-85

Annually two and one-half day short courses to give hands-on experience with new meat processing techniques have been co-sponsored by Extension Animal Sciences and Industry, KMPA, and, since 1984, the University of Nebraska. Attendance ranged from 16-26.

Processed Product Shows—1971-88

Competitions among small meat processors and their products have been a long-standing feature of annual conventions.

As a reflection of what has transpired over the 1970 and '80 decades, about 40 hams and bacon were entered in the State Show in 1971 and '72. In 1989, 166 products in 11 classes were entered.

Judging and managing these competitions and then effectively communicating the evaluations of each product back to the processor has been a major accomplishment of the Extension Meat Program.

The continuing improvement in quality of products resulting from these communications is noteworthy. Several Kansas processors have gone on to win national awards with their products.

The national competition, sponsored by the American Association of Meat Processors, frequently calls on KSU faculty to evaluate over 650 products from all over the nation and Europe.

Product Defect Consultations—1973-88

Since 1973, from 15 -30 problem meat products have been sent in each year by Extension agents, meat plants, meat inspectors, and customers for expert third-party opinions.

Most frequently, flavor problems that really cannot be well measured by instrumental analysis are the reason. Forms and systems have been devised by Schafer and meat colleagues to communicate what was found, the most likely causes, suggested means to prevent the problem, and alternatives to salvage usable products.

Internship/Research Programs

Student Internships—1952-88

The KSU Meat Internship Program is one of, if not the oldest internship program in the nation. Originating in 1952, its greatest growth has been in the 1970's and 1980s.

Of the 51 internees (both graduate and undergraduate) since 1973, 47 were placed in 23 different meat plants through contacts made by Meat Specialist Schafer.

In earlier decades, the 1950's seven were placed. In the 1960's, fourteen students participated as interns. Many of these persons have gone on to significant accomplishments and very responsible positions in the meat industry.

Demonstration/Survey Research—1980-88

Under these aforementioned circumstances, useful meats research has been difficult with no research appointment, graduate students, budget support, and little opportunity to compete for grant monies.

Now, short term "mini" projects were added to the requirements in the meat graduate program, which encourages student to investigate applied-type researchable questions.

Several mini-project topics, suggested by Schafer, were researched and important answers found for

immediate implementation. Examples were:

- 1) Benefits of electrical stunning and rapid sticking in reducing blood-splashed pork cuts (Dennis Burson, now Extension Meat Specialist, University of Nebraska),
- 2) Benefits of proper packaging material and vacuum packaging of cured and smoked sliced bacon for frozen storage (John Greathouse),
- 3) Survey on salt and sodium levels in commercial hams and bologna (S.S. Chen),
- 4) Incidence and causes of dark-cutting beef in 4-H steers (Scott Eilert, undergraduate),
- 5) "Processed Meat Problems" slide set and script (Rosemarie Nold).

Other research involvement by Extension Meat Specialist Schafer in the 1980's included two meat marketing projects led by Dr. Joseph Koudele, Agricultural Economics.

First, 1000 consumers were interviewed by telephone on their meat purchase patterns, how they stored and handled meat in the home, and their methods of preparation.

Second, 3340 store interviews were conducted in eight stores in three Kansas cities to understand the consumer market environment for variety meats.

Consumer Meat Programs

Home Processing—1970's

During the mid-70s, there was a considerably renewed interest in self-sufficiency, which included processing one's own meat.

Although not particularly encouraged, several meetings were held each year demonstrating carcass cutting, wrapping and freezing, with admonitions given on the legal limitations on home processing vs. business meat processing.

Shopping and Buying Tips—1970's

In the late 1970's health agencies, consumer activists, and even regulatory agencies of the federal government were coming down hard on meat, cholesterol and fat consumption.

Several agent training and consumer information meetings were co-held with Mildred Walker, Extension Consumer Marketing Specialist, to help people

deal with a very unsettled marketplace.

Meat Product Safety Issues—1970's

During this unsettled era, food and the way it was produced and processed became a popular target of criticism.

Increasingly sophisticated analytical techniques were being discovered to measure new chemical substances in previously unknown places, or in smaller amounts, often in foods.

The Delaney Clause in the 1968 Food Additives Amendment became a rallying point for concerns bordering on paranoia over additives and accidental constituents in food, as well as chemicals used to efficiently grow the food.

Issues affecting meat products during this period included: diethylstilbestrol (DES), polychlorinated

biphenyls (PBC), US Red Dye #2, purple ink for meat inspection marks, sodium, phosphates, polyvinyl

chloride (PVC) used in fresh meat packaging, and mechanical deboning.

Youth Meat Programs—1960's-88

One of the first 4-H meat projects in the country, the 4-H Meat Utilization project, has encouraged creative, self-determined types of activities for 100-250 youth annually, since the late 1940's

Two state winners each year received educational trips to Chicago sponsored by the Kansas Livestock Association and, the Kansas Beef Council.

Attempts to develop National 4-H Meat project materials were successfully completed in 1988. Several state Extension Meat Specialists (Kansas included) completed Phase One with the support of the National Livestock and Meat Board, and the National 4-H Council

4-H/FFA Meat Judging—1971-88

Annually, 55 to 80 4-H youth from 13 to 20 counties attend one to four practice Meat Judging and Identification contests and the State Contest, where carcass and cuts are evaluated, retail cuts identified by name, and cookery method recommended.

Over 75 contests have been set up and officiated in 14 meat plants over 19 years.

Key volunteers include Frances Lewis (Pawnee Co.), Mike Burns (Shawnee Co.), John and Sheila Price, (Lyon Co.), Coy Allen (Allen Co.), Dr. Denise Kobuszewski (Jefferson Co.), June Setzkorn (Hodgeman Co.).

Extension Agents who have contributed long-term service to this youth program were Otis Griggs (Reno/Finney counties), Lisa Ramsey-Lauxman (Lyon Co.), and the several host plant personnel and sponsors.

Additionally, from one to five district FFA Meat Contests annually, totalling over 55 in 17 years, have been officiated by Schafer. Each contest had from 35 to 130 students judging, totalling over 4000 participants between 1973 and 1988.

The contest form for the national 4-H/FFA Meat Identification contests was originated by Schafer in 1974 and is still used with minor modifications.

Meat Labels—1975-1988

With heightened interest in what was in foods during the late 70's, meat label knowledge was

communicated to 4-H youth and homemakers in the 1975-1985 decade by an educational program.

Using slides and real labels to teach label features, this presentation was usually followed by an exam with answers provided.

County Fair Carcass Evaluations—1960's-88

Carcass evaluation has been a growing educational activity for county 4-H market livestock exhibitors since the late 1960's. Counties in 1988 and 1989 include:

Beef: Atchison, Brown, Butler, Coffey, Comanche, Dickinson, Ellsworth, Finney, Ford, Franklin, Graham, Gray, Greenwood, Hodgeman, Jefferson, Johnson, Lane, Leavenworth, Lyon, Marshall, Miami, Nemaha, Norton, Pawnee, Rawlins, Riley, Rooks, Rush, Woodson, State Fair.

Pork: Douglas, Finney, Franklin, Graham, Gray, Greenwood, Hodgeman, Nemaha, Pawnee, Phillips, Rawlins, Riley, Rooks, Rush, State Fair.

Lamb: Finney, Franklin, Graham, Gray, Pawnee, Rush, State Fair.

Annually, these events involve over 1,000 livestock, over 800 youth and their families, most county Extension Ag and 4-H Agents, and several Home Economics Agents in those 31 counties.

The activities also involve personnel of 40 meat plants. Seventy-five percent of these county events have been evaluated by Schafer.

Since all occur between mid-July and mid-September, these County Fair 4-H livestock exhibit follow-ups have provided an excellent "teachable moment" to evaluate the direction a cross-section of breed-types are going.

Other counties or state shows known to have had 4-H carcass evaluations in the period 1972-89 include Anderson, Barton, Decatur, Edwards, Elk, Harvey, Jewell, Morris, Osborne, Reno, Scott, Sedgwick, Shawnee, Smith, Wabaunsee, Washington, Wilson, Kansas Junior Livestock Show.

Nearly half of all Kansas counties have made efforts to teach carcass quality and merit by this method.

Standard Eartag—1975

The adoption of a state-wide standard ear tag for 4-H livestock exhibits beginning in 1975 made it

possible to emphasize growth traits in 4-H livestock to a greater degree.

To qualify for entry to show at any state show and some county shows, livestock had to be weighed in (beef, May 1; hogs and lambs, June 20) and meet minimum rate of gain standards.

Early proponents of this concept were Wendell Moyer, State Ext. Animal Science, and Cecil Eye-stone, 4-H Specialist.

Although initially faced with some resistance, this system continues to date as an accepted and useful part of 4-H livestock programs. First in the nation, the Kansas system is still being looked to as a model by other states.

U-Scan of 4-H Livestock—1985-88

Ultrasonic scanning (U-Scan) of hogs, lambs and steers at 4-H county fairs on a \$3 per head fee basis

was started in 1985 with 14 counties participating.

That first year, 1,331 livestock were scanned for fat thickness and loin eye area in swine and sheep and just fat thickness in beef.

In 1988, 23 counties participated, four of which were in Nebraska. Between 2,300 and 2,500 live-stock were scanned.

Fair Judges Clinic—1972-1984

Alternating years with the University of Nebraska, the Extension and Animal Science faculty conducted training sessions for Extension agents and livestock judges on the skills needed to evaluate livestock and carcasses, and com- municate with those at- tending the livestock shows. From 85 to 100 people regularly attended.

POULTRY PROGRAM

Early Poultry Development

Poultry educational work in Kansas before the Smith-Lever Act was confined largely to activities in connection with establishing the Department of Poultry Husbandry and starting poultry experimen- tal work at the College. Very little field work was conducted.

Milo Hasting, Student Assistant in charge of poultry, Kansas State Agricultural College, and C. H. Rhoades, North Topeka, were largely responsible for interesting the College authorities in teaching and doing experimental work with poultry.

Poultry Course Work—1902

"Practice in Judging Chickens" was included under stock judging from 1902 to 1907 when regular work was offered in poultry husbandry for the first time at Kansas State Agricultural College (KSAC).

Poultry Plant in Mississippi Valley—1904

The Kansas Agricultural Experiment Station was the first station in the Mississippi Valley to have a poultry plant. In 1904, the pioneer open- front house of this region was built at the College and this later developed into the Kansas straw-loft open-front poultry house.

The first egg-laying contest in America started in Manhattan, November 1, 1904. Numerous egg-lay- ing contests followed in other states.

William Lamb was poultryman and A. G. Philips was student assistant in 1906-1907. Mr. Philips was the assistant in charge of poultry husbandry from 1908 to 1910 when he resigned to accept a similar position at Purdue University.

On January 1, 1912, W. A. Lippincott from Iowa State College, Ames, Iowa, was placed in charge of poultry work which at that time was made a separate department, the Department of Poultry Husbandry.

Dr. Lippincott served as head of the department until August 1, 1923, when he resigned to become head of the Poultry Department at the University of California.

Professor L F. Payne came from Massachusetts Agricultural College February 1, 1921 to succeed Dr. Lippincott as head of the department, August 1, 1923.

First Extension Poultry Work—1910

The first Extension poultry work in Kansas was in the form of movable schools in 1910 and 1911. Some work was done on Farmers' Institute programs, largely by members of the poultry department.

First Extension Specialist—1914

The first Extension poultry specialist was Ross Sherwood, employed November 1, 1914.

Poultry Improvement Program

The first poultry improvement activity of record was the poultry judging work started in 1902 at the College. A one-week poultry judging school was held during the 1902 winter term. Mr. Rhoades was in charge of the school. Feeding and breeding experiments were also started in 1902.

First Egg Laying Contest—1904

The first egg-laying contest in America was started at the College on November 1, 1904. It consisted of seven pens with six birds each. The contest was enlarged to 25 pens the second year after which time it was discontinued.

Oscar Erp, Head of the Dairy Department, and Milo Hastings, student assistant in charge of poultry, were in charge of the contest. The results of the contest were reported in Press Bulletins 140, 147 and 156 of the Department of Dairy and Animal Husbandry.

Numerous egg-laying contests followed in other states and were continued for many years.

Pioneers in Poultry Improvement—1921

N. L. Harris, Extension poultry specialist, was responsible for starting poultry improvement work in the state in 1921. The first flocks were accredited in Coffey County. J. H. McAdams was the County Agent at that time. Mr. McAdams was employed as poultry specialist on October 1, 1922 as was D. J. Taylor.

These two men expanded the program and also started the demonstration record program among flock owners in 1922. The poultry improvement work continued to be an important phase of the Extension poultry program.

Accredited Poultry Flocks—1921

Poultry improvement work in Kansas was started in 1921 in Coffey County through the cooperation of Norton L. Harris, Extension Poultry Specialist, and J. H. McAdams, County Agricultural Agent in that county. Flocks were accredited by the poultry specialist working with the County Agent.

All birds in the flock were banded, the flocks were visited and the birds appearing to be undesirable as breeders were removed. The same system of selecting flocks was used in 1922 and expanded to several other counties.

Poultry Flock Inspectors School—1923

In 1923, a school was held at the College for poultry flock inspectors who had been selected to help with

the flock inspection work. The poultry specialists continued to handle many flocks for several years.

Certified Flock Association—1923

The Kansas Certified Flock Association was founded in 1923, the name being changed to the Kansas Poultry Improvement Association in 1925.

Accredited Hatcheries Association—1923

The Kansas Accredited Hatcheries Association was organized in 1923, and the Kansas Record of Performance Association in 1928.

Egg Production—1922-60

The records of demonstration flocks, as kept by the owners, showed a constant increase on egg production per hen. By ten-year periods the record was:

1922-23	123.96
1932-33	154.23
1942-43	159.71
1952-53	218.18
1958-59	255.00

Record of Performance—1928

Record of Performance work under the National Poultry Improvement program gradually replaced most of the egg-laying contests as official egg-laying records could then be made on the breeder's farm.

Poultry Improvement Association—1935

In 1935, the three organizations combined into one organization adopting the name of the Kansas Poultry Improvement Association with four branches: the Record of Performance Branch, the Approved and Certified Flock Branch, the Approved and Certified Hatchery Branch, and the Approved Turkey Flock Branch.

Each branch had a board of seven persons. A general board of directors consisted of two from each branch and a College representative.

The Kansas Poultry Improvement Association was recognized by the Bureau of Animal Industry, United States Department of Agriculture, as the official state agency to supervise improvement work under the National Poultry Improvement Plan.

All of this work was closely correlated with the Extension poultry program. The breeding stages of the poultry improvement work were placed under

the National Poultry Improvement Plan in 1935 and the pullorum control classes in 1938.

R. G. Christie, General Secretary of the Kansas Poultry Improvement Association, was employed as secretary of the Kansas Accredited Hatcheries Association on October 1, 1931. J. M. Gish, Record of Performance Inspector for the association, worked in connection with the poultry improvement program for many years following 1923.

In 1939, this program included 15 United States Record of Performance breeders, 2,259 United States Approved and Certified flocks composed of approximately one-half million birds, 103 United States Approved and Certified hatcheries with a hatching capacity of 4,241,000 eggs, and 39 Kansas Approved turkey flocks.

Poultry Flock Improvement—1943-58

The program helped to sell better management, better marketing practices, and better birds to the poultry producers of Kansas.

To stimulate interest in record work, the Kansas Poultry Flock Improvement Project continued from 1943 to 1958, supported by the Kansas City Chamber of Commerce, the Weekly Star Farmer, and the Kansas Poultry Improvement Assn.

Schools have been held each year to train the inspectors who examine flocks for quality of individual birds and to test them for pullorum disease. Those schools were conducted by the College departments of Poultry Husbandry, Bacteriology, and the Division of Extension.

Typhoid testing was added in the school conducted in 1957. Persons who desired to qualify as inspectors were required to make a passing grade in the inspector's school.

Approved/Certified Poultry Units—1961

In 1961, there were 65 Approved and Certified hatcheries, 806 Approved and Certified flocks, and 63 Approved turkey flocks with 61,887 birds.

Poultry Business Analysis—1962

During 1962, the Extension Service initiated the Kansas Poultry Business Analysis, a standardized poultry record keeping system designed to encourage poultrymen to keep accurate records.

From data supplied by cooperating producers, monthly summaries are prepared and returned. In 1962, eight producers representing 25,000 layers were cooperating in this program.

Multiple Unit Test—1962

In 1961, the Kansas Multiple Unit Test was initiated. The requests for such a test came from hatcherymen. Instead of an egg-laying test being conducted at a central place under somewhat ideal conditions, several different locations were used. Seven commercial strains and a control were entered in the first test.

All eight strains were used at each location. Eggs were collected and hatched at a central location, wing banded and delivered to the respective farms. The chicks were raised intermingled to 150 days of age at which time they were separated and placed in respective pens.

The following traits were recorded: percent growing mortality, percent hen-housed egg production, percent hen-day egg production, number of eggs per pullet housed, and pounds of feed to produce one dozen eggs. Samples of eggs were taken five times during the test and the quality determined using seven different factors.

Data were made available to poultrymen and County Agents showing the merits of the various commercial strains of egg producing chickens.

Terminate Multiple Unit Test —1966

A casualty of this trend was the Kansas Multiple Unit Test which was terminated in 1966. The participating breeders switched their emphasis to testing their stocks in those types of environments that were being used in the commercial industry.

Poultry Education/Demonstration Program

County poultry schools, usually held during the winter months, were used for many years to contact the leading poultry producers of a county. Subject matter was presented by means of charts, film strips, slides, motion pictures, lectures and demonstrations.

Demonstration Record Flocks—1922

Demonstration record flock work including the keeping of a complete record on the poultry flock by using a poultry record book and reporting a summary of the record work at the close of each month to the County Agent and the Extension Service poultry spe-

cialist was started in 1922 and has been in operation continuously since that time.

Result Demonstrations—1939

Result demonstrations on brooding, housing and flock management have served a very definite purpose in connection with the poultry program in securing the adoption of recommended practices.

An example of such demonstrations was the first Kansas straw-loft poultry house constructed on the farm of William Bauer, Clay County. This housing demonstration and many more similar ones were partly responsible for that type of housing being used (in 1939) on more than 15,000 Kansas farms.

Poultry Festival—1939

In 1939, the name of County Poultry Schools changed to Poultry Festival. Egg shows and sometimes live poultry shows were often a part of the poultry festival program.

Commercial Flock Program—1940's

Throughout the first 40 years of the 1900's, poultry on Kansas farms was a very minor project. During the early 1940's a campaign was started to encourage poultry producers to develop the farm flock toward a semiype of operation. The slogan was "Thirty or Three Hundred."

The thirty was for a flock for home use only, the three hundred for a flock that would add income to the farm business. The larger flock would use labor more efficiently. Better management practices and better marketing were also possible. This enlarged flock emphasis continued since its inauguration. Larger flocks enabled producers to compete more successfully with other areas. By 1963, more than 500 flocks had over 1,000 layers and the flock size ranged up to 20,000 layers.

Graded Egg Law—1953

Educational work on the value of quality eggs was also a contributing factor to the larger size of flock. The graded egg program was given much time and emphasis following the passage of a graded-egg law by the Kansas legislature in 1953. The results of that program are further discussed under the heading, "Graded Egg Program."

The 1963 report made by the Specialist, under the heading "Kansas Poultry Business Analysis," stated:

One of the most promising opportunities for more profit to the egg producer is through more efficient

management based upon accurate flock records.

In cooperation with poultry industry personnel, the Kansas Poultry Association, and County Agents, the Specialist has continued to encourage producers to participate in the Kansas Poultry Business Analysis, a uniform standardized record keeping system for egg producers designed to provide poultrymen with the type of information that will assist them in improving the management of their flocks.

For example, based on a feed cost of \$60.00 per ton, a one fourth pound reduction in the feed required per dozen eggs would mean an annual saving of approximately \$150 per 1,000 layers or \$18,000 for the number of layers participating in this program.

A five percent increase in annual rate of lay would increase profits \$300 per 1,000 layers per year or \$36,000 for all layers participating in this program.

District Poultry Meetings—1956

In 1956, district educational meetings on poultry were started when it became evident that the county type meetings were no longer successful because of the smaller number of people in attendance and smaller number of commercial producers in each county.

It was possible to present to the poultry people better educational programs as the Specialists turned to commercial people for help on programs for the district meetings.

Commercial interests had an important part in developing the poultry industry in Kansas. The district poultry meetings (schools or festivals) were exceptionally well received and a greatly increased interest shown by the poultry producers. Most of the meetings featured a chicken barbecue at noon.

District/State Egg Shows

District egg shows were held in connection with the district poultry meetings. The eggs were judged on a quality basis to help the producers realize the need for producing a quality egg. The egg shows also encouraged producers to handle the eggs properly on the farm.

A state egg show was started in 1957 to give recognition to outstanding producers of quality eggs in Kansas. The state egg show was held in connection with the Kansas Poultry Improvement Association annual meeting.

The importance of the production of quality eggs was further emphasized through activities at the State Egg Show.

Terminate State Egg/Turkey Show—1970's

The State Egg Show and Turkey Show were terminated in the late 70's from lack of interest and the decline in number of producers.

Annual Poultry Industry Conference—1967

As egg production units became fewer but larger, the district egg and poultry schools were replaced by an annual poultry industry conference in 1967.

This annual statewide meeting allowed the Extension Service to provide the industry with current technology.

For the first two years, Kansas and Nebraska held conferences on successive days and shared speakers.

Poultry/Gamebird Exhibition—1970's-80's

Interest in exhibition poultry and gamebirds increased during the 70's and 80's. In a response to this interest, annual area meetings on management and disease prevention were started in 1984 for owners of small (backyard) poultry flocks.

Also, in response to an increasing interest in the growing of gamebirds for release, a statewide meeting was held in 1988 for gamebird breeders. Attendance was 55 people. Plans were to continue these meetings.

Hatcheries Increase—1980s

One result of this increasing interest in exhibition poultry and gamebirds is an increase in the number of hatcheries in the state from a low of 8 in the early 80's to 198 in 1988.

4-H Poultry Program—1963

Educational work with 4-H Club members included brooding, laying flocks, turkeys and capons. Members enrolled in the laying project were supplied a record book and monthly reports were made on the project. There were 1,549 enrolled in poultry projects in 1962.

State awards were made each year for 4-H members in each of three divisions: brooding, laying flocks and turkey projects. A few district broiler shows were started in 1961. Training in poultry judging was given by the Extension Specialists.

A state judging team represented Kansas at the Invitational Inter-State 4-H Poultry Judging Contest held in Chicago each year for several years preceding 1963. The team to represent Kansas was chosen at a state contest held at the Kansas State Fair in September.

Another activity for 4-H Club members was a Junior Turkey Show held in connection with the annual meeting of the Kansas Turkey Federation. The Federation provided a \$100 scholarship for the outstanding turkey project and a wrist watch for the winner at the turkey show.

Participants in the show learned how to finish, dress, and package their birds. All birds that placed in the show were sold at auction. In 1961, Jan Goering, Moundridge, displayed the top 4-H bird that sold for ten dollars per pound for a total of \$202.50.

4-H Poultry Programs—1984-88

Enrollment in 4-H poultry remained strong through 1988. The chick embryo project was the most popular. Participation in the state poultry judging contest increased from a low of 24 participants in 1984 to 52 in 1988.

The top four judges at the state contest represented Kansas in the National 4-H Poultry Judging Contest which was held in Louisville in years prior to and through 1988.

The Extension Specialist held several area judging clinics each year before the State Fair, and coached the State Poultry Judging team.

To reflect changes in the industry, the classes in the state and national contests emphasized those factors that would assist youth to be more intelligent consumers of poultry products. A quiz bowl was to be added to the contests in 1989.

Participation in the State Fair Poultry Show remained strong, with approximately 150-170 entries in the 1980s.

Poultry Program Shift

As the trend continued in the U. S. and Kansas for fewer but larger flocks, the emphasis in poultry improvement shifted from flock selection and breed comparison tests to prevention and control of transovarian diseases.

Marek's Disease—1960's

Marek's disease, a problem in growing birds, was the scourge of the egg production industry during the 60's. It wasn't unusual for a producer to lose 20-25 percent of the layers from this disease. Development of a vaccine greatly reduced the losses from this disease.

National Poultry Improvement Plan

Larger but fewer units increased the potential for major losses from disease, particularly those transmitted from generation to generation via the breeding stock. An example of this concern was

the implementation of the Pullorum-Typhoid Clean State program by the National Poultry Improvement Plan.

Kansas Poultry Disease Act—1985

To enable Kansas to attain this status, the Kansas Poultry Disease Act was enacted by the state legislature in 1985 at the request of representatives of the Kansas poultry industry.

This act required all hatcheries and breeding flocks operating in the state to meet the requirements of the National Poultry Improvement Plan Poultry-Typhoid Clean State status.

The main requirements were that all breeder flocks and hatcheries in the state operate as pullorum-typhoid clean and that all poultry going to public exhibits be free from these two diseases.

Training Schools—1985-88

A number of training schools were held to acquaint people with the provisions of the Act, and to certify them as blood testing agents. Approximately 200 people were trained as blood testing agents from 1985-88.

Kansas Pullorum-Typhoid Free—1986

Kansas attained the pullorum-typhoid free status in 1986. There were eight chicken hatcheries, one turkey hatchery, three waterfowl hatcheries and six gamebird hatcheries (a total of 18) operating in the state in 1988 compared to 38 hatcheries in 1966 and a low of ten in 1982. A total of 73,500 birds were tested for pullorum-typhoid diseases in 1988.

Other Poultry Diseases

The National Poultry Improvement Plan also

supervised the testing of breeding stock for other transovarian transmitted diseases, i.e. *Mycoplasma gallisepticum*, *meleagris* and *synoviae*, and *Salmonella typhimurium*. The commercial chicken and turkey breeding flocks in the state were free of these diseases.

A newcomer was *Salmonella enteritidis*. This organism, with the potential to cause food infection in humans when present in eggs, became of major concern to the egg production industry during the 80's.

Hatchery Changes—1979-80

Two major changes occurred in the hatchery industry in Kansas in 1979-80. Coombs Hatchery at Sedgwick, which had been in operation for 55 years, ceased business and Reimers Hatchery and Feed Co., Buhler, was purchased by Cargill, Inc.

Sanitation Monitored Program—1988

A new program, Sanitation Monitored, was adopted by the Poultry Plan in 1988 to provide states a vehicle to deal with those highly infectious diseases that from time to time pose a threat to the poultry industry. The Extension Poultry Specialist was the State Coordinator for the Plan in Kansas.

Terminate Management Studies

The breeding test was replaced by on-the-farm management studies at the Kansas State Penitentiary. These studies involved testing several strains in various types of cage environments.

This project was terminated after several years when the penitentiary decided to cease farming operations.

Graded Egg Program

Graded egg programs were in use more or less all during the development of the Kansas Poultry Industry. Since 1950 special emphasis was placed on a quality egg program with producers being encouraged to sell eggs on the grade the entire year.

Quality Egg Law—1953

In 1953, the Kansas legislature enacted a quality egg law making it mandatory that eggs sold at retail be labeled according to size, quality and the packer. This legislation gave added emphasis to the graded egg program. This program helped develop markets out of the state for surplus eggs.

The district and state egg shows were an important factor in emphasizing the value of graded eggs and the management practices necessary for producing them.

Quality Egg Clubs—1956-57

Quality Egg Clubs were organized by producers in areas that were not adequately served by quality market outlets for high quality eggs. By this means a large number of eggs could be brought together for the buyer. The producers agreed to use good production practices to maintain the high quality of the eggs.

Thus the buyer was able to get higher quality eggs and at the same time reduce the cost of handling the

eggs. This plan (in 1958) had proven successful in several areas.

The Republic County Club was organized in 1956 and in 1957 the Geary County, Cloud County and Shawnee County clubs were organized.

Egg Buying Organizations—1958

Cooperative egg buying organizations (listed in 1958) that have encouraged the graded egg program are: Central Kansas Coop Association, Hillsboro; Ark-Valley Cooperative Creamery, Hutchinson;

Washington County Cooperative Creamery, Linn; Neosho Valley Cooperative Creamery, Neosho.

Private concerns handling eggs on a graded basis are: Seymour Foods, Inc., Topeka, Marysville and Concordia; Bestyet Egg Company, Smith Center; Safeway Egg Company, Wichita and Kansas City; and Harris and Sons, Dodge City.

These organizations worked closely with the Extension specialists when setting up their various grading programs.

Egg/Broiler Production

Fewer but larger egg production units was the trend during the 1970's and 80's. Concurrent with this trend was replacement of independent egg producers with production contracts, the almost complete switch from housing layers on litter to housing in cages, and development of firms that specialized in growing started pullets for egg producers.

Contract Production of Eggs

Under contract production, the producer supplies housing, equipment, utilities, and the labor; and the egg marketing firm the birds, feed and market.

Sunny Fresh Foods, Buhler, presently has 800,000 layers on contract in Central Kansas.

The balance of commercial egg production in the state is controlled by Central Kansas Hatchery, Moundridge; Mark Miller Produce, Cottonwood Falls; Wise Poultry, Emporia; McAnally Enterprises, Maple Hill; and Parmely Poultry, LeRoy.

Contractors preferred that flock size be from 30 to 60 thousand at one location, and flocks located within 30 to 50 miles of the processing plant. In 1988, State Line Egg Producers and Key Milling ceased production of eggs.

Local Egg/Poultry Markets

Although large scale production is only possible through a contractual arrangement, the Extension Specialist continues to work with small producers who desire to develop small, local "niche" markets for eggs and meat.

Two farmers in central Kansas are growing 200-300 "organic grown" broilers per week for a market in Wichita. One of the producers is planning to also grow turkeys for this market. Similar small-scale direct marketing enterprises are found throughout the state.

State egg and poultry meat marketing regulations allow producers to market direct to the consumer limited quantities of eggs and poultry meat without being inspected.

Poultry Housing

The Kansas Straw-Loft Laying House was the recommended poultry house in Kansas until 1950. The straw-loft house with open front was 20 feet deep and usually units of 20 feet in length. In the early 1950's plans were drawn and distributed for a 26-foot side house.

This size was soon replaced by a pole-type structure with a width of 40 feet.

This type house was popular but when the larger commercial flocks began to develop this small type house became unsatisfactory.

Commercial Poultry Housing

Commercial poultry producers demanded an enclosed house that could be used for cages, floor, or slat-floor as the situation demanded. Extension Engineers developed plans for this type structure and it was accepted by the poultry people. This structure was also adapted to the use of automatic ventilation systems.

The fact remained, however, that almost 90 percent of the chickens in Kansas are in flocks of 500 or less; therefore, the larger houses are not needed by those flock owners.

Ventilation/Space Research—1961

In 1961, the Extension poultry specialists were cooperating with the Department of Poultry Science in an endeavor to determine the effect of crowding on the income from a flock of laying pullets. One

square foot per pullet and 1.75 square feet per pullet were compared.

Ventilation varied from natural to forced and a combination of the two. The research results were tabulated by the Experiment Station staff.

Caged Layer Development

Available reports have not mentioned the progress of the cage-layer program specifically as such. The following quotations indicate the develop a certain extent:

1956—During the year, a considerable interest has developed in the state in the establishment of cage laying plants. This has been brought about largely by commercial feed companies offering a definite financial plan for such plants... More interest has developed in cage laying plants in the Western part of the state due to drought conditions which have curtailed wheat and cattle production.

In general, cage laying plants being promoted are designed for 1,680 birds. Close-in houses with insulation and a definite ventilating system are used. Plants have a refrigerated egg room and are selling a quality egg on a definite market-ing program.

1957—Some cage laying plants are being developed in relatively cheap, open houses without mechanical ventilation or cooling. Such plants require more labor but the original investment is lower. A few of these houses are equipped with community cages but most of them are using single or double cages and not double decking the cages...

The caged laying plant development in the state has presented another problem in brooding and flock replacement. Many of these operators desire to purchase 16-week old pullets instead of raising pullets. Some large brooding operations are being established to supply these pullets.

1958—The caged layer program in Kansas was given a big boost in 1956 by General Mills when they started a finance plan for laying birds. This operation was based on an operation of 1,680 birds and a guaranteed market of 37 cents per dozen for Grade A large eggs. The market contract was by Hurst and Company, Bonner Springs, Kansas.

The houses were built by the Dodson Company, Wichita. This program ended with approximately 205 houses being constructed over the state. This program developed too rapidly considering the egg price in the fall of 1957 and spring of 1958 was

extremely low. The contract was broken on the egg market in the late winter of 1958.

Some producers stayed with the market while others used various market outlets. One area developed around Tribune, KS through financing by a local bank. This area markets through the Safeway Egg Company, Denver, CO and experienced very little difficulty in moving their supply of eggs.

The number of producers with caged layer programs as reported by the County Agricultural Agents, for the following years, were: 1958, 301; 1959, 269; 1960, 213; and 1961, 177.

1961—The Poultry Specialist said in his report:

The number of cage operators in the state is continuing to decrease. Although it is felt that this decrease has about reached a plateau, most of the cage operators that have continued their operation seem to be pleased with their results.

Their investment in this type of operation has been very high as compared to floor-type operations. The success of the cage operators has been due to above average management.

1963—The report made by the Specialist stated:

Through the encouragement of the Extension Service and poultry industry personnel an increasing number of farmers are making egg production a major farm enterprise; illustrated by the increase in number of flocks of over 5,000 layers from 59 in 1961 to 89 in 1963.

Increased interest in the importance of good business management practices in the egg production business is evidenced by an increase in enrollment in the egg production flock record keeping program from eight producers with 25,000 layers in 1962 to 28 producers with 121,500 layers in 1963.

Data from this program, in a number of cases, has provided the Specialists with the opportunity to assist producers in adopting practices which have helped them produce eggs more economically. Participation in this program helped one producer with 8,000 layers to save an estimated \$900 per year through a reduction in percent of cracked eggs.

Cage Housing of Layers

All commercial laying flocks in the state were housed in cages. Cage housing replaced floor housing because cages allowed a greater concentration of birds per unit of floor space, were more adaptable to automation, and require less labor. The open-sided, naturally ventilated cage houses of the 60's and 70's are being replaced with windowless, fan-ventilated houses.

Poultry Expansion Efforts

Any significant expansion of poultry production within Kansas will depend on development of new processing facilities.

The Extension Poultry Specialist, in cooperation with Extension Community Development Specialists, and personnel from the State Board of Agriculture and the State Department of Commerce, are contacting

major egg, broiler and turkey processing firms relative to locating processing facilities in Kansas.

A large West Coast egg production firm had tentatively decided to locate a large egg production complex in Kansas in the late 1980s. The final decision depended on an improvement in the current (1987-1988) feed-egg price relationship.

There was no commercial broiler production in Kansas for the 20 years from 1968-1988. However, in the 1980s the Campbell Soup Company was attempting to develop contract broiler production in Northeast Kansas for their processing plant in Tecumseh, Nebraska.

Knowledgeable industry people predicted a trend for some broiler production to move into the Midwest because of lower feed ingredient costs than in existing broiler growing areas.

Turkey Production, Management, Improvement

In 1935, a Turkey Improvement Plan was started under the supervision of the Kansas Poultry Association in cooperation with the Extension Service.

The program consisted of the selection of turkey breeding flocks by qualified selecting Agents, the pullorum testing of all breeders by the tube test in a central laboratory, the supervision of specialized turkey hatcheries, and the trap nesting, pedigreeing and progeny testing on the farms of the Turkey Record of Performance breeders.

In 1961, 12 approved turkey hatcheries operated under the plan. Turkey breeding flocks number 63 with 61,887 birds selected and pullorum tested under the National Plan during the year.

Kansas Dressed Turkey Show—1939

The first Kansas Dressed Turkey Show was held in 1939. The birds were New York dressed and shown in various weight classes. The dressed show helped to encourage the use of better breeding stock for the production of turkeys in Kansas.

As the interest increased in oven-dressed birds, the turkey growers decided to change the show to eliminate the New York dressed classes and have oven-dressed classes only. The competition became very keen and helped to encourage the production of better turkeys in Kansas.

In 1961, a live show as well as a dressed show was held. Birds were brought to the show alive, judged, then dressed by a local (Wichita) processing plant and then judged dressed. They liked this kind of show.

State Turkey Federation—1944

At a meeting of turkey growers held in connection with Farm and Home Week in 1944, it was voted to organize a State Turkey Federation to promote the turkey industry in the state. Temporary officers were elected.

District meetings were planned for September, 1944, at which time the constitution and by-laws were adopted and permanent officers elected.

The first officers were:

President, E. W. Runft, Belleville.

Vice President, Lloyd Raymon, Galena.

Secretary-Treasurer, R. G. Christie, Belleville.

Directors, R. M. Little, Maize, J. E. Tillotson, Kansas City; H. A. Neilson, Page City; L. S. Strackeljohn, Garden City.

KSC Representative, E. R. Halbrook, Manhattan.

State/National Turkey Federations

Later the Federation placed into operation a program in which turkey hatcheries added one cent to the cost of turkey poults sold to growers. That money was paid to the federation. Part, in turn, was paid to the National Turkey Federation to help promote

the "eat-more turkey" program and other consumer educational work.

The State Federation also gave valuable support to 4-H Club work. A \$100 scholarship was awarded each year to the top 4-H turkey project. Classes were also provided for 4-H members at the annual dressed turkey shows.

Random Sample Turkey Test—1958

The first Kansas Random Sample Turkey Test was conducted in 1958 at Kansas State College. This project was designed to give the turkey growers an opportunity to compare various strains of turkeys being offered for sale in Kansas.

The test was to check hatchability, mortality, feed efficiency, rate of gain, dressing percentage and quality of the finished turkey. The hens were dressed at 22 weeks of age and the toms at 26 weeks of age.

Records were kept, under the supervision of the Extension poultry specialists, according to the instructions of the National Turkey Plan, so procedures were consistent with similar tests in other states, and data could be compared.

The fertility of the eggs varied from 52.3 to 85.5 percent, hatchability varied from 33.2 to 59.5 percent. The weight of hens at 22 weeks of age varied from 13.22 to 15.11 pounds average for a pen, toms from 19.18 to 20.93 average for a pen, with other factors showing similar variations.

The information was made available to the turkey growers of the state. The test was continued for three years. The test was well received.

Turkey Production in Kansas—1961

In their report for 1961, the Extension poultry specialist said:

Estimated production of turkeys in Kansas in 1961 was 1,225,000 compared to 900,000 in 1960. Turkeys should be produced by specialized growers with large flocks. Extension has geared its turkey program to that type of producer.

Turkey equipment must be designed to save labor and provide sanitary conditions. All recommended brooding equipment is portable and should be moved frequently. A definite system of range management is used at each poultry demonstration.

Large pole-type houses are being constructed by some turkey growers and turkeys raised in complete confinement. This system of turkey production will increase in Kansas.

Turkey Industry Changes —1970's-80's

Dramatic changes occurred in the turkey industry during the 70's and 80's:

- 1) Fewer but larger turkey production units;
- 2) Change from production and marketing turkeys on the open market to production-marketing contracts with processors. These contracts specified the number of turkeys to be raised, when they would be processed, and how the market price would be determined.
- 3) Turkeys became a growth industry as a result of year-around production, development of a variety of value added convenience items, and the perception in the minds of consumers that turkey was a "lean" meat. Per capita consumption of turkey meat increased from below ten pounds in 1978 to an estimated 17 pounds in 1988.

Kansas Turkey Production Declines

Kansas did not experience growth in turkey production during this period. The loss of turkey processing facilities at Hesston and Parsons in the late 60's. was a crippling blow to the Kansas turkey industry. Turkeys produced in the 80s had to be hauled live to processing plants in Nebraska, Iowa, Arkansas, and Missouri.

This placed Kansas growers at a disadvantage because of transportation costs, shrinkage and lack of potential for contract production. As a result, the number of turkeys raised in Kansas decreased from 865,000 in 1960 to 192,000 in 1988.

Also contributing to this decline in numbers was the closing of two family owned turkey production-processing businesses; Thompson Turkey Farm, Wichita and Hilltop Turkey Farm, McPherson. Enactment of mandatory state-federal meat inspection made it unprofitable for these two firms to continue to operate.

Turkey Production Facilities—1987-88

Two contract turkey production facilities were built in Cherokee County in 1987. The owners had production contracts with ConAgra at Carthage, MO, a firm that was attempting to develop more contract production in the area.

The one turkey hatchery in the state, Central Kansas Hatchery, hatched between two and three million poulters per year, most being shipped to surrounding states for grow out.

SHEEP PROGRAM

Early Sheep Emphasis

When Professor R. J. Kinzer, a graduate of Iowa State College, came to Kansas as head of the Department of Animal Husbandry in 1903, he immediately saw the possibilities of farm flock sheep production for Kansas farmers.

He proceeded at once to develop and improve the sheep flock being maintained by the Animal Husbandry department at Kansas State Agricultural College.

Extension Sheep Specialist—1917

An organized Extension educational sheep program was developed soon after Carl Elling was employed, as Animal Husbandry Specialist on December 2, 1917, and given leadership in the sheep production program, along with the swine program.

After the World War I years, this program was actively implemented. In his report for 1919, Carl Elling listed the principal farm problems in the Kansas sheep industry as:

- 1) Need for better local market conditions for both wool and mutton.
- 2) Lack of appreciation of the local markets for quality in both wool and mutton.
- 3) Lack of quality in most Kansas flocks with respect to good breeding animals and good feeding.
- 4) Lack of quality with respect to culling the flock with reference to age and vitality.
- 5) Scattered farm conditions of the growers which made it difficult to reach them in any cooperative effort.
- 6) Inadequate feed reserves to insure good supply of feed during times of emergency.
- 7) Internal and external parasite control methods.

State Cooperative Wool Marketing—1919

Efforts for a state cooperative wool marketing program began in 1919. After several conferences of leading wool producers it was decided to consign wool shipments to the National Wool Warehouse and Storage Company, Chicago.

The main objective of the wool pool was to help farmers improve the quality of their wool clip.

In 1919, approximately 50,000 pounds were pooled; in 1920, 340,000 pounds; and in 1923,

500,000 pounds. sequence (21 day periods) for periods one through seven of 27.3, 60.4, 82.3, 92.5, 96.9, 98.8, and 100 percent.

Carl Elling pointed out to wool producers that the cost of grading, storing, shipping, and selling low-grade wool was as great as for high quality wool.

These reasons were given for encouraging the pooling of wool shipments:

- 1) To make sheep production more profitable with production of a higher grade wool.
- 2) To have the Pool sell wool on a quality basis.
- 3) To hold transportation charges by shipping in carload lots.
- 4) To eliminate unnecessary dealing, speculation, handling, grading, and short pools by selling directly to the mills as they could use it, thus avoiding overstocking the market shortly after shearing time.
- 5) To combine the small amounts of each grade of improved wool into larger lots, gaining the advantage of a higher selling price for large lots.
- 6) To encourage better preparation of wool before it left the producer.
- 7) To enter the marketing field in competition with other dealers and speculators through the pool.

In 1922, 711,198 pounds of wool were pooled of which 37 percent was of low grade burry, dead or medium burry.

In 1938, 16 years later, 1,415,000 pounds of Kansas wool graded only six percent of the low grades just mentioned.

In April of 1930, the Midwest Wool Marketing Association was organized with warehouses in Kansas City.

Kansas consignors participated generously toward support of this organization every year.

Lamb Grading and Marketing—1922

In 1922, Carl Elling first reported activities in lamb grading and marketing, needed because Kansas farmers did not have good local market facilities.

By cooperating in carlot shipments small producers were able to obtain central market prices on a graded and quality basis. This encouraged adoption of the best production methods.

In 1923, 45 carloads of lambs and sheep were marketed cooperatively. The objective was to produce and sell spring lambs before July 1, before hot dry weather and pastures became poorer.

By 1928, a program of grading lambs at the local shipping points was developed with assistance from W. T. Angle, manager of the Producers' Commission Company and A. M. Patterson, representative of the Kansas City Stockyards Company.

The first grading was done in Wilson, Marion and Montgomery Counties. Eleven years later by 1939, the lamb production and marketing program was active in 75 counties.

The general manager of Swift and Company wrote: "The Kansas Extension Sheep Program has resulted in a 100 percent improvement in the early lambs coming to our Kansas City market from Kansas Farms."

Parasite Control—1930s

During the early 1930s, in addition to demonstrations on drenching sheep for control of internal parasites, a program of dipping sheep to control external parasites was started.

Since the construction of a dipping vat was not always practical for a small sheep producer, portable dipping vats were constructed and operated by many counties.

Control of parasites was made convenient for every sheep producer, regardless of the size of flock, in this way.

Yearling Ewe Buying Program—1930s

The drought years of the early 1930s depleted the majority of sheep flocks so replacement ewes were not available in sufficient numbers to restock flocks of farmers desiring good quality sheep.

In the late 30s, a yearling ewe buying program was started. The first ewes were brought into Marion County in July, 1937.

Frank Hagans, then Marion County Agricultural Extension Agent, and three Marion County sheep producers—H. H. Johnsmeyer, A. F. Reisen and W. S. Amick—went to west Texas and purchased 700 head of yearling ewes. They were delivered to Marion County sheep producers at \$7.00 per head.

The Texas range ewes bred to mutton-type pure-bred rams produced very high quality lambs.

Hagans and his Marion County cooperators continued the purchase of yearling ewes from Texas through 1938, 1939 and 1940.

In 1940, Carl Elling went with Hagans to buy yearling ewes. In 1941, Elling purchased approximately 25,000 head in Texas for Kansas cooperators in a number of counties.

County Extension Agents pooled orders from farmers, who deposited the cost of the ewes FOB cars in Texas.

The ewe-buying program continued under the supervision of Carl Elling until 1953, when the program was transferred to the Extension Livestock Marketing Specialist, Ray Hoss.

District Indoor Schools—1932

In 1932, for the first time, a series of 22 district indoor schools were conducted during February and March, with the cooperation of interested live marketing agencies on the terminal markets and the Midwest Wool Marketing Association.

A lamb dinner was served at noon at each school. The lamb dinner served a two-fold purpose: it was an attraction to encourage attendance and it popularized the local consumption of lamb.

Lamb and wool district schools were continued, with the lamb dinner, to the present time.

District Lamb/Wool School—1936

In 1936, a district lamb and wool school was started on the Kansas City market, sponsored by the Midwest Wool Marketing Association.

Pens of five lambs and classes for wool were included in the show. Lambs were slaughtered and the carcasses made available for inspection and study.

A similar district school was started on the Wichita market in 1937, sponsored by the Friend Wool Company of Wichita.

Another district school was started on the St. Joseph market in 1940, sponsored by the Midwest Wool Marketing Association.

Winter Lamb/Wool Schools—1937

In 1937, a series of lamb and wool winter schools was started by Carl Elling. Each year some additional feature was included in addition to lamb and wool production and marketing, such as: sheep diseases, sheep equipment, consumer interests, etc.

A similar series of lamb and wool schools was continued through the years.

The Midwest Wool Marketing Cooperative provided a free lamb dinner to the lamb and wool producers in attendance. From 20 to 25 meetings were held each year.

Purebred Sheep Breeders Assn.—1946

The Kansas Purebred Sheep Breeders Association was organized at Kansas State College in March, 1946.

The first officers were: W. G. Nicholson, Great Bend, president; Fred Paulsen, Zenith, vice-president; and Rufus F. Cox, Kansas State College, Manhattan, secretary.

The first directors were: W. G. Nicholson, Great Bend, and LeRoy McCosh, Abilene, Hampshire; Henry Schmidt, Freeport, and Virgil McClure, Newton, Shropshire; Fred Paulsen, Zenith, and Erhart Tonn, Haven, Southdown; Will Condell, El Dorado, and Rufus F. Cox, Manhattan, At Large.

The Association's objectives included the promotion of purebred sheep and improvement in purebred flocks.

Annual ram sales were held in May, and ewe sales in November at Hutchinson.

The Association made awards to the 4-H Club Champion Showman, at the Kansas State Fair and to the top wool judges in the Block and Bridle Annual Wool Judging Contest, Kansas State University.

It awarded wool blankets to 4-H members exhibiting the Champion and Reserve Champion fat lambs at the Kansas National Junior Livestock Show, Wichita and sheep equipment to 4-H members exhibiting winning breeding animals at the Mid-America Fair at Topeka and the Kansas State Fair at Hutchinson.

Appoint New Specialist—1951

When Carl Elling retired as Extension Animal Husbandry Specialist June 30, 1951, V. E. McAdams, Dickinson County Agricultural Extension Agent, was employed June 1, 1952, to provide continuing leadership in the Extension sheep program.

Lamb Production Contest—1957

The Kansas Lamb Production Contest began in 1951 to provide a means of recognizing producers doing an outstanding job of producing early lambs for the spring market.

Awards were provided by the Kansas City Chamber of Commerce.

County Extension Agents contacted producers and secured costs of production and other data. Awards were presented at the time of the purebred ewe sale in Hutchinson in November.

Sheep Shearing Schools—1953

Sheep Shearing Schools were held on a district basis in March, 1953, at Topeka, Newton and Beloit.

The two-day schools were held on the farms of cooperators who furnished the sheep for shearing.

All enrollees participated under the instruction of Ed Warner, Livestock Specialist, Sunbeam Corporation, Chicago, Illinois. Warner furnished all equipment for the school.

One evening was devoted to instruction in the care of shearing equipment. Seventy-five young men received training at the three schools.

These schools have been continued to the present time.

Sheep Program Accomplishments—1963

During the quarter century through 1963, the Extension sheep program progressed steadily.

Objectives had been to:

- 1) Establish farm ewe flocks on more Kansas farms of economic size to contribute to the farm income.
- 2) Produce quality lamb for the consumer.
- 3) Market clean wool on a graded basis.
- 4) Promote programs for farm flocks and fall lambs, purebred flocks, feeder lambs, and the use of lamb and wool.

Achievements of 1963 were:

- 1) A continued increase in sheep numbers in Kansas from 1953. In 1962 there were: 566,000 stock sheep and 14,000 feeders for a total of 580,000. The economic return to Kansas farmers from sheep was about 15 million dollars annually.
- 2) An early lamb production program; lambs marketed on a graded basis.
- 3) A series of district lamb and wool schools covering all parts of the state, held during January and February, with 1472 lamb producers attending in 1962.
- 4) A cooperative yearling ewe-buying program with an average of 10,000 ewes brought into the state each year.
- 5) County sheep associations operating in 75 counties assisting the County Extension Agent and Specialist with their sheep program.
- 6) Sheep shearing schools held each spring; two in 1962 with 51 young men trained.
- 7) County Spring Lamb and Wool Shows held in the major sheep producing counties. These

- shows helped develop top quality lambs and gave proper care to shearing and handling of wool.
- 8) A Kansas Lamb Production Contest, with awards provided by the Chamber of Commerce of Kansas City. It taught sheep producers greater efficiency in production. In 1962 the net profit per lamb was \$6.05. Producers had a 101 percent lamb crop and net profits per ewe were \$10 to \$12 in 1962.
 - 9) Two sales each year, sponsored by the Kansas Purebred Sheep Breeders Association; a ram sale in May and a ewe sale in November, with an average of 300 head in each sale. The sales provided a good source of high quality breeding stock to Kansas sheep producers.
 - 10) A State Sheep Shearing Contest conducted at the State Fair each fall provided an incentive for good shearing techniques. This contest was started in 1941.
 - 11) Strong sheep departments maintained at the Mid-America Fair at Topeka and the State Fair at Hutchinson. A total of 1,305 head of sheep were shown at those two fairs by adults and 4-H members in 1962.
- At the Kansas National Junior Livestock Show at Wichita in 1962, 226 lambs were exhibited and sold at auction. The champion lamb sold for \$3 per pound.
- 12) District Lamb and Wool Shows, started in 1936 in Kansas City and a year later at Wichita and St. Joseph, were discontinued in 1958. At St. Joseph a Lamb and Wool Marketing Clinic was initiated with the cooperation of the St. Joseph Livestock Market Foundation. The program consisted of live and carcass grading, a tour of the stockyards, a discussion of lamb marketing problems, and a wool judging contest.
 - 13) Sheep projects for 4-H Club members were popular with 1,557 members enrolled in 1962.

Recent Practices

The Kansas Sheep Industry over the last 25 years has managed to combine traditional proven production methods with new technology.

Extension has had a major role in the adoption of new technology and to recognize changing trends in the industry so that educational programs could be tailored to meet the industry's needs.

Sheep numbers on Kansas farms were on a general decline from 1944 to 1976 and have gradually tended upward since 1976.

The aging producers was most likely the factor in the rapid reduction of numbers in late 1960's through 1976. Therefore, the upward trend in numbers after 1976 comes predominantly from young unexperienced producers.

Recent Extension programs have recognized the need for a concentrated effort toward the elementary level.

Some specific programs that have impacted the industry are as follows:

Kansas Quality Ewe Procurement Program

This program was begun in 1938 by Carl Elling, KSU Extension Sheep Specialist. It consisted of a pooled replacement ewe purchasing program with Southwest Texas as the major source of the yearling ewes.

Extension, Kansas Livestock Association, Kansas Farm Bureau, Sheep Producer Representatives, Terminal Markets, Midwest Wool Marketing Cooperative and Sheep Dealers all cooperated in various capacities to make the program functional.

Ray Hoss, Extension Livestock Marketing Specialist, was assigned the task of pooling and buying orders for the yearling ewes in 1951 upon the retirement of Carl Elling. Hoss continued this program through 1967.

The program grew rapidly as producers gained experience in handling young ewes. Kansas had been known as a place to dump solid mouth ewes from the Southwest. This situation rapidly changed and resulted in higher returns per ewe during her production life.

The objectives were expanded as follows:

- 1) To provide young ewes for practical early lamb production to all sheepmen.
- 2) To keep producers aware of the value of size, bone and open faces for high production.
- 3) To promote the value of uniformity in sheep in the groups purchased and eliminate unsound sheep.
- 4) To promote quality and red meat in the production of milk-fed lambs.

- 5) To promote through these purchases the existing county or district sheep associations.
- 6) To maintain a high interest among Kansas sheepmen interested in a good enterprise that has shown a high rate of return per dollar invested during the past thirty years.

County Extension Agricultural Agents were notified in early April about the availability of yearling ewes and probable prices. Agents then relayed this information to their cooperative sheep producers.

Orders were pooled by counties and areas through the effort of the county agricultural agent or some representative in the county with an interest in the project. The cooperation through this channel was most effective.

George Ahlschwede, State Extension Specialist, took over the responsibility of buying and managing the Texas ewe purchases in 1968 through 1974 when he accepted a Sheep and Goat Extension position in Texas.

Because of a lack of ewe orders, none were purchased in 1975. In 1976, Clifford Spaeth, Extension Sheep Specialist, began working the program and over 1500 yearling replacement ewes were shipped to Kansas. Yearling Texas ewes were purchased through 1979.

Several factors lead to the discontinuous of the Texas Ewe Procurement after 1979. Although the Texas Rambouillet ewe is still considered the basic foundation for many Kansas commercial flocks, research evidence pointed toward other breeds such as the Dorset or the Finnsheep as more prolific producers.

Also, some Kansas sheep dealers saw the Ewe Procurement program as competition for their businesses and were wanting to take total charge of such a program.

In 1978, a program was worked out with three Texas commercial sheep producers through which 46 Kansas twin fall born Dorset ram lambs were sent to Texas with the arrangements that Kansas producers would purchase the resulting Dorset-Rambouillet cross ewe lambs.

The program was successfully run for two years. Although numbers of the more productive Dorset cross ewes returning to Kansas were rather small, the program focus was successful in creating an awareness of alternatives to the traditional procurement program.

An increasing number of Kansas sheep producers are now raising their own replacement ewes and

must no longer rely on other people to provide an improvement in the genetic base.

District Sheep Schools

Five to ten District Sheep schools were maintained on an annual basis for the last decade.

Robert Henderson, Extension Wildlife Damage Control Specialist, and Dr. Lowell Breeden, Extension Veterinarian, joined Clifford Spaeth, Extension Sheep Specialist, on a regular basis in presenting the schools.

Pat Murphy, Extension Engineer, Don Mock, Extension Entomologist, and Paul Ohlenbush, Extension Agronomist, also presented portions of the program.

Generally, a topic was chosen to disseminate "in-depth" information.

Many Kansas sheep producers were involved in off-farm jobs or the sheep enterprise represented only a portion of the net farm returns. Therefore, a major shift resulted in scheduling all District Sheep Schools for night presentation.

Beginner Sheep Schools

Beginner Sheep Schools were begun in the late 1970s and expanded through the 1980s. Clifford Spaeth and Lowell Breeden were primarily involved in presenting the basis of a sheep operation to prospective and beginner producers. When possible, the school accompanied with a "hands-on" portion.

Master Sheep Producers Award

In 1977, a Master Sheep Producer Award program was initiated. It was sponsored jointly with the Kansas Sheep Association. The program annually identified a sheep producer family for excellence in the management of their sheep enterprise.

Shearing Schools

Each year at least one Sheep Shearing School was conducted at Hutchinson. The programs were sponsored jointly with Sunbeam by Oster and Mid-States Wool Growers Cooperative from South Hutchinson, Kansas.

Twelve to 25 participants were taught the basics of shearing sheep through gaining shearing experience of their own. Some participants proceeded to shear professionally and others shear only their own sheep.

SWINE PROGRAM

Early Swine Programs

The first Extension Animal Husbandry Specialist, George Wheeler, 1909 to 1913, devoted the major portion of his time to the beef cattle program.

Charles Taylor, Animal Husbandry Specialist from January 1, 1914 to January 31, 1915, authored a bulletin, *The Feeding and Growing of Swine*, which was published by the Extension Division in September, 1914.

This was a well written publication of 44 pages, and covered the important fundamentals of swine production.

During the next 25 years only two important discoveries were made in relation to swine production--the importance of vitamins in the ration, and the need for cleanliness in farrowing quarters as a preventative for many small pig ailments.

Carl Thompson, a 1904 graduate of Kansas State Agricultural College with a major in animal husbandry, after several years of farming and raising purebred Duroc hogs, joined the Extension Service September 1, 1915.

He served until August 31, 1918, then joined the Animal Husbandry staff at Oklahoma A & M. Mr. Thompson wrote a bulletin, *Self-Feeders for Swine*, which was published in May, 1917.

C. F. Johnson, a 1905 graduate of Kansas State Agricultural College, followed Thompson as a Specialist in swine production. Johnson served from October 1, 1918 to June 30, 1919.

In January, 1919, Johnson wrote Extension Form No. 87 which treated two subjects, "Winter Care of the Brood Sow" and "I Haven't A Single Hog on the Place."

The nature of the subject matter emphasized at that time is illustrated by the following two paragraphs taken from Johnson's publication:

One of the most important things to see to is water. The sow as well as other hogs should be provided with plenty of fresh water, and in the winter time warm water.

Never should the sow be required to eat snow or drink ice water on a cold day.

Another item that is very important is that the one who takes care of the brood sow herd should 'became acquainted' with his sows.

If we keep our farms balanced, that is, raise the different kinds of livestock and the different kinds of grains, we are less likely to suffer from strained economical situations.

I would say, in all frankness, that a few hogs on every farm is not only a good investment but a very essential one at this time.

Swine production became one of the responsibilities of Carl G. Elling on Oct. 1, 1918. He graduated from Kansas State Agricultural College in 1904, worked for the Bureau of Animal Industry, USDA, in Cuba and then became an assistant in the Department of Animal Husbandry under Professor R. J. Kinzer.

Elling was employed as a District Agricultural Extension Agent for Southeast Kansas in 1914. On December 2, 1917, he was appointed Animal Husbandry Specialist in Sheep Production.

His title was changed to Animal Husbandry Specialist on October 1, 1918, when he assumed responsibilities for both sheep and swine production programs.

Early Swine Recommendations—1920

These early day the Extension Specialists worked with County Agents and swine producers, at Farmers' Institutes, by establishing demonstrations, judging at county and state fairs, and making county visits to help with field days and tours.

A practical program was carried to farmers as illustrated by the following paragraphs, taken from Carl Elling's report July 1, 1921:

The most important work carried on by the Specialist since December 1, 1920, has been the 'Save the Pigs' campaign.....

Spring farrowing records were kept by 53 farmers in various parts of the state, giving information as to care of the sows, number of pigs farrowed, number weaned, rations fed and such other data as could be obtained.

The data from these farrowing records show that sows fed on balanced rations and under good management weaned 71 percent more pigs than the sows on low protein rations and 50 percent more than sows on good rations but under poor management.

Elling's 1921 report pointed out that the 53 farmers keeping swine management records had 574 sows, or an average of 10.8 sows per farm.

Research and demonstrations featured the value of sorghum grain as a hog feed and stressed the value of self-feeders.

Clean farrowing quarters were emphasized as an important factor in preventing small pig ailments in 1922 and later.

The value of clean ground and pasture were demonstrated in many counties during the 1920's, 30's and 40's under Elling's leadership.

Emphasis was on:

- 1) Thrift of pigs at weaning time.
- 2) Number of pigs saved per litter.
- 3) Ration used.
- 4) Cost of 100 pounds of pork produced.

On June 30, 1951, Carl Elling, Animal Husbandry Specialist since 1917 in swine and sheep production, retired.

Wendell Moyer, former County Agricultural Extension Agent, was appointed to succeed Elling in the Extension swine program on July 1, 1951.

Barrow Shows—1951

In March, 1951, the first Annual Barrow Show was held at the Wichita Stockyards. Adults exhibited single barrows and pens of three.

The show was sponsored by Cudhay Packing Company, Wichita Chamber of Commerce, Wichita Livestock Exchange, Wichita Union Stockyards and the Kansas State College Extension Service.

A carcass class was added to the Annual Barrow Show in 1957. A producers grading contest also was held.

In 1954, 43.6 percent of the barrows that were exhibited classified as No. 1s; 47.6 percent as No. 2s and 8.8 percent as No. 3s. Three years later, 1957, 62 percent were No. 1s; 37, No. 2s; and , No. 3s.

The show helped producers evaluate their stock and upgrade the quality to be exhibited.

Following the initial show in Wichita, a number of district and county shows were started.

Multiple Farrowing Pig Parlors—1956

Beginning late in 1956, several agencies and organizations promoted multiple farrowing, pig parlor operations in Kansas.

The reasoning behind this development was:

- 1) With the tremendous ability to produce sorghum grain, many people believed that

Kansas would increase hog production in the next decade.

- 2) Successful feeding trials at Kansas State College with sorghum grain found it compared favorably to corn as a major portion of the hog ration.
- 3) Swine production offered the opportunity to develop livestock systems on a farm where pasture was extremely short.
- 4) Many small packing companies in Kansas were forced to purchase and haul swine from other areas to keep their plants operating.
- 5) Feed dealers were interested in seeing multiple farrowing, pig parlor integrated type programs develop.

In January and February of 1957 the Staley Feed Company, cooperating with the Mauer-Nauer Packing Company, met with the Animal Husbandry Department and Extension personnel of Kansas State College of Agriculture.

They explained a hog plan whereby the Staley Company would furnish plans and management help and the Mauer-Nauer Packing Company would offer incentive prices paid on barrows that graded U. S. No. 1 on the rail.

During the following years, several such units were started. Some individual hog producers started similar multiple farrowing high quality swine production programs.

Swine Improvement Assn—1956

Early in 1956, the possibility of a state swine producers association was discussed with the Animal Husbandry staff and Extension Livestock Specialists.

Such an organization would enable the Extension Specialists and swine producers to coordinate their efforts in producing meat type hogs.

As a result of the discussion, Rufus Cox, Head of the Animal Husbandry Department, contacted a number of swine producers by letter to determine their interest in such a proposed organization.

Due to their enthusiastic replies, a meeting was called for June 1, 1956, at Kansas State College. The Kansas Swine Improvement Association was organized at that meeting. The officers elected were:

- Joe O'Bryan, Hiatville, President.
- Arnold Rose, Cawker City, Vice President.
- Wendell Moyer, Manhattan, Secretary-Treasurer.

Directors from Purebred Breeders were:

- Delbert Hollinger, Berkshire; Glenn Tawney,

Spotted Poland China.

Glenn Wiswell, *Poland China.*

Gordon James, Chester White; Bus Westerman, *Hampshire.*

Willis Huston, *Duroc.*

Edward Beahm, *Landrace.*

Wallace Wolf, *Yorkshire.*

Charles Booz, *Tamworth.*

Commercial Swine Directors were:

Fred Carp, Max Porter, Elmer Musil, Clinton Trostle, Jim Collier, Ernest DeLange, Merton King, Amby Woods.

Certified "Meat Type" Sire (CMS)—1957

The Kansas Swine Improvement Association's objectives were to further the production of meat type hogs and to encourage its members to produce certified meat type breeding stock.

One of the outstanding accomplishments in the meat type hog health certification program was certification of the first Kansas boar, "meat type."

The Hampshire boar, "Pacesetter B," bred and owned by C. Balthrop of Wichita was issued a certified "meat type" sire certificate by the Hampshire Association in October of 1957, making him officially the first Kansas CMS boar.

C. Balthrop also held the first purebred hog sale in Kansas consisting only of hogs from certified litters.

Other breeders who were certifying litters and working toward a CMS sire were: Joe O'Bryan, Hiatville, Herman Popp, Haven; Don Peterson, Delavan; Velsa Hall, South Haven; and Gooch Experimental Farm, Manhattan.

Swine Testing Station—1957

Soon after its organization in 1956, the officers and directors of the Swine Improvement Association began to consider the possibility of a swine testing station.

A special committee of the association organized a testing program and started the first testing of boars in 1957.

A temporary testing station was set up on the campus at Kansas State College. The first test consisted of 20 boars submitted by nine purebred breeders.

The pigs were checked for rate of gain and feed efficiency from 60 pounds initial weight to 200 pounds finishing weight. They were probed for back fat

thickness at 200 pounds weight.

These boars plus 38 bred and open gilts were sold on February 22, 1958 at an All Breed Swine Sale, sponsored by the Extension Division, the Department of Animal Husbandry and the Kansas Swine Improvement Association.

The seven boars that indexed 100 or above averaged \$155 in the sale.

The Swine Testing Committee of the Swine Improvement Association, was pleased with the results of the 1957 tests.

In cooperation with the Extension Livestock Specialists and members of the Animal Husbandry Department, it developed a plan for construction of a swine testing station.

Funds for the erection of the station were solicited from swine producers, state swine breed associations, packers, market interests and swine feed and equipment manufacturers.

A new station was constructed on College land and the first hogs were received for test on November 21, 1958.

The station consisted of two boar testing units of 20 pens each, a pig parlor type building in which a litter mate of half brother barrow to the boars were fed together, and an office-feed building.

The cost of the station was approximately \$13,000. The entry fee was \$15.00 per pig. The remaining costs were recovered at the time the hogs were sold.

Certified Boars—1960

By 1960, a number of good swine production years were experienced. Swine numbers increased by one-third.

The swine testing station program continued with 27 boar entries for the spring of 1960. This group made the highest average feed efficiency with 264 pounds of feed per hundred.

The commercial swine breeders enthusiastically accepted these boars. Boars sold for an average of \$172 at a sale held in August.

Half of those boars went to buyers in the western half of the state, an area which was rapidly expanding in hog production.

Barrow shows continued, with shows held at Marysville, Arkansas City, Beloit, Pittsburg, Wichita and St. Joseph, Missouri.

District Swine Schools—1960

District swine schools for Extension Agents and leaders were held in 1960 at Cottonwood Falls, Chanute, Ottawa, and Holton.

Field days for commercial swine producers were held at the Max Porter farm near Glen Elder and the Arnold Rose farm near Cawker City.

A field day at the O'Bryan Ranch near Hiatville continued to be an outstanding event for adults and youth.

It was devoted largely to livestock judging but also provided an opportunity to observe breeding and management practices on a successfully operated livestock farm.

County Extension Agent Training—1960's

Agent-training schools were held by the Extension Livestock Specialists and other personnel. Subject matter included live and carcass evaluation, management, breeding selection, and nutrition.

Extension Engineers provided training on plans for buildings, and equipment for efficient swine production.

District Swine Meetings—1962

During December of 1962, ten district swine meetings were held, with 1350 persons participating in discussions on management, nutrition, health, buildings and equipment, breeding and selection, outlook and marketing.

Feed dealers, building, and equipment manufacturers exhibited at these meetings.

Swine Testing Results—1961-62

The Swine Testing Station discontinued work with boars because of an outbreak of disease in 1961. In 1962, the station tested 104 barrows and gilts for purebred breeders.

Testing had brought a greater impact on breeders to improve market hogs than any other factor. The testing program identified superior breeding stock and outlined improved breeding and selection practices to producers.

Eight live hog and carcass shows were held at markets and packing plants in 1962. Producers received carcass data on hogs produced, learned to grade market hogs, and learned about carcass value at these shows.

County Swine Program Groups—1962

Some county swine groups had been organized by 1962 to assist County Extension Agents to develop and carry out a county swine educational program.

Tours were held in 28 counties. Sixty five county meetings were held on swine production, management and marketing.

Interest in feeder pig production increased. The first feeder-pig sale was held at Wichita in 1962, the second in Reno County.

A group of swine producers organized the Kansas (SPF) Specific Pathogen Free Swine Association.

In his report for 1962, Wendell Moyer, Animal Husbandry Specialist with leadership responsibilities for the swine program, stated:

The swine program has improved the quality of market hogs to the extent that 30 percent or more are U. S. No. 1 compared to ten percent in 1950. Kansas marketed 1.5 million hogs in 1962.

Conservatively, a 20 percent increase in U. S. No. 1 market hogs worth \$2 more per head would be \$450,000 added income to Kansas swine producers.

By 1964, a report on improvement shown by hogs tested at the Kansas Swine Testing Station from 1958 to 1964 revealed these factors: one-half inch more carcass length, 0.35 inch less backfat, 0.35 of a square inch increase in loin eye, and 6.2 percent increase in yield of lean cuts.

The animals also reached market weight on 24 pounds less feed.

Contributing Authors. *The primary contributing authors on Extension educational programs in Animal Science and Industry from 1965 through 1988 were Extension Specialists Keith Zoellner, Beef; Jim Nelssen, Swine; David Schafer, Meats; Clifford Spaeth, Sheep; Edward Call, Dairy; and Al Adams, Poultry.*

A complete list of personnel in Extension Animal Science is included in Volume II, Chapter 6, Extension Personnel, pp. 39-43.