FACTORS AFFECTING THE MANAGERIAL INPUT ON KANSAS FARMS

by

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INTRODUCTION

Management can be defined as the process of observing, analyzing, making decisions, taking action and accepting the responsibility of the action. Management in agriculture began when farming began. The first farmer had to observe plants growing. Through analysis he realized by putting seeds in the ground new plants would grow. After taking the first two steps of management he had to decide to plant these seeds or to continue reaping wild berries and seeds rather than becoming a cultivator of the soil. After deciding to plant the seeds he had to plant and accept all problems of production which came up. Today these same management functions are present, but they are much more complicated. The farmer has realized he does not operate in a static world, but rather in an environment of continual change. If there were no changes the problem of management would largely disappear. The essence of management is dynamics.

There has been very little written about the impact of a changing agriculture on the quality of management needed or the change which has taken place in management in Kansas agriculture. Since the beginning of agriculture, management has been used, but at first only to a minor degree. With each new development within or outside of agriculture it has become more important until 1963 without this input agriculture could not continue. Management was relatively simple when a farmer had only a few simple tools such as a hoe, sickle, and few other hand tools. Since the wheel was invented, since change in type of power used came about, since transportation

had improved, and many other farming methods were discovered or improved, management increased in importance. The greatest change in management in Kansas agriculture has come about in the last 30 years. At the first glance one would think that this great increase did not begin until about 1940, but the low production of agricultural products due to the great droughts and the depression kept production over much of the state down during the 1930's.

This report was part of a research project in the Department of Economics and Sociology of Kansas State University. The study was designed to provide information that would be useful in understanding the managerial function and how its quality could be improved.

The objective of this report was to identify the changes which have caused management to change and to show how the managerial input on Kansas farms has changed.

The author intended, through the use of past Farm Management Association records, to present the changes that have taken place in management, what new concepts and entries were being made in 1963 that were not being made 30 years ago in the farm account record books. Also various federal, state and private publications have been used as background for this report.

There were several things that brought about changes in farm management. The author intended to explain how such things as increased use of technology, increased size of operation, changed institutions, referring to laws, regulations, and customs that affect our behavior, and increased interdependence of the agriculture and non-agriculture sectors of economy have affected the managerial inputs on Kansas farms.

One must remember that this report was concerned only with Kansas.

If it was taken over the entire United States the results may be different due to different degrees of development among regions and states.

CHAPTER I

IMPACT OF TECHNOLOGY UPON MANAGEMENT

Technology is one of the most important factors affecting management. When the words technology and agriculture are brought up one immediately thinks of tractors replacing horses and mules, more modern and time saving machinery such as the combine, or the picker-sheller combination used for harvesting corn, improved crops such as hybrid corn and sorthums, improved varities of seed, new insecticides and fertilizers, improved transportation, better breeding of livestock and many many more. In agriculture technology is the utilization of scientific knowledge to improve production. "Technology in agriculture is largely control of change. Our purpose in agriculture is to stimulate, direct or retard the changes that nature wants to accomplish."[1] The farmer was faced with many problems when new technology was brought into use. The old adage, "the early bird gets the worm," was usually true in the use of agricultural technology. Usually the first to adopt this technology was the farmer who benefited the most from the improvement, although there were times when the technology had not been completely tested that it may not have been wise to be the first to use the new technology. Because of the nature of competition of agriculture, after the first ones adopted these innovations the rest of the industry

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1 _____, Yearbook of Agriculture, 1960, U. S. Government Printing Office, Washington, D. C., 1961, p. 183.

had to adopt just to stay in production. After initial adoption of technology the acceptance of the technique by all farmers was a must, due to the narrow profit margin in which agriculture operated.

> Each postponement in adoption of techniques, where they are clearly profitable to the individual or society, spells economic sacrifice or efficiency foregone.[1] In some cases even though the adoption will assure a loss the technique had to be adopted. Yet those whose returns are lessened can still "minimize profit reduction" by adopting the new technique (if they stay in the industry).[2]

> The farmer's technological problem is not solved simply by the adoption of the most advanced technology. From among the many possible and existing techniques he must select simultaneously the most economical technology as well as the specialized factors of production which will operate most economically under the technology chosen.[3]

A good example of this may have been the shift in Kansas from farm power produced by domesticated stock such as the horse and mule to tractors. When tractors were first introduced into Kansas they were very large. Most of these tractors were run by steam and were economical only in the flat wheat growing area of the high plains in Kansas. It would not have been at all advisable to try to adopt this type of machine to the cornbelt area of northeastern Kansas. In this area the fields averaged 15 to 20 acres or less compared to single fields in the western part of Kansas of a section or more and with the first tractors in Kansas it would have taken half of the northeastern Kansas field to turn it around. "In all areas, the

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[1] Earl O. Heady, Economics of Agricultural Production and Resource Use, Prentice Hall Inc., Englewood Cliffs, N. J., 1952, p. 808.

[2] Ibid.

[3] J. A. Hopkins, Jr., "Technological Developments," Journal of Farm Economics, Vol. 21, 1939, p. 174.

most successful farmers are those who select the enterprise best adapted to their area and their particular farms, and combine them in a way that will give the best balance to their farming operation."[1]

Although the bow and arrow may have been the greatest technological improvement in agricultural history, the author felt certain that in 1963 we were only beginning to open the doors of technology in agriculture. This meant that management, although very important in 1963 would become increasingly important in the future as increased amounts of technology were introduced into agriculture. Some people may have disagreed, thinking that the amount of technology introduced today in agriculture was less than years past, but in 1963 introduction of technology into Kansas agriculture had become the accepted thing rather than a few astonishing discoveries as had happened in the past.

The section on technology and its effects on management in agriculture in Kansas was broken into three broad areas; crops, equipment and livestock. Each of the three areas were subdivided to show how each one affected management and to show the increased importance of management to the producer in Kansas agriculture.

Crops

Since white men began farming in Kansas there has been dramatic changes both in the type of crops grown and major improvements within particular crops. When white men began farming in Kansas most of the crops were "imports" from areas from which the settlers had originated, mostly the eastern and southern parts of the United States. Very few crops were native to Kansas.

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[1] J. H. McLeod, "Farm Management, Facts in Building Area and State Program," Journal of Farm Economics, Vol. 21, 1939, p. 333.

> In 1863, the staple crops of Kansas were hemp, tobacco, flax and grapes. Other early crops of promise included buckwheat, silk, cane sorghum, and honey. By the 1870's sizable crops of flax, castor beans, hemp, and broom corn were grown in Kansas, as well as cotton, tobacco, and potatoes.[1]

Early day Kansas agriculture was very diversified compared to greater specialization in 1963. This was an important change which affected management on Kansas farms. Pioneer agriculture was characterized by several crops to each farm. In 1963 one farm may have specialized in wheat, corn, alfalfa, etc. Most crops originally grown in Kansas were found to be unadapted to Kansas climate. There has been a steady replacement of original crops by present crops grown in Kansas from 1900 to the present. In 1900 corn was considered the major crop in Kansas. At that time there were 7,506,000 acres planted to corn. Prairie hay was second with 6,988,000 acres cut that year. Third was wheat with 4,500,000 acres. Other important crops were; oats with 1,100,000 acres, millet with 450,000 acres, irish potatoes, alfalfa and flax. In 1960 this pattern had greatly changed. Wheat was the major crop in Kansas with 10,761,000 acres, which was larger than any four other crops grown in the state. Grain sorghum has increased in importance since the depression of the 1930's and has become the second most important crop in Kansas with 4,174,000 acres planted in 1960. Other important crops were corn, barley, and alfalfa with 2,052,000 acres, 1,077,000 acres, and 1,018,000 acres respectfully. Agriculture in Kansas has become much more specialized. It was not uncommon to find farms in Kansas devoted to a single crop, particularly in the western Kansas wheat region. With this specialized farming has come many management decisions.

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[1] D. Mann, "Early Day Trials and Errors," Kansas Agriculture, 44th Report, Kansas State Board of Agriculture, Topeka, Kansas, 1961, p. 272.

In the early days if one crop failed the farmer could often rely on another crop. With specialization if the single crop failed an entire year's income was gone. There were very few farmers who were producing on a large enough margin in 1963 to be able to lose one year's income without being in serious financial trouble. Also for the same reason, prices received by farmers were much more important, because the farmer operated on such a close profit-cost margin he could afford only mild fluctuations. A second change which has affected management has been the shift from corn to wheat as the major corp. The author believes this was one of the few cases in 1962 in which there were fewer management decisions to be made than in the past. In producing corn it was necessary to decide when to prepare the ground, what type of seed to buy, when to plant, when and how many cultivations were needed, and when to pick the corn. The only great difference in the production of wheat and corn was allocation of time between planting time and harvest. The basic change in management caused by changing from a rather diversified cropping system to a more specialized system was the decision of allocation of time. Also because of the more specialized system and undoubtly more expensive, there was less room for financial errors, because of the narrow profit-cost gap.

An important factor affecting management in Kansas agriculture was the improvement of seed used in producing these crops. The most important improvement made in crops to 1963 was hybridization. Kansas corn producers began to be interested in the use of hybrid corn in the early 1940's. "In 1939, 5 percent of Kansas corn acreage was in hybrids; in 1940, 11 percent; and by 1950, 85 percent. Since 1955, hybrid acreage has varied from

93 to 95 percent."[1] The development of sorghum hybrids was much slower than corn hybrids because of the pollination problem. It was rather easy to cross-pollinate corn because the tassel could be easily removed, but with the perfect flower of the sorghum plant this process was much more difficult. Introduction of hybrid sorghum to Kansas came about in the early 1950's and has increased sorghum production steadily until 1963 when Kansas ranked second only to Texas in the production of sorghum. In 1963 production of hybrid sorghums was only beginning and many changes can be expected in the future changes. "Many commercial hybrids are now on the market and continued research should bring marked improvement. Research also will find new uses of sorghum in industry and on the farm."[2] In 1963 researchers were working on a hybrid wheat which when perfected would be a great break-through in crop improvement.

The biggest change that hybridization made on management was the taking of production of grain for replanting off the average farm, which took away the decision of what part of the crop to save for seeding next year. Seed grain was then acquired from a dealer. This brought up several management decisions not previously made. First the cost of buying the seed had to be figured into the budget whereas when seed was produced on the farm the only problem was that of proper storing so it would germinate properly at planting time. The second problem was determining the best time to buy the seed. Also, since the seed was grown for particular growing conditions such as growing season, strength of stalk, and height of ear, the farmer

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[1] Kansas Agriculture, 44th Report, Kansas State Board of Agriculture, Topeka, Kansas, 1961, p. 284.

[2] Ibid., p. 286.

had to decide what type seed was best adapted to his particular situation. Another decision which became more important with the introduction of hybrids was increased production so storage and marketing decisions not faced with smaller production had to be solved by the farm manager. A factor that the manager had to consider after hybrid sorghum came into use was if it was economical to substitute grain sorghum in feed ration for fattening livestock and what the best substitution ratio was. Nearly every crop grown in Kansas has been improved and with this improvement has come an increased number of decisions to be made by the farm manager. For example, when alfalfa was first introduced it was only adapted to the rich deep soils of central and western Kansas, not to the acid soils of eastern Kansas. The introduction of improved seed and the application of lime to the soil, helped move alfalfa production eastward. After this improvement the eastern Kansas farmer had to decide whether it was more profitable to lime the soil and plant alfalfa, a crop which would produce over a period of 10 years or more, or to plant small grains or row crops from which profits could be realized more quickly. The early varities of alfalfa were not resistant to bacterial wilt or the aphid. Buffalo alfalfa, which was resistant to bacterial wilt, was developed in 1944 and Cody, which was highly resistant to many of the diseases common to Kansas was also developed about this time. With the introduction of these new types of alfalfa, the risk previously confronted by the farmer could now be overcome. Since there was less risk in growing alfalfa, compared to previous years, the manager had to decide whether to grow alfalfa or other grains.

When wheat was first planted in Kansas many hazards were faced by the farmer. Such things as winter killing, insect destruction, rust, etc. were a few of the many hazards. Each new variety and improvement made in wheat increased production, and as with alfalfa production, many of the same problems came up.

> Primary changes in varieties of soybeans thru the last 30 years have been to increase yields first and oil content second. There also have been varietal improvements for greater disease-resistance, higher-standing to permit better harvesting with combines and lodge-resistance.[1]

With the increased production of soybeans the farmer had to decide whether to cut the beans for hay, which had a very high protein content, or let them mature and harvest them for seed. In years past, the harvesting of beans for seed was a very delicate matter because a very few days after maturity the beans would shatter and could not be harvested by a combine. As the standing quality of the beans has been improved the selection of the harvest date has become less important. Another decision that became more important with increased soybean acreage was whether to sow the beans with a drill and keep them clean by aerial spraying, or to plant the beans with a planter and cultivate them just as corn would be cultivated.

Besides the many decisions which had to be made, came other management problems including the problem of staying abreast of variety changes which are taking place constantly. The problem of observation and analysis became more complicated. It became a continuous process just to learn about new varieties which were being used. The function of analysis was

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[1] Kansas Agriculture, 44th Report, Kansas State Board of Agriculture Topeka, Kansas, 1961, p. 290.

complicated by the growing number of crop varieties available.

An important technological innovation which affected crop management was the introduction and development of chemicals to control agricultural pests. The use of chemicals for weed and insect control has been known to agriculture for many years but only since World War II have chemicals become an important part of agricultural production. In 1944, 2, 4-D was introduced as a weed control and was widely accepted.

> Progressive farmers have rapidly accepted new chemicals for weed control. 2, 4-D was first used on a large scale in 1947. Ten years later, 92% of the farmers in certain progressive farming areas depended regularly upon herbicides.[1]

Scientists in this field believe we have only scratched the surface of chemical weed control. "The science of weed control has developed more in the past 18 years (since 1942) than in the previous 100 centuries. But chemical weed control is still in its infancy compared to plant breeding, for example."[2] The growth of the use of insecticides was divided into two periods. First, was the date from the development of calcium arsenate to the early years of World War II. Second, was the period from World War II to 1963. During the first period such things as calcium arsenate, lead arsenate, sulfur, nicotine, rotenone, pyrethrum, cryolite and various copper compounds were developed. "The quality of agricultural products was remarkably improved, further concentration of crop production became possible, and the area available for crop production was enlarged."[3]

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[1] G. C. Klingman, Weed Control: As A Science, John Wiley and Sons, New York, 1961, p. 5.

[2] Ibid., p. 9.

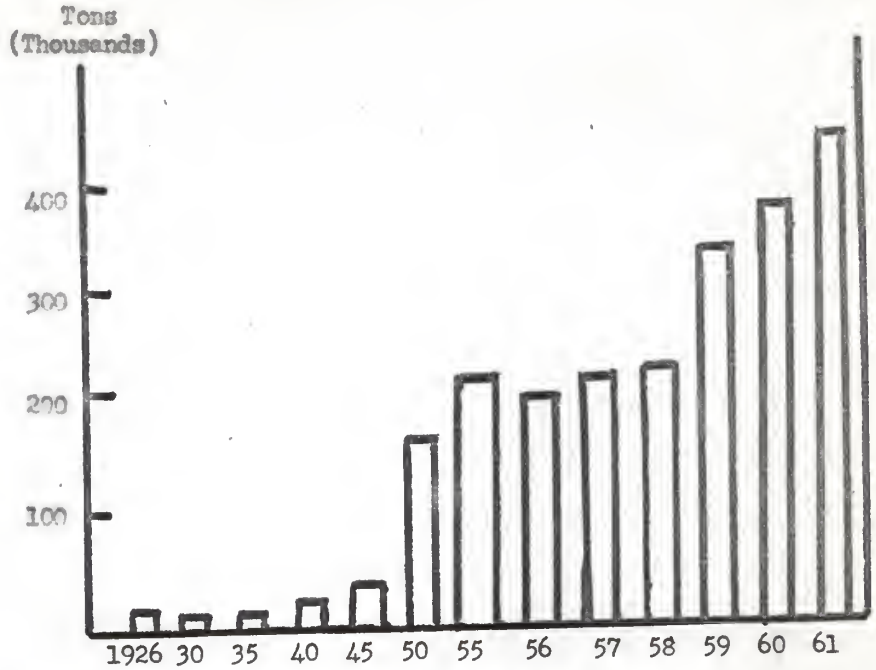
[3] L. S. Hitchner, "The Insecticide Industry", Yearbook of Agriculture, 1952, U. S. Government Printing Office, USDA, Washington, D.C., 1952, p. 452.

Many thought this period was one of the pioneer contributions to a more efficient agriculture. The introduction of DDT during World War II and the introduction of other organic insecticides started the second period of increased agriculture production caused by decreased loss to harmful agricultural insects.

The introduction and increased use of chemicals in agriculture was one of the more important factors affecting management which was mentioned in the section on technology. These agricultural chemicals opened up an entirely new method of farming. For example farmers cultivated basically to control weeds. In some instances cultivation was also used to loosen the soil for moisture penetration. With the introduction of chemicals to control weeds in row crops the farmer had to decide whether it was more economical to cultivate, spray or do both and which method would yield the highest end product. When using these chemicals the manager also must decide what method of application he would use. Spraying, dusting, putting the chemical on at ground level, above the plant or under the ground were some of the various ways the chemicals could be applied. There were particular dates and rates the chemicals had to be applied to get the greatest benefit. Storage of chemicals has become a serious problem for farmers. Because of the highly poisonous character of these chemicals they must be placed where livestock could not get to them. Compliance with tolerance laws and regulations was a new management problem to cope with as chemicals were used in agriculture. Governmental regulations placed a tolerance limit on the amount of chemicals found on food products sold on the public market. As production methods improved and crops improved so has the importance of management.

Fertilizer, another element of improved technology has had an influence on management in Kansas agriculture also. Although fertilizer had been used throughout the world for centuries in one form or another, commercial fertilizer is relatively new to the midwest. When this area was first settled organic matter of the soil was very high and the overall fertility of the virgin soil was high. During the next 70 to 80 years the fertility decreased in the deep soils of Kansas. Some farm grown fertilizer was used, such as barnyard and green manure, but very few farmers used commercial fertilizer. With World War II came an increased demand for food. To get increased production commercial fertilizer was used in increasing amounts. In the 1920's there was increased use of commercial fertilizer but reduced amounts were used during the 30's because of the depression. In 1933 there were only 2,000 tons of commercial fertilizer sold in Kansas. In 1946 the amount of fertilizer sold in Kansas increased to 30,000 tons and in 1950, 170,000 tons, which was about equal to the total amount used from 1926 to 1946. In 1961 there was 415,003 tons of fertilizer sold in the state. The graph on the following page illustrates the steady increase in the use of commercial fertilizer in Kansas.

During the early period of increased fertilizer use there were very few types of fertilizer sold, but in 1963 nearly any combination needed could be bought. In the early 1950's liquid fertilizer was introduced, which in many cases reduced the cost of fertilizer to farmers considerably. With this increased availability of different types of fertilizer and increased use of fertilizer came many new management problems, which had not previously confronted the Kansas farmer. "Unless managerial capacity is motivated, attempts to improve the utilization of fertilizer and general



Graph 1.--Commercial fertilizer used on Kansas farms 1920-61.[a]

[a]Agriculture in the Kansas Economy, Kansas State Board of Agriculture, Topeka, Kansas, 1962, p. 12.

organization of the farm and family business are not likely to be very successful."[1] With more types of fertilizer the farmer had to observe, to analysis and to decide which type was needed for his situation. To get the most efficient use of the available type of fertilizer the farmer tested his soil to see what elements were deficient.

> The information needed ranges from technical questions on how to apply fertilizer, on one hand, to questions involving how much value to place on income, leisure, and security, on the other;

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[1]J. Baum and E. O. Heady, Fertilizer Innovations and Resource Use, The Iowa State College Press, Ames, Iowa, 1957, p. 262.

questions which are deep in the realm of philosophic value theory.[1]

The use of liquid fertilizer brought with it new problems that had not been present before the introduction of this factor. Storage of liquid fertilizer was the main problem faced by farmers. If the farmer stored this fertilizer on the farm he had to have a liquid tight container whereas when storing fertilizer, which was in sacks, any shed with a water tight roof would do for storage. When using liquid fertilizer it was possible in many cases to contract this job done, but even with this the farmer had to find the best contractor.

Equipment

One of the more important technological factors affecting management in agriculture has been the rapidly improving equipment which has been introduced into the industry. Many of the other technological innovations came about because of changed and improved equipment being used either in agriculture or industries affecting or being affected by agriculture. Although there have been many technological changes in equipment in agriculture since the early 1900's, the greatest and most important came about after the depression of the 30's. Examples have been mentioned to show their importance and how they affected management. The change in equipment that drew the most attention was the switch from horses to tractors as the main source of power on the farm. Although the tractor was first introduced to Kansas agriculture in the early 1900's, horses continued to be the main source of power on the farm. In 1914, Kansas was at its peak in number of

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[1] Ibid., p. 261.

horses, with 1,071,434. This number declined steadily until 1960 when there were only 72,000. Although these statistics were not broken into draft horses and riding horses, there was a much larger percentage of riding horses in 1963 than was the case in 1914. The mule population has followed the same pattern with its peak being in 1916, with 296,007. In 1963 the number of mules was so small that they were included in the figure with horses. Since the introduction of the tractor to Kansas agriculture, it has steadily replaced the horse.

> In 1915 there were about 3,000 tractors in Kansas of which 39 percent were in the eastern, 46 percent in the central and only 15 percent in the western section of the state. During the 1920's the increase in the western section was so great that, whereas in 1920 there was only 1 tractor per 11.1 farms, in 1930 there was 1 per 1.9 farms. In the central sections the increase was from 1 per 9 to 1 per 2.3 farms in the eastern section from 1 per 14.3 to 1 per 6 farms.
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> The general acceptance of general-purpose (row-crop) tractors stimulated a rapid increase in numbers, especially in eastern Kansas, during the late 1930's and 1940's. By 1950 there were more than 146,000 tractors in Kansas, and the number had increased to 176,000 by 1955.[1]

The only deviation in this steady replacement came forth in the 1930's when many production methods, which had previously been abandoned, were reestablished because of the great depression. In 1963 nearly all horses on Kansas farms were kept for riding, tradition or the novelty of still having the "old team" around.

The following dates show the change made in tractors that have been important to Kansas agriculture.

1916 - Multipurpose tractors into use

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[1]L. M. Hoover, Kansas Agriculture After 100 Years, Agricultural Experiment Station, K.S.U., Manhattan, Kansas, Bulletin 392, August, 1957, p. 46-47.

1919 - Farm tractor equipped with power take-off
1920 - Starters and lights appear on tractors
1924 - Mounted-type tractor implements introduced
1924 - Successful light tractor developed
1930 - Farm tractor equipped with powerlift
1931 - Diesel-powered crawler tractors into use
1935 - High compression engine introduced

Other changes which have come about since that time are; increased use of rubber tires, automatic transmissions, attachments for equipment for quicker hook-up and detachment, etc.

One important factor which affected management due to the switch from animal to mechanical power on Kansas farms was the vast increase in acreage available for other use since pasture was no longer needed for draft animals. As this change came about each farmer had to decide how to most efficiently utilize the land, which was formerly used to produce feed for draft animals. The farmer had two alternatives. He could put this land into cash crops or increase the number of livestock. The land formerly used to feed draft animals could be used for other farm animals or could produce crops for sale. With the introduction of tractors, the hours worked per day were only limited by the farmers ability or desire to work, so the farmer had to decide which he desired most, longer work days and possibly greater dollar profits or more leisure time to do something possibly less profitable. Another important factor brought on by increased use of tractors on the farm was that the manager had to have larger gross profits to get a net profit comparable to that realized with the use of horses, because the expenses were greater due to: 1) higher original investment, and 2) greater upkeep with the tractor than with the horse. The vast improvements made in tractors over the past 40 years have also brought many changes in associated machinery. For example, the

changes made in the equipment used to produce wheat are many and with it management has also changed. More acres could be handled by the producer because of the increased size of machinery. Crops could be planted and taken care of so much faster in 1963. This was particularly true due to the use of tractors, but also due to the use of rubber tires on equipment and the improvement of parts so there was less friction and consequently longer life of the parts. The most widely publicized change in equipment used in wheat production was the combine, not only the introduction of it, but also the change to self-propelled combines. The great change in harvesting equipment started in the United States about 1880 but it took a while before Kansas began to benefit by these improvements.

> It took about 75 years to bring about this change in the harvesting picture in Kansas. It was this machine improvement, including the transition from horse to tractor and them to combine harvester and inevitable reduction in use of labor and labor cost, that helped bring about the tremendous increase in production of wheat in the state by 1920. The transition from pulled combine to the self-propelled combine was more in the nature of a refinement in mechanization and it took another 15 years to bring this about.
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> It was thought the self-propelled combine was the last word in mechanization, but attempts already are being made to install mechanical dryers on the combine in order that wheat with higher than 13 percent moisture content may be reduced to safe storage levels at the combine before being hauled to storage. If successful, this would permit earlier harvesting, thereby reducing the hazard of loss by untimely rain, hail or possibly high wind.

Because of these changes in harvesting equipment for wheat in Kansas problems of financing became a major concern to farm managers. They had to decide if it would be more profitable to invest in a combine or to

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[1]L. C. Aicher, "Wheat State Becomes Breadbasket of World," Kansas Agriculture, 44th Report, Kansas State Board of Agriculture, Topeka, Kansas, June, 1961, p. 278.

hire the harvesting done by some custom harvesting gang. Many times the farmer had a large enough crop of wheat that if the weather was bad, even if he owned his own machine he would have to hire other machines to "beat the weather." So this brought up another factor in deciding whether to buy or hire.

Change in equipment used in the production of corn greatly affected the management of many farms in the eastern third of Kansas. There were two major changes which the author considered to have had the greatest effect on management. One, the introduction of spray equipment, which in many areas almost completely took the place of the cultivator, made the decision of which to use a very important factor. This factor was discussed in the section on technological change in insecticides and herbicides. It needs to be only briefly mentioned that the farmer had to decide whether it was most profitable and if the largest yield would come about from a combination of spraying and cultivating or to use one or the other by itself. Two, the introduction of the corn picker also revolutionized this field. In 1946, the self-propelled corn picker was introduced to Kansas agriculture and today the self-propelled picker-sheller is being used commercially.

> One man husking corn from the shock would require a long day to get 25 bushels. A good man, working from dawn to dark, could husk and crib 75 to 100 bushels from standing corn. With a new combine and a corn-harvesting attachment, one man can harvest 35 to 40 acres or up to 2,000 bushels of shelled corn in a 10-hour day.[1]

Just as with the wheat harvesting equipment this innovation greatly

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[1]A. L. Clapp, "Corn Once Kansas' Biggest Crop," Kansas Agriculture, 44th Report, Kansas State Board of Agriculture, Topeka, Kansas, June, 1961, p. 282.

increased investment needed in the production of corn. "Special machinery necessary to produce and harvest corn by modern methods on an economical acreage would require an original investment of $9,000."[1] Another problem farmers were confronted with was the need for special types of corn. The farmer needed to plant a type of corn that was easy and quick to shell but would withstand the rapid process without cracking. Also the ear had to be attached to the stock well enough to prevent shaking from the husk before it got into the machine. If there was a large amount of corn left in the field, this had to be picked either by hand, which was a very slow process or to turn livestock into the field to "hog it down." These improvements increased production very little, but labor cost per bushel was greatly reduced.

There has been more improvements made in equipment used in hay production since 1930 than equipment used in most other crops grown in Kansas. The reason for this was because hay production always was a more labor intensive crop than the other principal crops in Kansas. The following selection by William L. Cavert taken from the January, 1956 edition of Agricultural History, illustrated the increasing number and complexity of decisions which farm managers made in 1963 that their fathers were not faced with in the production of hay. By comparing this with the two previous crops mentioned one could see the correlation in the increased complexity of decision making in the production of all crops in Kansas due to the rapidly changing equipment associated with agriculture.

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[1] Ibid.

> More emphasis on management. It is evident that the modern farmer is faced with a far more complicated set of questions to be decided than was his father. For example in putting up hay, the choice for the father in most cases was between a hand pitchfork, a hay loader hitched behind a horse-drawn wagon, and the buck-rake and overshot stacker combination. Now among the methods to be considered are the following: (a) the field baler, with choice between many sizes and types, between various kinds of wagons and loading devices; (b) the forage chopper plus types of wagons with unloading devices. With the forage chopper, there is also the choice as to whether all or part of the grass acreage will be harvested as grass silage. If harvested as grass silage, it may be put into a glass-lined silo, costing perhaps $5,000, with a minimum loss of feed value and having an automatic unloading device, or it may be put in a conventional cement or clay block silo or in some type of stack or trench silo. If the decision is in favor of some type of trench silo, there may also be the question as to whether the cattle may be successfully self-fed directly from the silo without taking the silage to the cattle. (c) stacking with the hydraulic stacker and moving the stacks to the feeding lot by skidding them on to a specially devised wagon may be one of the alternatives, especially in ranching areas. (d) a fourth alternative may be to hire a part or all of the equipment for putting up hay or silage by any of the previous mentioned methods. (e) with any of the foregoing harvesting methods, except the making of grass silage, the present day farmer has the question of whether he will install artifical drying equipment. Again, if he decides in favor of drying equipment, he has the choice between the heated air types and those that use unheated air.[1]

Transportation has affected the entire agricultural sector of our economy. Trucks and automobiles were the two important factors of transportation which have affected Kansas agriculture most. Through the improvement of these two factors the farmer had a larger choice of markets both as a producer and a consumer so this increased the number of market decisions which had to be made by the farmer as a manager.

L. M. Hoover, in his bulletin, Kansas Agriculture After 100 Years, gave two changes which came about because of mechanization in Kansas agriculture,

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[1]W. L. Cavert, "The Technological Revolution in Agriculture, 1910-1955," Agricultural History, January, 1956, p. 28.

both changed management to a considerable degree. First, mechanization increased custom work. Many farmers found that it was more economical to hire the work done than to invest in the machinery needed. Second, an increased amount of farming by absentee owners became evident because of the increased mechanization. "Increased mechanization especially the development and adoption of easily transported tractors, contributed to the development of what have become known as "sidewalk" and "suitcase" farming."[1] With this type of farming, decisions had to be more accurate and the manager had to have a better understanding of the operation whereas when the manager lived on the farm there was more room for trial and error methods.

The big change in management which came about because of improved machinery was that management decisions became, by necessity, more technical and precise. As with technological improvements in crops the improvements in machinery occurred so rapidly that to keep abreast with changes was a major problem itself. Beside the rapid changes which took place there was a great increase in types, sizes and models from which the farmer had to choose. As machinery replaced animal power the problem of maintance became a factor of rising importance. There were many more moving parts to wear out with the tractor and attached machinery than there were with the team of horses and their associated machinery. The maintance problem changed from simply replacing a wooden tongue on a wagon or replacing wooden shear pins in a cultivator to straightening a steel frame or replacing a bearing. Operation of the machinery became more difficult as improvements were made.

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[1] L. M. Hoover, Kansas Agriculture After 100 Years, Agricultural Experiment Station, K.S.U., Manhattan, Kansas, Bulletin 392, August, 1957, p. 55.

The problem of obsolescence became increasingly important as the number of machinery improvements increased. The manager not only had to figure if it would decrease costs of production to buy the new machinery but had to also try to figure out if the machine could be fully depreciated before it became obsolete, which in very few cases happened.

Livestock

Many of the changes in livestock were similiar to those made in crops. For example, improved breeds occurred both in crops and livestock in Kansas. A very common decision which had to be made in 1963 by any farmer that raised livestock was whether to buy that expensive sire or not. The farmer had to decide if it was more economical to invest in that expensive bull to try to improve his herd of grade or range cows, because at times the difference in price of finished stock may not have been large enough to make the investment profitable, or use a good non-registered bull which probably would not have given quite as good quality calves. With the increased use of artifical insemination, the manager had to decide whether or not to even buy a bull. Although this method hasn't proven too economical in beef herds a great many of our state's better dairymen were using this with great success. By using this method of breeding, money could be released for investment in something else so this brought up another decision for the farm manager to solve.

The most important livestock industry in Kansas in 1963 was beef cattle production. The changes in this industry were numerous and very important to the manager. In 1963 many of the beef producers were using feed additives and antibiotics that were not used 25 to 30 years ago.

Cattle feeding was an exacting science. Some of the trends in cattle production were contract feeding, the feed bank idea, mechanization of feed lots and bulk feed handling. The investment decisions grew from $1,000 investment decisions with small feed-lots to $10,000 investment decisions with the mechanized feed yards. The author went more into detail on this in the section on increased size of business and its affect on management. R. M. Finley, in an article in the December, 1961 edition of the Journal of Farm Economics, made four points about how he thought livestock production would change in the 60's.

1. Increased use of irrigation could mute some of the effects of land retirement and feed grain reduction programs.

2. Use of wheat as a feed grain could cause a change in the livestock feed base and location of feeding enterprise.

3. Changes in the organizational structure of the cattle-feeding industry might lead to specialization and change the feeding program of midwest farms.

4. Various changes in governmental policy, credit, and tenure are variables which could be overriding features in the livestock adjustment in the 60's.[1]

One particular effect which these changes in livestock production had on management was that it had made management decisions much more technical. This seems to be true in all technological improvements which were being made in agriculture.

Since Kansas placed a great deal of emphasis on range or grazing cattle production, the increased size of herds per farm placed an important role on management. All decisions previously made were necessarily increased

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[1]R. M. Finley, "Discussion: Adjusting Livestock Farms in the North Central States to the Prospects of the 1960's," Journal of Farm Economics, Vol. 43, No. 5, December, 1961, p. 1305.

in size and importance in connection with the increase in livestock herd size.

All these technological changes which have been mentioned have greatly increased the ways of investing the limited resources available. The manager today has more questions to answer and more ways to invest his limited resources.

In summary each of the five functions of management have been affected by the changes in technology in agriculture whether it be in livestock, crops or the equipment associated with the production of these commodities. Observation became more important because there were so many more innovations to learn about; new improvements in livestock, new crop varieties, and the continuous improvements which were being made in equipment in agriculture. The farmer did not only have to know that these changes were taking place but he had to analyze each change. The importance of decision making had been illustrated at various times throughout the chapter. The function of action taking became a bigger burden due to the realization that each farmer was taking on a greater burden of responsibility.

CHAPTER II

THE EFFECT OF CHANGES IN SIZE OF OPERATION ON MANAGEMENT

Increased size of operation takes in two general areas. First, there has been an increase in the financial size of farms in Kansas. Second, there has been a profound change in the physical size of farms in Kansas.

Technology and capital were very closely related. The increase use of technology on Kansas farms caused the amount of capital needed to increase. With this increase came more difficult management problems.

> Technological advances and associated capital investments introduce a time factor that makes it possible to minimize many hazards of nature that formerly cut production. For example, an insect infestation that formerly would have destroyed a crop before a farmer could complete treatment with horse-drawn equipment can now be saved by using efficiently equipped tractors or an airplane. Timeliness of operations made possible by added use of capital in the form of mechanical power and equipment often averts serious loss in crop production.[1]

The graph on the following page illustrates the increasing amount of capital invested per farm in Kansas over the past 30 years. Although there has been a general trend upward, the sharpest increase in use of capital on Kansas farms came about after World War II. "Use of capital in agriculture has been an important factor contributing to improvement in farm income and the standard of living, and a continuation of this trend is

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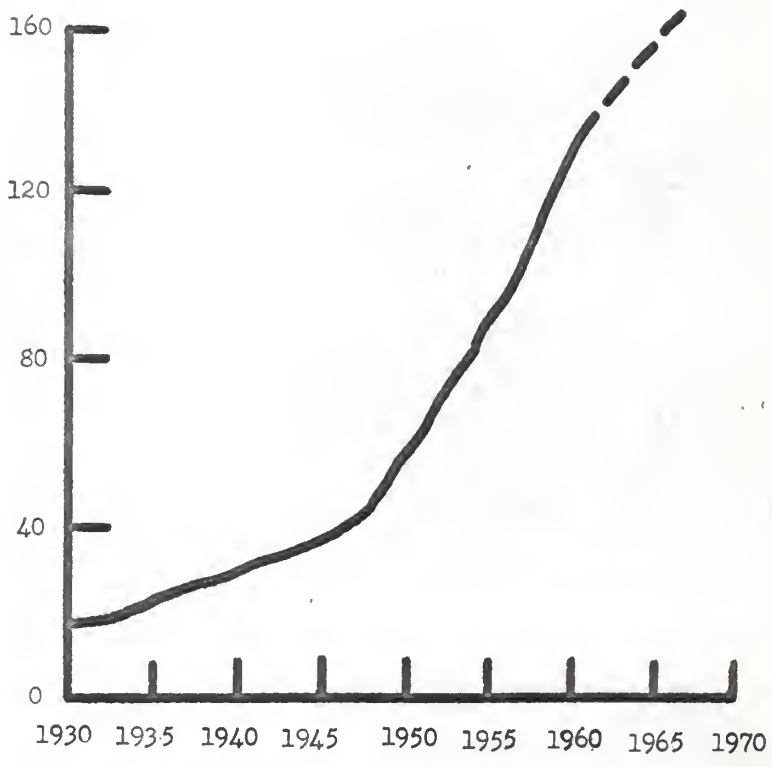
[1] W. Murray and A. Nelson, Agricultural Finance, The Iowa State University Press, Ames, Iowa, 1960, p. 6.



Graph 2.--Investment per farm in Kansas 1930-65.[a]

[a]Compiled from Farm Management Association Records.

dependent in no small measure upon a continued rise in farm investment."[1] To most Kansas farmers capital has been one of the important limiting factors in their operations, but to compete in modern agriculture the need for this factor has greatly increased. The need for credit has become more important. As the amount of capital needed increased so also did the amount of credit. " . . . survival in the agricultural economy

[1]Ibid., p. 12.

of the future will depend largely upon the individual farmer's management ability and whether he has sufficient credit of the right type."[1] There were many places to get farm credit but the manager had to realize which would be most profitable in the long run.

> While credit properly used is a powerful tool contributing to success, it is an equally powerful tool leading to financial ruin when improperly used. The student of agricultural finance should be even more aware of the hazards of unwise use of credit than he is of benefits accuring from its proper use.[2]

Many problems had to be solved by the farm manager in the use of the financial tools that were available to him. He had to know how to use credit and how to get it extended on proper terms. He had to know how much credit to use, how to use it and where to obtain it. "The supply of credit, the terms on which it is made available to agriculture, and the knowledge farmers have about how to use it, have great significance for the future."[3]

Another connection in which technological increase and capital use in Kansas agriculture had a great deal of significance was the drive for specialization in agriculture. This was also connected in the past to the limited amount of capital available. A factor that has often been over looked as the reason for specialization in agriculture was the limit to the managerial ability possessed by most persons. There were very few managers who had the ability to manage as many different crops and live-

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[1]Robert B. Tootell, "Governor of the Farm Credit Administration," The Co-op Bank Messenger, Omaha Bank for Cooperatives, March, 1959, p. 4.

[2]W. Murray and A. Nelson, Agricultural Finance, The Iowa State University Press, Ames, Iowa, 1960, p. 13.

[3]Ibid., p. 18.

stock projects that were common on Kansas farmers thirty years ago on the scale of production on which the projects were operated on in 1963. For example, the author studied individual records of the Farm Management Association. One farmer who had kept continuous records over a 30 year period made the following changes. In 1930 this farmer raised dairy cattle, hogs, chickens and a few beef cattle for home use. In the early 1940's he switched to dairy cattle, sheep and chickens. Then in the mid 1940's he switched again doing away with his sheep and keeping only his dairy herd and chickens. Later he increased his dairy plant and herd and greatly decreased his chicken flock from a commercial flock to a small farm flock for his own use. Although realizing the livestock and crop programs were different in the western part of Kansas, than they were in the eastern section of the state where this example was taken, the same general pattern of specialization was being followed throughout the state. It was mentioned earlier in this report about the trend of crops from many crops to a few major crops in which Kansas specialized in 1963. Kansas was broken into three general farming areas; the wheat belt of the western two-thirds of the state, the flint hills of east-central Kansas with its blue stem grazing area and the north-eastern part which may be classed as at the edge of the corn belt.

Because of the limited amount of capital available the percent of the farm land owned by the operator has decreased over the past few years. In 1963 most farmers who wanted to expand their operation rented additional land rather than buying land. The following table illustrates the change in land tenure in Kansas in the past 35 years.

TABLE 1

NUMBER OF COMMERCIAL FARMS BY TENURE OF OPERATOR IN KANSAS 1925-59[a]

	1959	1954	1950	1945	1940	1935	1930	1925
All farm operators	104,134	120,291	131,394	141,192	156,327	174,589	166,042	165,879
Full owners	22,678	45,513	50,680	52,469	52,441	60,358	57,151	61,698
Part owners	37,903	40,746	41,135	36,531	33,034	36,538	37,611	33,451
All tenants	22,287	33,730	39,232	51,621	70,222	76,771	70,326	70,001
Proportion of tenancy	21.4%	28.%	29.9%	36.6%	44.9%	44.%	42.4%	40.4%
Proportion of part owners	36.3	33.8	31.3	25.8	21.1	20.9	22.6	20.1
Proportion of full owners	21.7	37.8	38.5	37.1	33.5	34.5	34.4	37.1

[a]Computed from U. S. Census of Agriculture 1959, Vol. 1, part 21, Kansas.

There were several reasons for the changes in land tenure which were shown in the above tables. The percent of all tenants has decreased from 40.4 percent to 21.4 percent. This may have been due partially to the fact that many of the farmers that were all tenants had to seek jobs or part time jobs off the farm to have enough capital to operate and after taking the "off the farm job" they found they could make a better living at that than farming. Also many of the tenants were not as good managers as the full owner or the part owner and were forced off the farm. The important change which has taken place in land tenure, which is plainly illustrated in the two tables, was the increased percent of part owner operators of farms in Kansas. Although there were only 292 more part owner operators of farms in Kansas in 1959 than there were in 1930, the percent increased from 22.6 to 36.3 percent. Another change which took place over the past 10 years was the decrease in full owner operators on these farms. This came about, as was mentioned earlier, because of the limited amount of capital available. Also this trend was partially due to increased value of land. Many of the older retiring farmers would rather rent their land than sell.

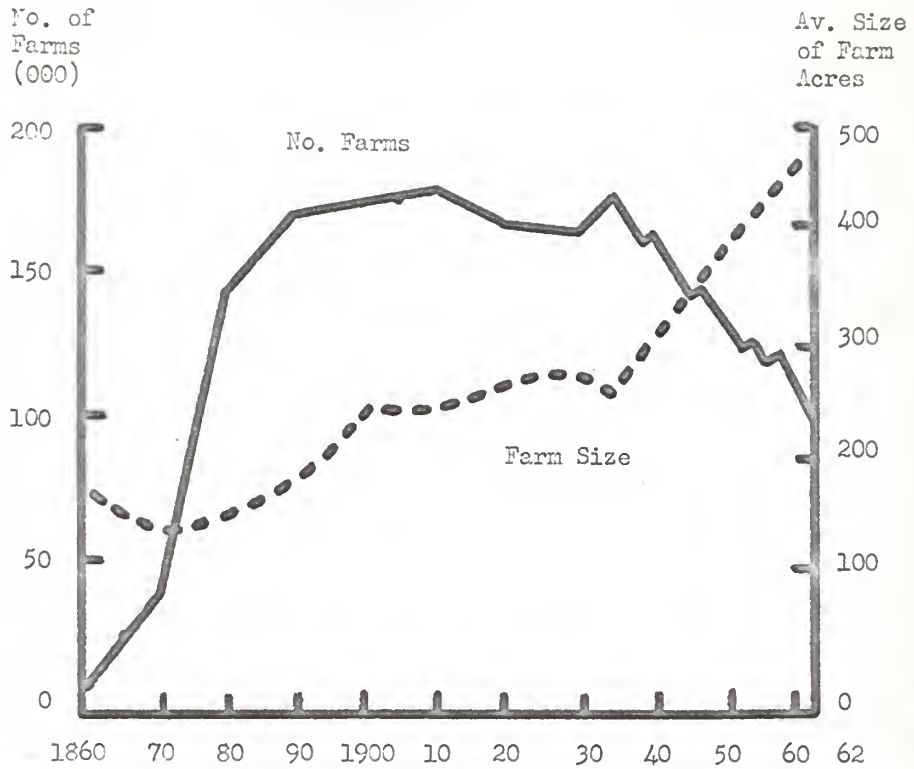
The problems which the owner faced and those which the renter faced were combined to increase the number of management decisions made by part owners. The operator who owned part of his land had to make management decisions on taxes, resource use and many other decisions which had to be made by a land owner. Also, as a renter, he had to decide, with his landlord, how to divide the profits between himself and the landlord. Because of the changing tenure of farms the farmer usually had more than one landlord. This would multiply the management problems by the number

of landlords. To list all decisions a renter had to make would have been too voluminous for this report, but a partial listing illustrated the increased significance of management this change in land tenure brought about. There were many different profit sharing systems available to the renter. Such methods as straight cash rental and crop or livestock share were examples. The amount of resources furnished by the renter and landlord, would determine the percentage each one was entitled to get. Such decisions as who would furnish machinery, the fertilizer and seed, or who was responsible for maintance of fences was only a small portion of what the renter and landlord had to work out.

Without further discussion it has clearly been illustrated that the increased percent of part owner operators on Kansas farms has necessarily increased the number of management decisions made by the operators of these farmers.

The size of farms has continually increased since Kansas became a state, but the most remarkable change has come about since the depression of the 30's. This change since 1930 has not come about by bringing in new areas, which formerly had been the case, but rather by consolidation of present farm land into fewer farms. From 1860 to 1930 the total amount of land in farms changed from 1,778,400 acres to 47 million acres in 1930. From 1930 to 1961 there was only a 3,100,000 acre increase to bring the amount of land in farms in Kansas to 50,100,000 acres in 1961. The following graph illustrated this change in farm size and number of farms in Kansas.

The interrelation of technology and capital was one cause for this increased size. The farmer was forced to enlarge in order to compete with others as the cost per unit went up. As the cost per unit went up the



Graph 3.--Number of farms and average size farms in Kansas 1860-1962.[a]

[a]Agriculture in the Kansas Economy, Kansas State Board of Agriculture, Topeka, Kansas, 1962, p. 18.

investment per operator also rose. This was illustrated by the increase in physical size of each farm. As each farmer increased the number of acres operated he necessarily increased the size of his investment.

> It directly encouraged larger units, too. This is because the greater investment in power and machinery resulted in higher fixed cost per acre. These can be reduced by operating more land to spread the fixed cost over more acres.[1]

This increase in acres operated per farmer will undoubtly continue

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[1]Earl O. Heady and Ronald D. Krenz, "How Big Will Our Farms Get?" Iowa Farm Science, Iowa State University, Ames, Iowa, Vol. 16, November, 1961, p. 51.

because the increased investment would continue as long as new improvements were made in equipment. The main problem, which the Kansas farmer had to answer in increasing the size of his farm was if he had the managerial ability to handle this large an operation.

> As farm size is increased, management may not be able to cope with the larger operation. This is particularly important in making the recommendation that an increase in the size of the operation will automatically result in higher average net revenue per unit of output.[1]

Assuming that he had the managerial ability to handle the increased amount of land, the farmer was faced with various management decisions. First, all decisions concerning planting, harvesting, marketing, etc., were increased in size and importance. Also he had to decide if his present investment in machinery was large enough to handle more land or if it was economical to buy more machinery. In other words he had to decide how many dollars per acre investment would be optimum.

In 1963 the management of farms in Kansas were in the hands of a much smaller group than years past. The following table illustrated this decrease in farm population.

This farm population decline has been brought on by several things. Increased technology had increased labor efficiency therefore less labor was needed. Size of investment has prohibited some people from increasing their operation. Also some men lacked the managerial ability which had to come with increased technology and investment. Because of this decrease in farm population, managerial ability had necessarily to increase in quality if farmers intended to compete. It was only natural that the better managers

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[1]J. E. Faris, "Economies of Scale in Crops," Journal of Farm Economics, Vol. 43, December, 1961, p. 1226.

TABLE 2

FARM POPULATION OF KANSAS 1900-60[a]

Year	Farm Pop. (thousand)	% of Total Kansas Pop.
1900	865	59
1930	709	38
1940	607	34
1950	468	25
1960	360	17

[a]Compiled from Farm Facts, 1961-62, Kansas State Board of Agriculture, Topeka, Kansas, 1962, p. 17.

would be the ones that remained and the ones who lacked this would be the ones looking for jobs in industry. "Brain power has replaced horse power as the essential ingredient of our farms."[1]

After looking at the effect capital has had on finance, specialization, land tenure and physical size of the farms in Kansas, the author concluded that management played the major role in deciding whether the farmer would succeed or fail. The manager of the modern (1963) commercial farm had more capital invested, took greater risks, faced stiffer competition and had more opportunity for reward if he did a good job than the farmers of a previous generation.

> With such large amounts of capital and technology involved, management had become the key factor in successful farm operation. This is in sharp contrast to a generation or two ago, when the farm unit was more self-sufficient than now, with much less capital involved, much less science applied and with fewer critical managerial decisions to be made.[2]

[1]_____, Yearbook of Agriculture, 1960, U. S. Government Printing Office, USDA, Washington, D. C., 1960, p. 381.

[2]Ibid., p. 384.

H. Van Vliet summed up the interdependence of capital and farm management in his article in the December, 1958 edition of the Journal of Farm Economics. "A large farm capital implies commensurate managerial capacity to effectively accumulate and manage the capital under difficult circumstances presented in farming."[1]

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[1]H. Van Fliet, "Increased Capital Requirements," Journal of Farm Economics, Vol. 40, December, 1958, p. 1614.

CHAPTER III

THE EFFECT OF INSTITUTIONAL CHANGES ON MANAGEMENT

The institutions that affected management on Kansas farms were numerous. One could include under this section such institutions as laws both federal and state. Under federal laws were included such things as, production controls, tariffs, and associated regulations and tax laws. Foreign aid was part of the federal laws that was important to farm management in distributing surplus commodities to underdeveloped countries. State laws and regulations also were considered. Laws and regulations set up by foreign countries were also important to Kansas farmers. Customs, mores, and social law which changed over time were very important to management also.

Federal Laws

The first type of institutions which affected Kansas farmers and possibly the most important was the federal laws. These laws were numerous and had a great effect on management decisions, Under federal laws a very important institution considered was the tariff regulations. Because of the growing importance of the European Economic Community, the effects of the tariff laws are becoming recognized as being more important to Kansas agriculture. Tariffs were by no means a new institution to agriculture. The agriculture and industrial sector of the United States economy have been in constant controversy about the amount of tariffs and their effects since before

the Civil War.

Kansas agricultural production has greatly expanded over the past few years and with this expansion came greater concern for foreign markets and how they affected the agricultural economy. Wheat, grain sorghum, corn, barley and oats were the more important crops in Kansas which were the major export crops of the United States. The following table illustrated the increase in exports of those major crops from the United States.

TABIE 3

MAJOR GRAIN CROPS EXPORTED BY U. S.[a]

Crop	1939	1959
Wheat	7.0%	43.0%
Grain sorghum	.3	16.8
Corn	1.9	3.0
Barley	1.7	28.0
Oats	14.5	43.0

[a]Computed from U. S. Census of Agriculture 1959, Vol. 1, Part 21, Kansas.

Not only did the percent of the total production exported increase, but the total production has also increased in the United States and Kansas.

Since Kansas was the number one producer of wheat and second largest producer of grain sorghum in the United States in 1962, Kansas farmers were greatly affected by new tariffs or any change in the existing tariffs of the United States and importing countries. For example the Kansas farmer wanted to know how large the tariff wall around the EEC would be in the

future. He wanted to know how this tariff wall would affect his own production, because it surely would when it was pointed out that 43 percent of the total United States production of wheat was exported and Kansas produces 22 percent of this total production within her own boundries. Grain sorghum was a crop which had rapidly expanded in Kansas since the introduction of production control on wheat in 1956. It has increased every year in importance since that date. In 1959, Kansas produced 23 percent of the total United States production. In 1961, Kansas had moved to second place in production of grain sorghum and in that year Kansas produced nearly 28 percent of total U. S. production, an increase of 5 percent in two seasons. Also grain sorghum was a much more important export crop for the United States, moving from a mere .3 percent of total U. S. production being exported in 1939 to 16.8 percent of total production being exported in 1959. Only twenty years ago managers on Kansas farms had very little concern for foreign markets and therefore were concerned only with price on the local markets. The common question asked at this point was how his management on the farm in Kansas was affected by increased tariffs on imports of United States grain at some foreign port. For example, one of the ways the United States may have been able to get around the Common Market's quotas and some of its tariffs was to produce grain that was of a higher quality than that grown in any of the countries in the Common Market. In Germany there was a great demand for certain grains of higher quality than was grown anywhere in the EEC, if the farmer knew about this he would have grown the grain demanded. In the Netherlands there was a law which prohibited the bakeries from operating at night so the bread had to be baked the day before. If the bread was to stay fresh the flour used had to be of a very high quality.

This was one more possibility which, if the manager on the farm knew about, he could have taken advantage of in producing wheat. These were only a few examples of how tariffs and trade regulations affected present day farmers in Kansas. The Common Market also affected the poultry farmers in Kansas. Over the past five years Germany, 1958-63, became an important market for Kansas poultry, but because of the increased German tariffs this market may be greatly curtailed in the future. Only 20 to 25 years ago the farmer in Kansas was not concerned with such problems as have just been mentioned because nearly all his products were distributed within the continental United States. Tariffs set up by our federal government affected management also. The government set quotas and tariffs on certain commodities thus preventing competition which would have prevented such crops as sugar beets to even be grown in Kansas due to lower prices for imported sugar. The sugar beet farmers of southwest Kansas had to keep up to date on foreign sugar regulations because any reduction in these regulations would, with little trouble put them completely out of business. Another example would be the quota on beef which could be shipped into the United States if this regulation was not present it would have forced the price of beef down below the narrow profit margin on which many Kansas beef producers operated.

Federal laws which have had a great affect on Kansas agriculture were production and price support programs. These two were interrelated to a very large extent. The first legislation which affected Kansas agriculture was passed in the early 1930's. The Agricultural Adjustment Act of May 12, 1933 authorized the government to make rental or benefit payments to producers of named "basic" agricultural commodities who cooperated in programs developed under the act. These programs were designed to decrease acreage

planted so this was the first real attempt at production control. Under this situation the Kansas farmer began to be faced with the problem of what to do with the acreage not planted to wheat. Since that date production controls expanded to include many other crops which were grown on Kansas farms and with these also have come increased responsibility to the farmer. For example to have bases accurately set for production control, the farmer had to have complete records on acreage of crops planted, many times for several years. Other questions which had to be answered were: Should other crops be planted to take the place of particular crops that are under the control program, and whether to take government loans or plant over the alloted acreage and go to the free market?

In 1933 the Commodity Credit Corporation was established. There was no basis for price support loans in the Agricultural Adjustment Act of that year so the CCC was created to do this. Although the CCC was created in 1933, it wasn't until 1938 that any loans were made on wheat because of the succession of short crops due to the drought conditions in the Midwest and Great Plains areas.

In 1936, the Soil Conservation and Domestic Allotment Act was passed. At first, payments were made largely to encourage farmers to reduce production by complying with acreage allotments on "soil-depleting crops," but later emphasis was shifted to payments for soil conserving practices, such as soil catching dams, tarraces, water ways, etc. The farmer had to decide immediately if it would pay off in the long run to invest in these so called "soil-conserving practices."

The Agricultural Adjustment Act of 1938 authorized the CCC to make loans on agricultural commodities including dairy products. Loans were

made mandatory on certain products including corn and wheat when the price of the commodity was below a certain percent parity.

From 1938 to 1954 price supports continually increased. The Agricultural Act of 1954 and the Agricultural Trade Development Act represented a change in the direction of farm legislation - a shift away from a heavy dependence on price supports to a greater effort to build firmer markets for farm products and adjust agriculture production to meet market demands.

In 1956, through the Agricultural Act the soil bank program came into effect. This was created to encourage farmers to take land out of production of surplus crops.

Two methods were used in this program. First, an acreage reserve provided for reducing acreage on a year to year basis. Second, a conservation reserve was taken out of production and put under contract for 3 to 10 years. These lands were taken out of production and appropriate conservation practices had to be carried out on this reserve. The soil bank program brought up many management decisions not previously faced by Kansas farmers. How much time should be spent working on this soil bank land? Should this land be planted to some soil conserving crop or should the land be left to grow up to weeds? In many cases it was more profitable to let this land grow up to weeds than to try to follow some soil conservation practices.

The Agricultural Act of 1958 was another good example of the added responsibility placed on the farmer in Kansas through federal legislation. This act set forth a referendum of corn producers to do one of two things. (1) Continue their current price support program, which made price support available within a 75-90 percent of parity range for those producers who

complied with their acreage allotments; or (2) shift to a new program, which discontinued acreage allotments and made support available to all producers at 90 percent of the average price received by producers the three preceding calendar years but in no event at less than 65 percent of parity. Also in this act some of the feed grains were placed under mandatory support through manipulation of legislation.

The 1960 Agricultural Appropriation Act limited price support loans and asked for reduction of acreage from the previous season.

In 1961 and 1962 wheat farmers voted on much the same problem as the corn producers voted on in 1958. Also the price support program and acreage allotment was still in effect for feed grains.

State Laws

Although presented only in summary in this report, state laws must be considered when the Kansas farmer made management decisions. He had not only to know the laws of his own state which affected him as he did business from day to day, but he had to have general knowledge of laws of surroundings states. For example certain states prohibited the movement of grain into their state if it contained over a certain amount of weed seed. Some states prohibited the shipment of diseased livestock into their states.

Of course the state laws which were most important to the Kansas farmer were those of the state of Kansas. For example a law which was passed during the 30's which was very important to farmers was the Wind-Blow Dust and Soil Erosion Act of 1937. In recent years, with the increase of "suit-case" farmers, this has brought many headaches to owners and neighbors. The farmer

had to have equipment available or make arrangements to prevent the soil from blowing if the incident arose. Laws to prevent spreading of disease by livestock affected management. When selling livestock or milk the livestock had to be tested for Tuberculosis and Bangs disease. Milk sold had to meet certain regulations which each farmer needed to know in order to sell his milk at the most profitable level or to make the needed adjustments. For example milk to be sold as whole milk had to contain more than 3.25% butterfat. Cream had to contain not less than 18% butterfat. There are various bacteria levels above which milk could not be sold. There are several laws which affect the use of water in Kansas. When more than one industry needed water for certain use there was a law which set up an appropriation of water for various uses. "Surface or ground waters of the state may be appropriated as herein provided . . . where uses of water conflict such uses shall conform to the following order of preference; domestic, municipal, irrigation, industrial, recreational and water power uses."[1] These were only a few of the various state laws affecting management, but the manager of any Kansas farm had to know these regulations and how they affected him as a farm manager. Most of the state laws passed in the past 25 years which affected agriculture were laws which were trying to increase the quality of products which were produced on the Kansas farms. This has come about because of the increased demand for quality by the consumer. Many times, without laws to prevent poor quality products, it was easier for the farmer to produce a little larger quantity and neglect the quality which the consumer may have been asking for. It was very easy to

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[1]Supplement to General Statute of Kansas, State Printer, Topeka, Kansas January, 1962, p. 1325.

let a little foreign material float into the grain, but the good manager knew that in the long run the profit would be larger if quality was produced. Examples of these "quality" laws would have been the Labeling of Agricultural Products Act of 1951 and the Kansas Egg Law of 1955.

These laws didn't have to be considered by our grandfathers when they were making management decisions, because Kansas agriculture in that time was not as commercial as it was in 1963.

How Taxes Have Affected Management[1]

The effect taxes had on farm management was listed seperately because of the many changes which have taken place in tax laws.

Although the present federal income tax system began in 1913 and the state income tax was created in 1933, it affected the Kansas farmer very little before 1940. Kansas agriculture was not affected by these taxes for two reasons. First, the rates were very low. Second, personal exemptions were high and farm income was very low. For example in 1913 taxes had to be paid on any income over $3,000 plus $1,000 deduction for children or wife if the tax payer was living with his spouse.

> A tax of 1% was levied on the taxable net income of every citizen of the United States, whether residing at home or abroad, and every resident of the United States including the Philippine Islands and Puerto Rico. In addition a surtax with graduated rates was levied on the amount of taxable net income of individuals over $20,000. These surtax rates and brackets of income were as follows:

Rates of Surtax Percent	Amount of Income ("Brackets")
1	$20,000 - $50,000
2	50,000 - 75,000

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[1]The author is indebted to J. H. Coolidge, Extension Economist in Farm Management, Kansas State University, for much of the information in this section on taxes.

Rates of Surtax Percent	Amount of Income ("Brackets")
3	$75,000 - $100,000
4	100,000 - 250,000
5	250,000 - 500,000
6	500,000 - [1]

In 1962 individuals making over $675 net income plus $600 deduction for each dependent had to pay federal income tax. The following are some of graduated rates on incomes less than $5,000.

TABLE 4

FEDERAL PERSONAL INCOME TAX RATES ON INCOME LESS THAN $5,000, 1962[a]

			Number of Exemptions		
Total Income	1	2	1 single or filing sep.	2 single or filing sep.	2 married filing joint
$ 675 - $700	$ 4	—	—	—	—
1,000 - 1,025	62	—	—	—	—
2,000 - 2,025	242	122	—	—	—
3,000 - 3,025	—	—	$420	$298	$298
4,000 - 4,050	—	—	625	503	494
4,950 - 5,000	—	—	813	681	656

[a]Computed from Instruction Sheet For Form 1040A, Federal Income Tax, 1962.

[1]Roy and Gladys Blakely, The Federal Income Tax, Longmans, Green and Company, New York, 1940, p. 96.

TABLE 5

FEDERAL PERSONAL INCOME TAX RATES ON INCOME
$5,000 TO $10,000 FOR SINGLE PEOPLE
OR THOSE MARRIED AND FILING
SEPARATE RETURNS, 1962[a]

Over - not over	
$0 - $2,000	20% of total taxable income.
2,000 - 4,000	$400, plus 22% of excess over $2,000.
4,000 - 6,000	840, plus 26% of excess over 4,000.
6,000 - 8,000	1,360, plus 30% of excess over 6,000.
8,000 - 9,999.99	1,960, plus 34% of excess over 8,000.

[a]Computed from Instruction Sheet For Form 1040A, Federal Income Tax 1962.

TABLE 6

FEDERAL PERSONAL INCOME TAX RATES ON INCOME
$5,000 TO $10,000 IF FILING JOINT
RETURNS, 1962[a]

Over - not over	
$0 - $4,000	20% of total taxable income.
4,000 - 8,000	$800, plus 22% of excess over $4,000.
8,000 - 9,999.99	1,680, plus 26% of excess over 8,000.

[a]Computed from Instruction Sheet For Form 1040A, Federal Income Tax, 1962.

In 1933 the Kansas Income Tax Act was passed, but as was mentioned earlier had little effect on Kansas agriculture. In the beginning individuals had to pay state income tax on all income over $750 if single. Married couples had to pay on income over $1,500 plus $200 deductions for each dependent under 21 years of age. The rates for state income tax in Kansas are as follows, after deductions.

TABLE 7

STATE PERSONAL INCOME TAX RATES, 1933

1% up to $2,000.
2% for $2,000 - $3,000.
2½% for 3,000 - 5,000.
3% for 5,000 - 7,000.
4% for income over $7,000.

In 1962 an individual had to pay state income tax on income over $600 ($1,200 if filing a joint return) plus $600 for each dependent, or child under 21 years of age. On joint returns these rates are figured on half the income, thus the total tax is doubled. The rates for state income tax in Kansas for 1962 were as follows.

TABLE 8

STATE PERSONAL INCOME TAX RATES, 1962

1½% tax up to $2,000 income.
2½% tax for the next $1,000.
3% tax for the next $2,000.
4% tax for the next 2,000.
5½% tax on the balance.

In the early 1940's farmers in Kansas began to feel the effects of the tax. In 1940 federal tax had to be paid on income over $2,500 for a couple plus a $400 deduction for each dependent. Even then very few farmers were affected since the average net income per farm was below the personal or family exemptions. Since that time taxes have greatly increased in importance to the manager of the Kansas farm. Since 1955 many farmers have paid over $1,000 income tax compared to net incomes below that figure in the early 1940's.

There have been several major changes made in our tax system that have affected management in agriculture in Kansas. Since 1947 sales of breeding and dairy animals were treated as capital gain instead of ordinary income. Under this change there were stipulations that had to be followed. The livestock had to be held for draft, dairy or breeding purposes and held for 12 months or more to be classed as a capital gain. Gain or loss on livestock held primarily for sale could not be included as capital gain or loss, but had to be reported as ordinary income or loss. An example of this type entry was given in the "Farmer's Tax Guide, 1963 edition."

> Example 4. A farmer is in the business of raising registered cattle for sale to others for use by them as breeding cattle. It is the business practice for the cattle to be bred, prior to sale, in order to establish their fitness for sale as registered breeding cattle. The farmer's use of the other young cattle for breeding purposes is an ordinary or necessary incident for the purpose of selling them as registered breeding cattle. Such use does not demonstrate that he is holding the cattle for breeding purposes. However, those cattle used by the farmer to produce calves which are added to the farmer's herd are considered to be held for breeding purposes. The same applies to hog and sheep breeders.[1]

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[1] _____, Farmer's Tax Guide, 1963 Edition, Pub. 225, Internal Revenue Service, U. S. Treasury Dept., Washington, D. C., 1962, p. 39.

In 1951 farm labor was included under Social Security. With this the tax paid by the farmer increased, because the employer had to match the amount deducted from the employee's wages. The law places liability for paying Social Security taxes on employers. In 1955 self-employed farmers were included under Social Security, so this also affected management. After this was passed the farmer had to be careful to even out his income from year to year to keep above $4,800 ($4,200 prior to 1959) income to get the full benefit from his coverage under the social security act. In 1951 3% was the tax rate on farm workers and in 1955 4% was the tax rate on self-employed persons. The following table illustrated changes made in 1962 and expected changes for the future. This table shows the changes in the percent which will have to be paid as social security tax.

TABLE 9

F.I.C.A. TAX RATES[a]

Year	Self-employed	Farm Workers[b]
1962	4.7/10	3.1/8
1963-1965	5.4/10	3.5/8
1966-1967	6.2/10	4.1/8
1968 and after	6.9/10	4.5/8

[a]Smith and Shapley, Federal and State Farm Income Taxes, 1962, Cornell University, Ithaca, New York, December, 1962, p. 25.

[b]Employer matches this amount.

A few recent changes in the Social Security Law are mentioned on the following page, which were taken from the same extension bulletin as the above information.

A. Parents who work for sons and daughters in the farm business are covered (effective 1961).

B. The age at which men are first eligible for Social Security benefits is lowered from 65 to 62, with lower benefits for those who retire before age 65.

C. The minimum benefit level for a retired or disabled insured worker is increased from $33 to $40 per month. There are corresponding increases in survivorship benefits.

D. The amount of work in a position covered by Social Security in order to get benefits is reduced. Just how long a person must work to get benefits depends upon date of birth.

A worker now needs one quarter of coverage for each four quarters elapsing after 1950 instead of one quarter for each three quarters elapsing as was formerly the case. (Effective four months after July, 1961).

E. The insurance benefit payable to an aged widow is increased by 10 percent, with similar increase to a widower or surviving dependent parent.[1]

In 1958 a 20 percent additional first year depreciation was allowed on machinery and equipment to be held for 6 years or longer. This, along with new methods of depreciation, allowed more rapid recovery of investment on these items, particularly in the early years of the machine's useful life. This 20 percent allowance was allowed on property purchased not to exceed $10,000 on separate returns or $20,000 on joint returns. This cost limitation was for total machinery bought and not on each piece. After this allowance was taken out regular depreciation for the year may be deducted. To qualify for this deduction the property had to be purchased, not acquired by gift or through inheritance.

In 1962 a 7 percent investment credit was added to apply directly to

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[1]Smith and Shapley, Federal and State Farm Income Taxes, 1962, Cornell University, Ithaca, New York, December, 1962, p. 25.

the tax liability. Machinery and equipment were the basic types of property included under this 7 percent investment credit. Tangible personal property, other than livestock and some real property, excluding buildings, were included. This credit may be applied to both new and used property. The property must have been acquired after December 31, 1961. There were no limits on the amount of new property which qualified, but there was a $50,000 limit on used property acquired. A point of importance on used equipment that each farm manager had to know was that when a farmer traded one piece of used equipment for another used machine and gave something to boot, only the "boot" or cash, may be used for computing the investment credit rather than the total cost of the equipment. The property bought had to have at least a four year life expectancy to get even partial credit. For property with an expected life of 4 or 5 years, 1/3 of the investment was counted. For property with an expected life of 6 or 7 years, 2/3 of the investment was counted and the full amount may be counted if the property's life was over 8 years. Because of the above rates, it was very important not to over estimate life of the property. If property was sold before the years of depreciation was fulfilled a refund was due the government. The amount of credit for any one year is limited to $25,000 or the tax liability, which ever was less. "However, if your tax liability is more than $25,000 and your credit also more than $25,000, the credit was limited to $25,000 plus ¼ of the tax liability which exceeds $25,000."[1] But to overcome this, unused credit may be carried back three years (not before January 1, 1962) or carried forward to the five succeeding years.

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[1]Farmer's Tax Guide, 1963 Edition, Pub. 225, Internal Revenue Service, U. S. Treasury Department, Washington, D. C., 1962, p. 32.

If these periods expired before the credit was used, the unused amount could be used as a deduction. As mentioned earlier this credit did not apply to livestock or to new buildings. Real property included in this rule was that property used in production such as fences and tile drains. To make tax reporting more difficult, a new tax form, 3468, was added on which to calculate the 7 percent investment credit. This investment credit would reduce most farmers' tax payments and would entirely eliminate income tax for others.

There were many things to be considered when paying taxes and to reap the greatest benefit the farmer had to have a general understanding of these points. "A farmer need not be a tax expert, but he should know enough about taxes to recognize the income tax aspects of a farm decision. If he knows how to look for tax problems, he will know when he needs tax advice.[1]

The following tax reporting reminders taken from the publication "Income Tax Management for Farmers," illustrated the increased importance of management because of the increased affect which tax has had on Kansas farmers compared to the past.

1. Be sure that CCC loans are not counted twice (in one year when borrowed and next year when the crop is sold).

2. If using the cash method, deduct cost of purchased livestock lost, strayed, or stolen or which died during the year.

3. If using the accrual method all purchases of livestock should be recorded. Make a "livestock number check" to see that the total number purchased, born, and on the beginning inventory equal the total sold, died, butchered, and on the ending inventory.

4. Deduct the farm share of the cost of auto and truck licenses, insurance, etc., as well as gasoline, oil, repairs, and depreciation.

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[1] Income Tax Management for Farmers, North Central Regional Pub. No. 2 of Agricultural Extension Services, 1960, p. 9.

5. Deduct as much expense of auto, utilities, telephone, etc., as is actually used in the farm business.

6. Take all depreciation allowable on depreciable improvements, machinery, equipment and on purchased draft, breeding, and dairy livestock.

7. Keep records to insure deduction of easily overlooked items such as farm magazines, organization membership, bank service fees, overnight business trips, portion of dwelling used for farm use, losses on household goods used for hired help, and cash outlays to board hired workers.

8. Itemize on bank deposit slips all gifts, borrowings, sale of bonds, etc., so that there is no chance they will be considered farm income.

9. Keep records of all medical, dental, and hospital bills, including payments for accident and health insurance.

10. Keep exact records of dates of purchase, cost and date of sale of all items sold.

11. Do not include in income any indemnity for diseased animals if the payment has been or will be used to purchase "like or similar" animals within one year.

12. Deduct social security tax paid on farm laborers.

13. Keep all paid bills, invoices, cancelled checks, etc., for at least five years, including checks used to pay income taxes. Pay bills by check whenever possible. Write down all other payments at once in an account book. Get the bank statement each month and check it against the farm account book.[1]

There are a few other points which may be added to the above list. It was mentioned in one of the above points, but should be clarified that it was very important for the farmer to make certain sales were even from year to year. Don't plan sales so one year your income is extremely high and less than personal exemptions the next year. With the graduated tax the farmer didn't have to pay as much tax if the income was more nearly the

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[1] Fagen and Macy, Public Finance, Longmans, Green and Co., New York, 1934, p. 493.

same from year to year. Also, as has been mentioned this leveling out of income had to be carried out to get the greatest benefit from the social security tax.

There were several other taxes that were important to management on the farm in Kansas. Federal estate tax and gift tax were very important when a farmer was transferring property. The federal estate tax was adopted in 1916. At that time the law read that there would be a 10 percent tax on all property with a valuation over $5,000,000 to 25 percent tax on all property in excess of $10,000,000 with a $50,000 initial deduction. In 1926 a progressive tax was created for the estate tax. "Under the Revenue Act of 1926, a progressive tax was levied on the remaining net estate, ranging from 1 percent on a net valuation of $50,000 to 20 percent on a net estate valuation in excess of $10,000,000."[1] There have been considerable changes since the 1926 act. In 1962 after deductions were made the additional exemption was $60,000 instead of the $50,000 as in 1926. Also the progressive rates were altered as was illustrated in the table on the following page from North Central Regional Pub. 127.

The federal gift tax was created in 1924, repealed in 1926 and restored again in 1932. All gifts of property were to be taxed at the same rate as was imposed on estates of like sums. This tax was adopted basically to keep people from giving property or estates away before their death to escape having to pay estate tax. When the gift tax was first enacted gifts to charitable institutions could be given free of tax. Also the first $50,000 given was tax free. As in the federal estate tax there have been

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[1]Fagen and Macy, Public Finance, Longmans, Green and Co., New York, 1934, p. 493.

TABLE 10

THE FEDERAL ESTATE TAX RATES ON DIFFERENT SIZES OF TAXABLE ESTATES[a] [b]

Taxable Estate	Amount of Tax
Not over $5,000	3% of the taxable estate
5,000 to 10,000	$150 plus 7% of excess over $5,000
10,000 to 20,000	500 plus 11% of excess over 10,000
20,000 to 30,000	1,600 plus 14% of excess over 20,000
30,000 to 40,000	3,000 plus 18% of excess over 30,000
40,000 to 50,000	4,800 plus 22% of excess over 40,000
50,000 to 60,000	7,000 plus 25% of excess over 50,000
60,000 to 100,000	9,500 plus 28% of excess over 60,000
100,000 to 250,000	20,700 plus 30% of excess over 100,000
250,000 to 500,000	65,700 plus 32% of excess over 250,000

[a]Credits for State Inheritance or Estate Taxes are not shown.

[b]Family Farm Transfers and Some Tax Consideration, Special Bull. 436, Michigan State University, East Lansing, Michigan, 1961, p. 39.

important changes in the gift tax which affect management in Kansas agriculture. In 1962 each taxpayer could give $3,000 to any number of individuals free of tax each year. In addition he had a $30,000 gift tax exemption over his life time. This could have been an accumulated excess over the $3,000 annual exemption. All gifts in excess of these amounts were subject to tax. Gifts given by husband and wife may have been doubled and each one was treated as giving half of the amount. The following table from the North Central Regional Pub. 127 showed the progressive tax rates that were in affect on gifts in the United States in 1962.

By showing the many changes that have taken place in our federal and state tax system it was evident that management was becoming increasingly important to the Kansas farmer and with expected future changes, management

TABLE 11

FEDERAL GIFT TAX RATES ON TAXABLE GIFTS IN EXCESS OF ANNUAL EXCLUSIONS, LIFETIME AND AUTHORIZED DEDUCTIONS AS OF 1960[a]

Taxable Gifts	Amount of Tax
$0 to $5,000	2.25% on excess up to $5,000
5,000 to 10,000	112.50 plus 5.25% on excess over 5,000
10,000 to 20,000	375.00 plus 8.25% on excess over 10,000
20,000 to 30,000	1,200 plus 10.5% on excess over 20,000
30,000 to 40,000	2,250 plus 13.5% on excess over 30,000
40,000 to 50,000	3,600 plus 16.5% on excess over 40,000
50,000 to 60,000	5,250 plus 18.75% on excess over 50,000
60,000 to 100,000	7,125 plus 21.% on excess over 60,000
100,000 to 250,000	15,525 plus 22.5% on excess over 100,000

[a]Family Farm Transfers and Some Tax Considerations, Special Bull. 436, Michigan State University, East Lansing, Michigan, 1961, p. 37.

would surely become more important.

> More and more good farmers are becoming convinced that tax management is an important part of running a farm business. To be most effective tax management must be practiced year-round, and careful consideration should be given at all times to the tax effects of each major business decision.[1]

Customs

Customs were continually changing and with these changes came management problems not previously faced. What would the farmer do for entertainment? What would he do with the leisure time which increased as more technology was used? These were only two questions which were part of changing

[1]Smith and Shapley, Federal and State Farm Income Taxes, 1962, Cornell University, Ithaca, New York, December, 1962, p. 27.

customs and mores the farm manager had to answer. How people carry out their social life was very important in any community and what social customs and mores they follow.

The greatest change which occurred in customs and mores came about from the increased movement and intermingling of urban and rural populations. Customs and social law were many times forgotten in the discussion of institutions affecting agricultural management, but were very important factors affecting management. The intermingling of urban and rural population or the so called "urbanization" of our rural population has changed many values. For example over the past 30 years the standard of living has increased in the rural areas. In the early thirties the farm was visualized as having very few modern conveniences and was usually on an unsurfaced road. During this time Kansas agriculture had gone from a subsistence agriculture, to a commercial agriculture and with this came many changes in values and customs. "As recently as 40 years ago Kansas had only mud roads that became impassable at times after heavy rains."[1] Because of these vastly improved highway systems the areas became more urbanized. Another cause of this urbanization and increased standard of living was the introduction of electricity to rural areas in Kansas. "In 1924 there were only about 900 Kansas farms that had centerally generated electricity. Now virtually 100 percent of the farms in the state are electrified."[2] With the increased use of electricity on the farm came an

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[1] Kansas Agriculture, 44th Report, Kansas State Board of Agriculture, Topeka, Kansas, June, 1961, p. 131.

[2] Ibid., p. 135.

increased number of management decisions. Work could be done quicker and also could be done at night. This greatly changed the social life of the farm. Farmers at one time would spend the evening hours with his family, but with the introduction of electricity many other things could be done in the evenings. Many household items, began to become available and decisions had to be made by managers of the farms about their use. One decision which had to be made that was of relatively little importance 25 to 30 years ago was that of deciding to re-invest in machinery or other productive commodities or to buy consumer goods such as a television, a boat, or an added recreation room or a patio. All these commodities would not have been considered by most farmers 30 years ago. With urbanization and increased standard of living have come changes in preference for food. This affected the Kansas farmer both as a producer and a consumer. As the standard of living on farms increased the housewife preferred to buy milk in a paper carton rather than bother with producing it on the farm. With this change the farmer no longer had to keep a milk barn for two or three milk cows that were undoubtly rather inefficient producers. Another change which has come because of changed customs is the disappearance of the farm poultry flock of 25 to 30 birds. It was much more convenient to go to the super market in town than to bother with the small flock of chickens.

As a producer, the Kansas farmer was concerned with this increase in living standard as it affected eating habits because it changed the demand for certain food products. Although the demand for all goods were very inelastic, certain products were rather elastic. For example as the standard of living went up less starch foods such as potatoes and bread were consumed, but more meat products were consumed in their place, although the total per

capita food consumed changes very little. He had to make the decision to produce that commodity for which there was the greatest demand. The most difficult job of management associated with all the changing institutions was learning about the many changes. Although changing state and federal laws may not make management more technical, the function of observation and analysis was still very important. Because of the rapidly changing laws the consequence of poor decision making or the acceptance of responsibility was greater and there was less room for error in decision making by the good farm manager. The tax laws changed so much that a little extra time spent as a manager many times made the difference between profit and loss. The farmer also had to realize that he was living in a changing social world and that many of the values held when agriculture was at a subsistent level were greatly changed when farming became commercialized.

CHAPTER IV

THE EFFECT OF INTERDEPENDENCE OF THE FARMER WITHIN AGRICULTURE AND WITH OTHER SECTORS OF THE ECONOMY ON MANAGEMENT

The importance of industries outside agriculture which have affected agriculture was very great. Although not classed as such, throughout this report this fact has come to the surface many times.

> The agricultural world and the industrial world are not two separate communities with merely a buyer-seller relationship. They are so bound together and so interrelated that we must think of them jointly if we are to reach sound conclusions about either one.[1]

There were various reasons for this interdependence of our economy. One such factor was of course the increased use of technology. Another factor would have been the increased need for capital. The interdependence of agriculture and off-the-farm industries was divided into two areas; selling and buying. The non-farm industries include marketing and processing agencies. Also included would be the service agencies such as banks and loan companies. M. L. Upchurch, Assistant Chief, Agricultural Research Service, U.S.D.A., thought there were two revolutions going on in agriculture in 1958. First was the technological revolution which was evident to all. The second was the "economic revolution."

> For want of a better term, I shall call it an economic revolution. It is a revolution in ways of doing business in America

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1 _____ The Yearbook of Agriculture, 1960, U. S. Government Printing Office, U.S.D.A., Washington, D. C., 1960, p. 382.

> agriculture. You will note that I used the term "in American agriculture" rather than "farmers", because farmers do not operate independently and the economic revolution affects all levels of farm production and marketing.[1]

Interdependence in selling of agricultural products has been affected by: First, integration, vertical and horizontal, has tied the entire economy closer together. Second, contract farming which may be a form of integration, was another tie between agriculture and the rest of our economy. Also selling cooperatives have had a great influence on the American economy. The following was an illustration of the increase in basic decisions which had to be made by the farmer. The author called these basic decisions because they were decisions which had to be made before production was even started. The farmer must decide if he was going to "go it alone" and take the risk of changing price or if he should contract his crop so as to be assured of a certain price. If the farmer decided to contract his products he must then decide what type of contract was best for his situation. Upchurch brought up the two major types of contracts in a talk given to a joint seminar of staff members of the Federal Extension Service and the Farmer Cooperative Service in Washington, D. C.

"One that I shall call "standard contracts" means those that prepare well in advance of any decision on them. The other major type of contract might be called "special contracts."[2] The first type was one where all

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[1]M. L. Upchurch, "New Decisions Farmers Must Make in Contract Farming," Talk prepared for delivery before a joint seminar of staff members of the Federal Extension Service and Cooperative Service, Washington, D. C., October 23, 1958, p. 1.

[2]Ibid., p. 3.

arrangements were made well in advance of decisions on them. Upchurch said these were made on a "take-it-or-leave-it basis." The other contract negotiation was made at the time agreement was reached. Both of these major types of contracts required that the farmer make many decisions not made when selling in a completely free market. Under the standard contract the farmer had to know the costs of all resources used. He had to figure what the expected value would be at sale time. The farmer should know what risks exist and how they would be shared. The farmer had to be aware of all possible choices. Under special contracts the farmer had to know what conditions he would be expected to meet in the future. He had to have all this information at his finger tips when he was negotiating the contract. Many farmers believed they would be reduced to mere laborers by contract farming and vertical integration. This would happen only if they wanted it to happen. The farmer could be the coordinator of contract terms in many cases just as well as the middle man.

> Moreover, farmers are not abdicating their role as managers because of contract farming. Their role as a manager is becoming even more important. To be sure, some of the decisions formerly made by farmers in the course of production of a particular commodity may now be made for them, as specified under contract or some other obligation. But the farmer may have an even greater responsibility, in making sure that the specification he agrees to in this contract are proper and adequate and to his advantage. At the same time, because contracts obligate him in the future, his role as a manager, a coordinator, an organizer of future events, becomes more important, more specific, more demanding.[1]

Management has not been unimportant in an agriculture that has been as interrelated with industry as that of Kansas. Management decisions could not be made with only a single farm enterprise in mind, but rather the

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[1] Ibid., p. 5.

farmer had to take into consideration consumer wants and needs. The farmer was more interested in the market and its effects on him as a producer than he ever had been in the past.

> Changes in market structure, particularly at initial levels, have increased producer interest in markets and marketing decisions. This is not to imply that attention has shifted from questions of production efficiency but that the managerial input in agriculture has necessarily been expanding in perspective.[1]

These changes have increased the need for emphasis upon proper and direct planning, upon analysis commitments before contracts are given final approval, upon an effort to look ahead and anticipate those demands and conditions that provide favorable opportunities in the future.

As was mentioned earlier the farmer needed not to be reduced from his managerial position. This would only happen if he so chose. The use of cooperatives was one way many farmers could continue making their own management decisions. Under this the farmer had much more bargining power than if he sat back and waited for the processers or distributors to contact him. The basic reason for this increased use of contract farming, vertical and horizontal integration, cooperatives, etc. was the increased desire by producers to increase their bargining power in the market. Even without various cooperatives and contracts the farmer as a producer became more dependent on the market. More of his commodities were being sold off the farm. As the farms became more specialized the farmers became more dependent on service and processing agencies. For example the wheat farmer became dependent on what the elevator, the flour mill, or the bakery wanted or was willing to pay. As more of the beef farmer's product went to market

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[1]C. O. McCorkle, "Economics of Marketing and Producing Firms in American Agriculture," Journal of Farm Economics, Vol. 43, May, 1961, p. 407.

he became more dependent on the meat packer.

The interdependence of agriculture and industry seemed to be even more important when thinking of the farmer as a consumer or buyer than when considering him as a producer. As was mentioned in the section on changing values and customs, it was better to specialize in the production of a few commodities rather than trying to be a self-sufficient unit. Milk, eggs, meat, bread and various other articles were bought instead of being produced on the farm. Although not mentioned as such, throughout this report it was evident that farmers were becoming more dependent on industry for products used in agricultural production. In the section on technology it was pointed out that the farmer was dependent on seed dealers, machinery dealers, etc. In the section on increased size of operation it was very evident that credit facilities were becoming more important to the farmer. Earl Butz gave a very good illustration of the growing importance of management on the farm because of the interdependence of our economy in the Yearbook of Agriculture, 1960.

> The modern farm operator is much less self-sufficient than his father was. He buys many goods and services needed in his production that father produced on the farm. In a very real sense, he assembles "packages of technology" that have been put together by others on a custom basis. For example, he buys his tractors and petroleum, whereas his father produced horses and oats. Think for a moment of technology that goes into the modern feed bag, with its careful blending of protiens, antibiotics, minerals, and hormones, as contrasted with the ear corn and a little tankage put out for the hogs in his grandfather's day.
>
> This development obviously calls for a high level of managerial capacity. It is more difficult to manage the modern commercial farm successfully than it is to manage the family-sized manufacturing concern, grocery store or foundry shop in the city.
>
> The manager of the modern commercial family farm must make more managerial decisions each week covering a much wider range of subject

matter than does his counterpart in the city.[1]

Only ten to twenty years ago the stereotype of a farmer was "a man with a strong back and a weak mind." In 1963 this stereotype would not be a successful farmer, although this doesn't mean the earlier stereotype was very successful either. It has been proven time and time again that a few minutes spent in thought will many times save hours of labor and also that the time spent working will be much more profitable to the farmer.

> Today's farm operator is a combination manager-applicator of the life sciences, the physical sciences, and the social sciences. The research undergirding modern agriculture ranges all the way from physics to physiology, from biology to business.[2]

In the past the necessities for production in agriculture were land, labor, and capital, but management has to be added to this list as a separate all important unit. Farming in Kansas became an extremely interrelated part of the United States economy and the efficient and proper use of management by these farmers would determine whether they were to be successful business men competing in a modern economy or subsistence farmers, so to speak, who would get a large share of their income off the farm and eventually be pushed completely off the farm to be replaced by those who are better managers.

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[1] _____, Yearbook of Agriculture, 1960, U. S. Government Printing Office, Washington, D. C., USDAF, p. 382.

[2] Ibid.

SUMMARY AND CONCLUSIONS

Kansas agriculture has become so dependent on management as one of several input factors that management must, by necessity, top the list of inputs in agricultural production. It would be foolish indeed for any man to start farming if he did not possess a very high level of managerial ability. Throughout this report it was pointed out how particular changes have affected management. The general change which came about in the managerial input in Kansas agriculture has been omitted until this time because to mention it in each section would only mean a repetition of the same thing all through the report. As one will notice as he reads this report each section was interrelated to the next.

Kansas agriculture has changed from an industry in which art and tradition played the dominate role to an industry dependent upon science and scientific methods. In grandfather's day he planted corn or raised cattle or hogs because that was what his father had done. He planted his crops at certain times because the signs were right. In 1963 the manager of a modern Kansas farm raised certain crops or livestock because they had a comparative advantage over some other enterprise. He planted his crops not by some superstition, but rather because the temperature was warm enough to germinate the seed or there was enough moisture for the crop to get started. Application of science continued from the beginning of production until the product had been successfully marketed.

Beginning with the introduction of increasing amounts of technology each section was closely related. As increasing amounts of technology were used in agriculture, the remaining operators increased the size of their operations. They increased the physical size of the operation to spread high fixed costs. They increased the financial size of the operation to make the increased amount of technology economically feasible. If they were to change from horse power to tractor it would cost more to own one tractor than a team of horses. Because the tractor cost more and its ability to perform work was greater the farmers had to increase the physical size of their operation. Because of the increased size of operation the institutions had to change to stay up with the changes being made. Increased use of technology also caused institutions to change. For example greater tax deductions in the form of depreciation on machinery had to be allowed so the farmer could write costs off faster. This was due to rapid introduction of technology causing machinery to be obsolete before it could be completely depreciated. Because the size of operation increased and the associated specialization became apparent the farmer became more dependent on the non-farm industry. Also technology made these two sectors of our economy more interdependent. As less and less of things needed were produced on the farm the farmer became more dependent on industry. Increased complexity and importance of management in Kansas agriculture was the most evident fact that came out of this report. All the changes which were illustrated in this report increased the complexity of management. Observation, analysis, decision making, action and acceptance of responsibility all became more complex because of the increased alternatives to which the farmer could allocate his scarce resources. Acceptance of responsibility became

a great burden to the manager because of the increased number of people affected by the decisions which he made. As was mentioned in the section on interdependence of the farming and non-farming sectors, the importance of this interdependence greatly increased. The farm manager must keep in mind the demands not only of his immediate family but also twenty-two other people which each farmer in the United States could feed in 1963. Agriculture was expanding and with it so was managerial ability. A breakdown of management into its five functions illustrated how all the changes affected management. Observation in all four cases became more complicated due to the increased number of observations needed to have a working knowledge. Analysis became more complex also because, as in the case of technology, as each new inovation was introduced it was more complex and needed longer to completely analysis part by part so as to have a complete understanding so decisions could be made based on some scientific knowledge rather than a guess. For the same reason decisions became more difficult. As technology increased there were more ways of allocating scarce resources. The importance of action and acceptance of responsibility became more important due to increased number of people affected by the decisions which were made. Earl Butz sumed up what has been said in the summary in the Yearbook of Agriculture 1960.

> American agriculture is an expanding industry in every important respect except one - the number of people required to run our farms. Our agricultural plant each year uses more capital, more science and technology, more managerial capacity, more purchased production inputs, more specialized marketing facilities, and more research than the year before.[1]

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[1] _____ Yearbook of Agriculture 1960, U. S. Government Printing Office, U.S.D.A., Washington, D. C., 1960, p. 381.

In conclusion changing institutions, increased use of technology, increased use of capital and the related increase size of operation caused the farming and non-farming sectors of our economy to become more interdependent. Because of these changes management on the Kansas farm was more technical and precise than in the past. And because these changes have not come to a halt managerial ability will become even more important in the future to the successful farmer in Kansas.

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FACTORS AFFECTING THE MANAGERIAL INPUT ON KANSAS FARMS

by

LONL REX STUCKER

B. S., Kansas State University, 1962

AN ABSTRACT OF
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submitted in partial fulfillment of the

requirements for the degree

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Department of Economics and Sociology

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Management has become an increasingly important input in Kansas agriculture. Agriculture has changed from an art, where tradition played the dominate role, to a production process based on decisions derived from science and scientific methods.

The objective of this report has been to identify the changes which have affected management on Kansas farms. It was the authors intent to explain how these changes have affected management.

Increased importance of managerial ability has been caused by several factors. In this report the changes affecting management on the farm were categorized into four parts; technology, size of operation, institutions and interdependence of the farm and non-farm sectors of our economy. Technology has become a prime factor in increasing the need for improved management on Kansas farms. In this report technology was sub-divided into that which has been introduced into crop production, livestock production and equipment used in Kansas agriculture. The increasing use of technology has necessiated the increased use of capital and a corresponding increase in the size of operation. In the part on size of operation it was explained how both the increased physical size of farms and amount invested per operation had increased the need for better management over that which was needed with the smaller operations of the past. Institutions have also greatly affected management on Kansas farms. Examples are changes in federal and state laws and customs and social laws. Laws authorizing tariffs, quotas, and taxes have increased so much in complexity that it is very difficult for the farmer to understand the impact of them on his business. Specialization and commercialization have caused the farm and non-farm sectors of our economy to become so interrelated that any management decisions made by the farm manager

in Kansas affect not only his immediate family and business but many other participants in the economy that may be only indirectly associated with the farm operation.

Because of these four factors the managerial input on Kansas farms has become more important. The problems with which the farmer is faced have become much more complex therefore his decisions, in many cases, must necessarily be more precise. Also the number of decisions have greatly increased because of these factors. And if the present rate of change continues in these areas management will continue to be an important input in Kansas agriculture.

This report has been written to be included as part of a Kansas Agriculture Experiment Station study designed to provide information that may be useful in understanding the managerial function and how its quality may be improved.

The materials used in this report were taken from Farrell Library and Farm Management Association records.