

The Opportunity News, Atchison, Topeka and Santa Fe special train newspaper

The Atchison, Topeka, and Santa Fe Railroad ran special trains to encourage farmers along its routes. This is a two page newspaper that was distributed in Kansas in 1925. The content contains information about improving wheat farming, dealing with the Hessian Fly, etc. J. F. Jarrell, AT&SF promotions, gives the company's reasons for running the trains on page two. He wrote that the lectures and demonstrations that accompany the train provides the farmers with the latest information on how to improve their yields. Another article on page two is by J. C. Mohler, secretary of the Kansas Board of Agriculture. Mohler states that Kansas is top in wheat production but that farmers need to continue to update their practices to improve quality and quantity. There is a picture of Vada Watson, the Kansas Wheat Girl, on page one.

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THE OPPORTUNITY NEWS

ABOARD THE OPPORTUNITY SPECIAL, A. T. & S. F. SYSTEM, JULY 20-AUGUST 1, 1925

GOOD SEED WILL HIKE PRODUCTION

SUMMER POINTS OUT WAY TO
AVOID HEAVY LOSSES

Reduction in Dockage, End to Mix-
tures, Higher Yields, Less
Weed Trouble Listed

GOOD SEED AVAILABLE

There are three sources of good seed wheat available in Kansas this fall.

Seed wheat raised on your own or a neighbor's farm known to be pure and free of weeds, rye, smut. Approved seed wheat produced from a field inspected and declared pure by a county agent, free of rye, smut and apparently well adapted. This is known as approved seed.

Certified seed wheat, produced by a member of the Kansas Crop Improvement association, which was inspected in the field by a representative from the agricultural college and pronounced pure, free from rye and smut, and apparently adapted.

"All we need out here is moisture, hundreds of you growers have told me. Unfortunately, there's not much we can do about that, but I sincerely believe that there are other factors concerning wheat production within your control which have as great an aggregate effect upon your bank account," H. R. Sumner, the college agronomist who planned the Opportunity Special, tells Kansas growers.

With the same sincerity and enthusiasm as Woody Hockaday manifested in spreading the fame of Kansas wheat, Sumner stresses the value of good seed.

Good Seed Wheat

"A valuable reward awaits the Kansas wheat grower who heads the demand for quality grain. The market pays a premium for quality product. Why not collect yours?" he queries.

Proper recognition of quality was difficult to attain previously to the establishment of the Federal wheat grading standards but now each grower may sell on a definite grade basis, he pointed out.

"Certainly there are a great many things which affect the quality or grade of marketed wheat. However, of all the determining factors, good seed is admittedly the basic consideration. The first requisite for high yield is a uniform stand and the fundamental cause for a good stand is good seed.

"The principal advantages secured by planting good seed are: Reduction in the amount of dockage, eliminating mixtures, principally rye, higher yields and less weed competition.

Dockage Losses High

"The amount wheat growers lose annually by reason of dockage is enormous. Dockage in wheat is the dirt, sand, weed seeds, stems, chaff and straw, or in other words dockage comprises all material other than wheat which could be removed from the grain by proper cleaning.

"The amount of dockage in wheat cannot be controlled entirely by the purity of the seed planted. Fully 25 per cent of the causes of dockage would be removed, however, if quality seed were used. Small grain mixtures, presence of weeds, unevenness in ripening, and uniformity in height are factors that increase the amount of dockage and are ones that may be eliminated through the use of good seed.

Volunteer Rye a Menace

"Rye in wheat is a preventable loss. The fact that more than 2½ per cent of the hard red winter wheat coming into Kansas City, grades

down one grade or more because of its mixture, indicates that we fail to appreciate the magnitude of this great leak. Terminal markets dock wheat that contains five per cent rye at least five cents per bushel.

"The magnitude of this loss to the Kansas grower seems all the more glaring when it is realized that any community or county in Kansas may, by concerted action, rid itself of volunteer rye within three years time. A simple formula for rye control is to rotate the infested fields into row-crops; cultivate out the rye; then raise rye free grain by planting rye free seed on rye free ground.

Good Seed Yields Well

"The standardization of wheat varieties in Kansas is probably more nearly perfected than in any other state in the Union. The fact that practically all the wheat raised in the hard winter wheat belt of Kansas is of either the Turkey or Kanred variety accounts largely for the state's success in producing the best wheat of the world. Notwithstanding this condition, however, there are certain strains of either Turkey or Kanred that undoubtedly will produce more than others.

"The state college has found that Kanred wheat is the best hard red winter wheat for the hard winter wheat belt of Kansas. Turkey or Turkey Red, it is a good strain, is a close second best variety. Kanred is a pure selection of Turkey and the average person cannot distinguish between the two varieties. These two varieties are supreme in yielding power, quality, flour yield, protein content, winter hardiness, and all the other factors that compose a good wheat. The list of seed growers supplied on the Opportunity Special comprises as near as it is possible to ascertain, the best strains of those two varieties."

Don't Store Damp Grain

"Bin burn" or "stack burn" wheat, which sells at a heavy discount, is caused by fermentation which takes place when damp or wet grain is stored in a stack or bin.

HESSIAN FLY CONTROL A MATTER OF PREVENTION

Entomologist Outlines Methods to Follow in Preventing Huge Loss of Wheat

Important steps in the control of the Hessian fly are:

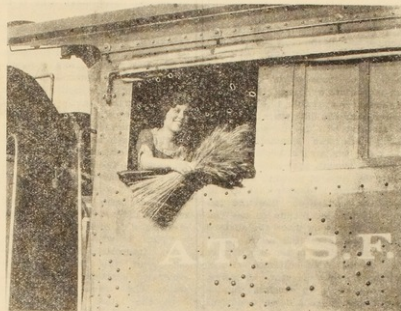
- Early, deep plowing of stubble.
- Proper preparation of seedbed.
- Destruction of all volunteer wheat.
- Planting at the time recommended by state experiment station or county agricultural agent.
- Rotation of crops.
- Cooperation of all farmers in the community.

"Twenty million bushels of Kansas wheat was the toll taken by the Hessian fly in 1924, declares E. G. Kelly, extension entomologist, aboard the Opportunity Special.

Control of Hessian fly, like control of many other cereal crop insects, is largely a matter of prevention and is dependent primarily on good farm management and cooperation. Once the fly infests the wheat crop, there are no remedial measures that can be applied," he said.

"Infestation in the fall wheat comes from two sources—the stubble of previous crops and volunteer and early sown wheat. Control of the fly, therefore, becomes a matter of handling these sources of infestation in such a manner as to destroy the fly and prevent the infestation of fall sown wheat. Extensive experimental work in Kansas has resulted in a method of control which is not only effective against the fly, but is also practical from the standpoint of good farm management."

Opportunity's Herald—Vada Watson



Vada Watson, the Kansas wheat girl, who is traveling with the Opportunity Special to help spread the news of better wheat farming practices, believes that even though Kansas grows the best wheat in the world now, the state's grain may be made even better.

"My dad tells me that it's possible and practicable to prevent wheat smut," Vada insists. Mr. Balmer says that by using good seed we can save tons of money every year. Mr. Kelly feels that by doing certain things we can get rid of those horrid Hessian flies. It's a little thing to

raise only a bushel or so more wheat on every acre here for Kansas it means an increased wheat crop of about 20 million bushels. That's lots of money and it will make Kansas a larger wheat state than ever before. I love Kansas and I love our wheat. I believe that a higher per acre production will help Kansas as no other one thing will accomplish. A higher per acre production will cause Kansas to continue to grow the Best Wheat in the World which is possible by virtue of a wheat climate, a wheat soil and understanding wheat farmers."

WHEAT THE MOST IMPORTANT CROP

IT BRINGS AVERAGE ANNUAL IN-
COME OF \$100,000,000

Maintenance of Kansas Supremacy
in Wheat Hinges on Adoption
of Scientific Method

By F. D. Farrell, President,
K. S. A. C.

Despite many complaints which have been made against the wheat industry of Kansas and many imperfections which that industry has, the fact remains that it means about as much in dollars and cents each year as any other agricultural industry in the state. It brings to Kansas farmers an average annual income of about \$100,000,000. This fact makes it desirable to foster the best development of the wheat industry in the state.

"But many Kansas land owners have placed too much dependence upon wheat. They have shown a strong tendency to overdo the wheat industry, to devote to it a disproportionate acreage of land and to place upon it a disproportionate share of responsibility. Because the wheat industry frequently is profitable, many land owners have attempted to overdo it, just as the farmer in the fairy story overdid a good thing when he killed the goose that laid golden eggs."

Supremacy Is Lasting

There is every reason to believe that Kansas will long remain pre-dominant among the political divisions of the world in the production of good wheat. The soil and the average climatic conditions of the state are favorable to this. The farmers are showing increased interest in improving their methods of producing, handling, and marketing wheat. The markets of the world are looking increasingly to Kansas for high grade raw material for the manufacture of flour. These factors working together support the belief that the predominance of Kansas as

a producer of good wheat is likely to continue for many years.

But it is certain that the wheat industry of the state can not be improved, or even satisfactorily maintained, unless there is increasing use of the facts of science in the various enterprises of the industry. The Opportunity Special which is being operated by the Santa Fe, the Kansas State Agricultural college, and the Southwestern Wheat Improvement association is operated mainly for the purpose of stimulating interest in improved methods for the wheat industry and of bringing to the wheat grower some practical, scientific information which has a bearing on the industry.

Not a Simple Industry

The wheat industry, whether in the state as a whole or upon the individual farm, is not a simple thing. It has many complex relationships. The welfare of the industry is influenced by economic and agricultural conditions throughout the world, by the cropping systems that are followed by wheat growers, by the kind of wheat that is used, by the control of insects and diseases which affect the wheat plant, by the treatment of the soil upon which wheat is grown and by the efficiency with which farmers individually and collectively carry on the various operations involved in producing, storing, and marketing the wheat crop.

The information which is being carried to the wheat growers along the Santa Fe line by this Opportunity Special is based upon long continued systematic experiment and upon the practices of successful wheat growers. It is information which has no value unless it is used. That the information is reliable has been proved in many instances by individual farmers and by small groups of farmers. There is every reason to believe that if this information is widely used the effects will be beneficial to the individual wheat grower, to the wheat industry, and to the state.

If poor seed is used the resulting crop cannot be the best, no matter how good the soil, how well the seedbed is prepared, or how favorable the weather conditions.

WHEAT MARKET IS HARD-BOILED

IT PLAYS NO FAVORITES STOK-
DYK REMINDS GROWERS

Watch the General Market Situation
and Sell a Quality Grain
Is His Advice

The wheat market is a cold, hard-boiled proposition and cares not a whit from whence comes the supply it needs. It would just as soon buy from Alaska as Kansas if the requirements it demanded were met, E. A. Stokdyk, Kansas State Agricultural college marketing specialist, reminds Kansas wheat growers.

"The proposition of meeting competition is squarely up to you," he said, "and fortunately you have two ways to do it—lower the cost of production and produce quality grain."

Acres Yields the Goal

"Experiment station workers have spent a great deal of time determining how more economical production can be accomplished. Methods they recommend fulfill the purpose of a better wheat campaign which is to increase the yield per acre. When a few more bushels per acre are raised the wheat grower gets a better return on his land, and also a greater return for his labor.

"Figures gathered on 60 farms in Harvey county show that when a grower raises less than 16 bushels of wheat per acre he gets a return of one bushel of wheat per hour of labor. When he raises between 16 and 20 bushels of wheat per acre, he gets a return of 1½ bushels per hour of labor. When a grower raises 20 bushels or more per acre he gets a return of two bushels per hour of labor."

When to Market

"To consider the marketing of wheat, it will be necessary to view the exports from competitor countries. In July and August the market is usually weak. This is the time of the year that Kansas, Oklahoma, and Nebraska are sending a large part of their wheat to market and when heavy competition from foreign countries is felt. In September and October, before Canada begins to dump her crop, the market usually strengthens. In November and toward the latter part of October, a period of weakness due to the Canadian rush to market may be expected. In January, with competition declining, there usually is decided strength in the market. February and March again bring a period of weakness due to exports from the Argentine and Australia."

Collect the Premium

"Test weight, dockage, foreign material, freedom from smut, freedom from bin burning, and freedom from insect damage are some of the things which must be considered. At present much attention is given to protein content."

"There is quite a difference in protein content of wheat produced on farms in the same locality but as a rule each man is paid the same price. Some Kansas elevator operators have started to buy on a protein basis, and have found it satisfactory. Growers are having protein tests made for their own information and have been paid handsome premiums."

"To have a test made take samples from several different places in the bin and mix them thoroughly. Place one-half pint of the mixture in an envelope and mail to the grain inspection department at Hutchinson, Wichita, or Kansas City. Mark the envelope 'Protein Test,' affix your name and address. County agents are willing to assist in taking samples and sending the grain for test."

A QUESTION FOR WHEAT GROWERS

WILL THEY USE GOOD OR BAD
METHOD OF PLANTING?

Good Method, Tried and Proved, Will
Help to Make Major Crop
of State Profitable

"There are two methods, one good and the other bad, for planting in the wheat crop. Both cost the same but the right method guarantees more wheat to the acre. Which are you going to follow?" is a question put by H. M. Bainer, director of the Southwestern Wheat Improvement association and an extensive wheat farmer.

Director Bainer said in part: "The average yield of the state, 13.5 bushels per acre, is not enough to make the crop very profitable and increased profits must come largely through increased yields per acre. "All of the experiment stations in the winter wheat territory of the Southwest, as well as the best wheat farmers, have clearly proved that land prepared in July will produce from five to nine bushels more wheat per acre than land with the same kind of work done in September.

Rotation Increases Yields

"For best results wheat lands must have a change. Under a continuous cropping system of wheat following wheat, the land is sure to become 'wheat-sick' in the course of time. There is no possibility of being able to maintain yields, when the same fertility elements are being constantly removed with no provision for returning anything to the soil. Besides causing decreased yields, continuous cropping is subject to greater risks and is more likely to be damaged by insects, plant diseases and weeds.

"Every farmer wants to be sure of a cash crop like wheat every year and he must have feed crops—both are essential. Any system that will properly combine wheat, feed crops and livestock will insure success. There is no need of discussing the amount of rainfall or the high evaporation of western Kansas; we are more interested in a system of farming that will collect the moisture and save it. Moisture is the controlling factor. Experience and observation show that some farmers are more successful than others, and when their methods are analyzed it usually shows that they know how to conserve the moisture. The best farmers are those who farm for the dry years every year and the poor farmers are those who farm for the good years.

Must Plow Occasionally

"The practice of continuing to prepare land for wheat year after year with a disk is responsible for much of the low yields. The use of a disk for the entire seedbed preparation, not only last year, but this year, and for the years to come, works out the vegetable matter, makes too shallow a seedbed, conserves very little moisture, and leaves the land in a condition to blow. For best results wheat land must be plowed or listed every three or four years.

"Early disking, plowing or listing is just as important for western Kansas as it is for the eastern part of the state. It destroys weeds, saves moisture and makes more plant food available. Anything that will keep the weeds from using the moisture will save it for the wheat.

How to Summer Fallow

"The practice of genuine summer fallowing does not permit a crop of any kind to grow on the land for one season—not even weeds. Under a proper system of this kind the ground accumulates moisture and this, plus moisture, along with the natural rainfall, practically insures the crop following for the next three years.

"One of the best plans to start summer fallowing is to leave all stubble, weeds and trash on the fields until late April or early May. This stubble will catch and hold snow and will also prevent soil blowing. As soon as the weeds begin to grow in the spring, this ground should be

double disked. This will cover the ground quickly; it will kill the weed and save the moisture, and will leave the ground in good condition to plow or list any time. Arrangements should be made to plow or list this land and complete the work before harvest, otherwise the delay for harvest will make it too late for best results.

"The secret of best results in plowing summer fallowed ground comes through packing it immediately after the plow. It is good practice to pull a packer behind the plow. If this cannot be done, arrangements should be made to stop the plow long enough just before noon and again at night to hitch the team or tractor to a packer and pack each half day's plowing before quitting. If no other implement is available, like a sub-soil packer, then the disk with the blades set straight will do the work quite well. While the common harrow will do much toward keeping down any weed growth that may start between the time of plowing and sowing, yet there is danger that it will make the surface too fine and too smooth. The best time to use the common harrow is when the surface is moist, being careful not to use it when the surface is too dry. It is often advisable to cultivate with a common harrow when the surface is moist, being careful not to use it when the surface is too dry. It is often advisable to cultivate with a tooth harrow is an excellent implement to use to keep down weeds on summer fallow.

Results of Summer Fallowing

"As an average for the past nine years the yield of wheat after kafir, where kafir was planted in the regular manner, has been 13 bushels. Where kafir was planted in every row and only one-half a stand the average yield of wheat has been 15.2 bushels. Where kafir was grown and the land was summer fallowed in preparation for wheat the average of wheat has been 25.9 bushels. This is practically twice the yield where wheat was planted immediately on the kafir ground.

Listing for Wheat

"Good listing is equal to plowing and sometimes better, for western Kansas sandy soils and those that are likely to blow should be listed. The lister furrows should be worked down early enough so the seedbed will become well packed before sowing time. Sixteen years' work at the Hays station produced an average yield of a little over 17 bushels of wheat per acre on early listed ground and during the same period early plowed land produced an average yield of almost 15 bushels.

"Reports from farmers who practice this wide row rotation show that they harvest more seed, one year with another, than from the every row system, and their wheat also makes better returns. At the Hays station during a seven year period, kafir planted in every row yielded 11 bushels per acre and wheat following yielded 11 bushels per acre. Kafir in wide rows yielded 15 bushels per acre and wheat, following produced 15 1/2 bushels.

STATE HAS NO RIVALS IN GROWING OF WHEAT

But Farmers Must Keep Quality and
Quantity Increasing, Mohler
Tells Them

J. C. Mohler, Secretary, State Board
of Agriculture

"The most vital thing in human life is three square meals a day. It is not of first importance how we live, but that we live at all. No less authority than Herbert Hoover has stated that the population of the United States keeps pace with our output and that we could not stand a reduction, in total production, of 10 per cent without suffering in every home in the land.

Wheat is our most important cereal food element and in its production Kansas has no close competitor, either in quantity or quality, and the most important problem before the wheat farmer of Kansas is to maintain both this quality and quantity.

As a wheat producer Kansas is especially favored. The greatest wheat producing country in the world is contained in a long, narrow strip

JARRELL TELLS WHY

The Atchison, Topeka and Santa Fe Railway company is running the Opportunity Special because the management believes the messages to be given from the lecture car and demonstrated by the exhibits shown are worth the careful consideration of farmers before wheat seeding time this fall, according to J. F. Jarrell, manager of the company's agricultural development department, who is in charge of the train.

"Our people have kept in close touch with the work of the Kansas Agricultural college and the state experiment station, and are convinced that the information representatives of these institutions are able to impart as to results of hundreds of experiments made will be helpful to farmers, particularly in the wheat belt," Mr. Jarrell said. "Investigation shows that farmers who followed the program now offered harvested a good yield of wheat this year, while their neighbors who followed other methods did not do as well, some meeting with total failure.

"That is why the Santa Fe, being interested in the prosperity of the farmers as a general business proposition, wants the wheat growers to have the latest data available as to methods successfully tried out by state and federal agencies. The only way to bring the information to the attention of the farmers without delay is to run a train, in cooperation with the Kansas State Agricultural college, and invite them to attend the meetings held at various stops."

of grass-lands extending from Oklahoma into Canada and averaging an equal distance from the mountains. With other grasses wheat especially thrives in this region, though the difference in climate requires the spring varieties in the north and the winter kinds in the south half of the state. Kansas, being in the middle of the south half, is the best known region on earth for the production of hard winter wheat.

This is important, not only because Kansas grows the best wheat in the world but actually produces one-half of all the hard winter wheat in America, according to the United States Department of Agriculture. A great importance is attached to this because the standard of living has so improved that Kansas hard winter wheat is in almost universal demand for blending with and strengthening other wheats before being ground.

No one ever heard of Kansas importing wheat to mix with our own in milling, but it is not so now. The fact that Kansas wheat is constantly sought to give tone and quality to pretentious makes of flour represents as peculiarly choice because the product of extra-fancy grades of spring wheat grown elsewhere.

Too much emphasis can hardly be placed on this fact. The territory in which it is possible to grow this type of hard winter wheat is very limited and the demand for it is rapidly increasing and will continue to grow. As we cannot materially expand the territory it becomes imperative that we secure a greater production per acre while maintaining its quality.

The value of the wheat crop in the United States seldom exceeds 7 per cent of the total of all crops and livestock but in Kansas the value of the wheat crop has averaged 35 per cent of the total of all crops and livestock. Kansas is distinctively a wheat state and will probably remain so and I would bring home to the farmers of the state the vital importance of co-operating with every agency in the adoption of such methods as will maintain the pre-eminence of the state in quantity production and at the same time maintain the quality as the best wheat in the world.

The Kansas State Board of Agriculture was largely instrumental in making known the value of hard winter wheat to the farmers of the state so that there is now practically no other kind grown, but it was the state Agricultural college which improved on these varieties and made it possible for Kansas to adopt the slo-

gan, "Kansas Grows the Best Wheat in the World." The result is that in the five years ending with 1924, Kansas led all other states with a total production in that period of 622,176,000 bushels of wheat, worth \$706,139,000, or averaging \$1.10 a bushel, as against 493,640,000 bushels, worth \$517,943,000, an average of \$1.04 a bushel for North Dakota, which ranked second in production.

LOSS OF SIX MILLION ANNUALLY IS USELESS

Copper Carbonate Dust Treatment
Will Prevent Costly Ravages of
Common Wheat Smut

Approximately six million dollars might accrue to the Kansas farmer each year if they practiced the smut control measures advocated by D. E. Porter, extension plant pathologist, in his demonstration aboard the Opportunity Special.

"Wheat smut," said Porter, "is a very tiny plant of growth similar to that of the higher plants. Instead, however, of getting food from the soil smut steals it from the wheat plant."

"A method of wheat seed treatment has taken the place of the formaldehyde. It is known as the copper carbonate method. Copper carbonate is a finely pulverized poison dust and has proved itself superior to formaldehyde in many respects."

The new method, he explained, consists of mixing thoroughly in an air-tight container the copper carbonate dust with the wheat seed at the rate of two to four ounces of dust per bushel of seed.

"This new method is simple," continued Porter, "it is essential that every wheat kernel be covered with the dust. This can only be done by using some revolving air-tight container and mixing for at least two minutes. There are, however, a few precautions which must be taken. First, be sure to use sufficient dust; it is very inexpensive. Second, do not try to mix wheat and dust by shoveling together in a wagon box, a horse trough, or on the granary floor. Third, do not treat seed that is badly smutted. Fourth, be sure to treat for at least two miles. The easiest way to treat and to treat correctly is to purchase a machine."

START WORK EARLY TO KILL 1926 HESSIAN FLY

Prepare Seedbed Early and Keep
Down Volunteer Wheat and the
Battle Goes Your Way

Seedbed precautions and volunteer wheat destruction are the two essential control measures for Hessian fly according to George Dean, head of the department of entomology at the Kansas State Agricultural college.

"Preparation of the seedbed has an important bearing on the control of the fly, as well as on the yield of wheat," Dean points out. "Infestation in the fall wheat comes from two sources—stubble of previous crops and volunteer wheat. Eliminate these sources by plowing or listing the land soon after harvest to a depth of about six inches. Be sure to turn the stubble under at least three inches of soil. The combined rolling coultter and jointer has been found very efficient in the covering of stubble, weeds, volunteer wheat, and trash. Listing and splitting the ridges about one month later has been shown from the standpoint of Hessian fly control to be preferable merely to listing and working down."

"It is not possible to plow or list soon after harvest, the land should be thoroughly disked. Disking not only conserves the moisture and makes plowing easier, but also starts the growth of volunteer wheat. This method is conducive to the early emergence of the fly. The land should be plowed or listed to a depth of about six inches and worked down into a good seedbed. The soil should be kept mellow and free from vegetation until wheat-seeding time."

ROTATION IS A SAFETY DEVICE

SHOULD BE USED WITH PROPER
SEEDBED METHODS

Present Season Points Weaknesses
of One-Crop System, Throckmorton Says in Statement

How to produce more wheat on fewer acres by averting many of the every-year common disasters that visit growers of the state was summarized by L. C. Throckmorton, head of the agronomy department of the Kansas State Agricultural college. A crop rotation and correct seedbed preparation were the two safety devices he recommended.

Seedbed Preparation

"Wheat is the leading cash crop of central and western Kansas and under normal climatic and market conditions, the most profitable grain crop grown in most of this region, but it cannot continue indefinitely to produce wheat profitably by growing it continuously to the exclusion of other crops and livestock," warned Throckmorton.

Importance of Rotation

"A crop rotation is not easy to plan in either central or western Kansas. The idea of growing wheat in a rotation is to produce as much or more on fewer acres. The rotation will not only increase the yield per acre, but will also increase the per cent of protein in the wheat and aid in controlling insects and diseases.

"Where alfalfa and sweet clover can be grown successfully the acreage of these crops should be increased. The rotation should also include some feed crops as corn where it is adapted and some of the sorghums. These crops should be fed to livestock on the farm.

Rotation for Western Kansas

"A rotation for most sections of western Kansas must be worked around wheat and a feed crop because we do not have leasurage, adapted to this region. One of the difficulties in rotating feed crops with wheat is to secure a good crop of wheat following the feed crops, as kafir, milo, and other sorghums. This can best be done by summer fallowing the sorghum ground before planting it to wheat. Summer fallow used in this way is also a good form of crop insurance. A very satisfactory plan is to grow about three crops of wheat with two years of feed crops after which the land is again summer fallowed for wheat.

Listing for Wheat

"Early listing is one of the best methods of preparing ground for wheat in central and western Kansas but late listing is a very poor method. Listing is especially an advantageous method when the acreage to be handled is very large. The method is rapid and economical. A large acreage can be covered more rapidly than by plowing and hence more land can be prepared early and at less expense. Listing is especially desirable on soils that are subject to blowing. In those regions where there is Hessian fly infestation it is desirable to double list. If the land is single listed, the ridges should be worked down as soon as possible in order that a firm seedbed may be produced. The comparative value of listing and plowing in preparation for wheat is well illustrated by the results secured at the Fort Hays experiment station which showed an increased yield of 2.3 bushels per acre from early listing over early plowing and of 7.4 bushels over late fall plowing.

"About one-third of the cultivated land should be used for the production of feed crops but where this is not possible the rotation may be changed to a five year system in which only one-fifth of the land would be used for feed crops.

"The advantage of summer fallowing ground after a feed crop, as kafir, instead of trying to grow wheat on such land has been well demonstrated by results at the Hays experiment station where wheat has been seeded both ways for the past nine years."