Farm News- From the Leading Agricultural Papers, and Instructive Hints From the Experiment Stations.

SOME WHEAT PROBLEMS

Outline of Lecture On Wheat Raising By Prof. Ten Eyck

Introduction.

The mere fact that Kansas has seven million acres of wheat gives little indication of agricultural prosperity. Our low average yield of about thirteen bushels per acre does not speak well for our methods of farming when we consider our comparatively new and rich soil and remarkably favorable climate for the production of winter wheat. The "wheat belt" has moved westward, and unless we awake to the actual conditions it may pass us as it passed Ohio many years ago. Then, too, the marked increase in land values should impel the Kansas farmer to seek methods of getting larger yields—greater returns for each acre. A yield of ten bushels of wheat on land costing $1.25 may have been profitable years ago, but that yield on land worth $50 or $75 an acre, with the attendant higher cost of labor, does not look well. It is apparent, too, that our population of nearly one hundred million people will soon demand practically our whole wheat product for home consumption. Therefore we must produce more wheat per acre; and, as we must begin to put much of our wheat land into clovers, alfalfa and peas, or other leguminous crops, to preserve fertility, it follows that this country, including Kansas, must produce more wheat from fewer acres. The Kansas Agricultural College stands for more wheat and better wheat, through better methods of breeding improved varieties, drought- and disease-resistant varieties, better-yielding varieties; then for better cultural methods, better farming, more legumes, more barn-yard manure; and then for such methods of culture as will destroy all injurious insects. It is therefore devoting the time of many men and thousands of dollars in careful experiments for finding out the best methods of wheat culture, of breeding the best seeds for distribution, and then it is spending more of the peoples money for carrying this information out to the ones who have so cheerfully contributed in taxes for the support of the "farmers' school and the farmers' farm." The following suggestions by Professors TenEyck, Freeman and Headlee are well worth careful study.

J. H. MILLER.

The Seed-Bed for Wheat.

In order to secure the ideal condition for seed germination and plant growth, a seed bed for planting wheat and other small seeds should not be too deep and mellow; rather the soil should be mellow, but well pulverized only about as deep as the seed is planted. Below the depth at which the seed is planted the soil should be firm and well settled, making a good connection with the subsoil, so that the soil water stored in the subsoil may be drawn up into the surface soil. The firm soil below the seed, well connected with the subsoil, supplies the moisture to the seed, while the mellow soil above the seed allows sufficient circulation of air to supply oxygen and favors the warming of the soil, gathering the heat of the sunshine during the day and acting as a blanket to conserve the soil heat, maintaining a more uniform temperature of the soil during the night.

The mellow soil above the seed conserves the soil moisture, acting as a mulch to keep the water from reaching the surface, where it would be rapidly lost by evaporation, and the same condition favors the growth of the young shoot upward into the air and sunshine.

The too mellow deep seed-bed is almost wholly dependent upon rains for moisture to germinate the seed start the young plants, and drought is very apt to injure the crop because of the rapid drying out of the loose surface soil. In such a seed-bed the crop is not only apt to "burn out" in the summer, but it is also more apt to "freeze out" in the winter than a crop grown in the "ideal" seed-bed described above.

Conserving Soil Moisture.

So far as the cultivation is concerned there are three principal steps in the conservation of soil moisture.

1. The soil must be loosened to a considerable depth in order to prepare a reservoir to receive the rain and carry the water downward into the soil. This may be accomplished by deep plowing, by listing, or by disking plowed lands.

2. The water which is carried down into the subsoil must be brought back again into the surface soil where the seed is germinating and the young roots are growing, and to accomplish this a good connection must be made between the furrow-slice and the subsoil, and this is the purpose of the use of the subsurface packer immediately after plowing. A similar result may be accomplished by plowing early, several weeks or months previous to planting, and depending on the rains, occasional surface-tillage and the natural settling of the soil to secure the "ideal" seed-bed.

3. Finally, in order that the water which is drawn up again toward the surface may not reach the air and be wasted by evaporation, the upper two or three inches of the soil should be kept mellow in the form of a soil mulch, and this is accomplished in the growing of crops by frequent cultivation.

Method of Preparing the Seed-Bed.

When wheat follows wheat or some other grain crop a suitable seed-bed may be prepared by plowing early, as soon after harvest as possible, and the fields should be cultivated with a harrow or disk at intervals until seeding time in order to firm the soil, conserve the soil moisture and destroy the weeds.

When the plowing is done just previous to sowing it is well to follow the plow with the subsurface packer and harrow in order to pulverize and the soil at the bottom of the furrow and leave a mellow, even surface. This packing and pulverizing of the furrow slice is especially necessary when the soil is plowed dry or when stubble, trash or manure are plowed under, because if the furrow-slice is left loose and unpulverized the capillary connection of the soil with the subsoil is largely broken off and the soil moisture will not rise into the surface soil to supply the germinating seed and feed the roots of the young plants; hence the seed fails to germinate well or the plant is often stunted in growth, and in such a seed-bed the crop is apt to "freeze out" or "burn out." Because of these results it is not safe to plow under coarse manure or a heavy growth of weeds or stubble in preparing a seed-bed for wheat or other small grains or grasses.

It is often a good plan to disk the ground previous to plowing. If plowed at once the loose surface is in better shape to more readily connect and reunite with the subsoil if the plowing is delayed the ground will remain in good condition for when the furrow-slice is inverted, and plowing for a much longer period during dry weather than land which has received no cultivation. It may often be advisable to practice early disking rather than early plowing where both cannot be accomplished. The surface mulch of soil produced by disking not only retains the water in the soil but offers a favorable surface to absorb the rains.

A new method of preparing the seed-bed for wheat is now coming into practice in western Kansas. The plan is to list the ground with an ordinary corn lister as soon after harvest as possible. The lister furrows are run about three to three and a half feet apart, very much the same as when the lister is used for planting corn. Later, when the weeds have started, the soil is worked back into the listed furrow by means of a disk-harrow or disk-sled.

In a dry climate this method of preparing the seed-bed may have several advantages as follows: (1) The cultivation of the land soon after harvest tends to conserve the moisture already stored in the soil; (2) the furrowed land is in good condition to catch and store the rain, and the later cultivation clears the land of weeds and leaves a mellow soil mulch to conserve the moisture already stored in the subsoil; (3) the early and continued cultivation of the soil favors the action of the batteria and the development of available plant-food.

The Seed.

Good seed means more than seed that will sprout and grow; it means well bred wheat adapted to the climatic and soil conditions of the locality in which it is grown.

The hard, red winter wheat and the soft red winter wheat are the two types best adapted for growing in this state, and these types have their special adaptation to certain sections of the state, the soft red wheat being superior to the hard red wheat only in the eastern and southeastern counties, while throughout the great central wheat belt of Kansas and in the west and north the hard wheat has been found to be the more hardy and productive.

There is no question but that some varieties of wheat are superior to others in hardiness, qualith and productiveness, and that certain varieties are better adapted than others for growing in certain section of the state. The tests at the experiment stations proves this, and a farmer should be well repaid for securing and planting a little pure seed-wheat of one or more of the best-producing varieties as shown by the tests at the experiment stations.

Several hundred varieties or samples of wheat secured from foreign countries and from farmers and seeds men have been planted and tested at the several Kansas experiment stations during the last six years. Comparatively few of these varieties have proved superior, and these have been purified, graded and selected, and the improved seed planted in larger areas for increase. During the past four years the Kansas Experiment Stations have distributed some 8,000 bushels of well-bred hard red winter wheat of these best producing varieties, such as Kharkof, Malakoff and Improved Turkey—all bearded Turkey wheat. This wheat has been redistributed by the farmers and sown in larger areas, and fields of it are now growing in practically every county of the state, the total aggregating some 200,000 acres. The tests at the Station and reports from farmres prove that this wheat is of greater yielding capacity and hardier and purer and of better quality than the wheat generally grown.

Several hundred letters of inquiry sent to growers of College-bred wheat have brought a large number of replies, very few of which are unfavorable. The following are extracts from some of the more favorable reports received:

Extracts from Reports of Growers of College-Bred Seed-Wheat

Kharkof wheat yielded 32.5 bushels per acre. Made about eight bushels more than the White Russian wheat grown beside it. Barber county.—W. H. Benton, Kiowa, Kansas.

Turkey Red wheat yielded 29.8 bushels per acre. More vigorous than other varieties; will yield one-third more than other wheat in the locality. Rice county.—O. R. Vincent, Alden, Kansas.

Sowed three varieties of College wheat: Bearded Fife, Kharkof and Turkey. Consider each of the three varieties superior to common wheat here. Harper county.—W. R. Moody, Harper, Kansas.

Kharkof wheat will yield three to five bushels more than other wheat. Stafford county.—D. W. Reazin, Macksville, Kansas.

Kharkof wheat better than surrounding fields; matured several days earlier; will yield five to ten bushels more than other wheat; yields 25 bushels per acre. Reno county.—C. C. Throstle, Nickerson, Kansas.

Malakoff wheat sown on my farm made a much better crop than other varieties—seemed hardier; straw was long enough to bind while other wheat had to be headed. Yield 24 bushels per acre, making four to eight bushels more than other wheats. Crop grown on upland. Mitchell county.—Claude L. Hendricks, Glen Elder, Kansas.

From the ten bushels of Kharkof seed wheat which I secured from you in 1907, I thrashed 554 bushels of fine wheat. Sowed fifty acres last fall and have just thrashed 1057 bushels of sixty-pound wheat, which is pretty good considering season. Other wheat in this locality made about eight to twelve bushels. Comanche county.—C. M. Sherman, Protection, Kansas.

The Experiment Station will have several hundred bushels of improved seed-wheat of these varieties and others for distribution this fall. Two promising new varieties are the Crimean and Ghirka. The Crimean is a bearded wheat of the same type as the Kharkof and Turkey, but appears to be somewhat better adapted for growing in warm climates and wet seasons. The Ghirka has some advantage in being beardless, being the only

(Continued on Page Seven)

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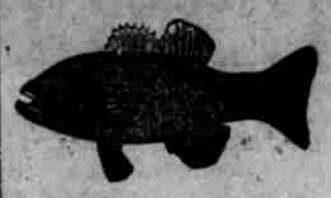

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