

September, 1917

COLORADO AGRICULTURAL COLLEGE
FORT COLLINS, COLORADO
Extension Bulletin

Series 1, No. 125

Colorado Agricultural College

EXTENSION SERVICE

Fort Collins, Colorado

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WHEAT GROWING IN COLORADO

BY ALVIN KEZER



CO-OPERATIVE EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS—
COLORADO AGRICULTURAL COLLEGE AND U. S. DEPARTMENT OF
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WHEAT GROWING IN COLORADO

BY ALVIN KEZER

Wheat is rightly considered one of Colorado's most important cash crops. It does well in a wide variety of conditions. It finds a ready market and gives rather satisfactory returns for labor, skill and capital expended in its production. During the 1917 season, Colorado has grown approximately 310,000 acres of winter wheat, which will produce approximately 7,500,000 bushels. The spring wheat acreage amounts to approximately 270,000, with an estimated production of over 5,947,000 bushels. Both the acreage and production could be increased by proper methods. Increased acreage and production would largely increase returns to the grower.

VARIETIES

There is practically only one type of winter wheat which should be grown under Colorado conditions, and that is, the Turkey Red. There are a number of distinct strains of Turkey Red, some of them superior to the general Turkey Red stock. The superior strains cannot be told by physical appearance from the regular Turkey Red, but they can be distinguished at the thrashing machine, because of a somewhat superior yield. Of these superior strains, the Colorado-grown Turkey Red, Khar-kov, and the new wheat originating in Kansas known as Kan Red, are superior.

It is of very decided advantage to grow one type of wheat for the market, because of greater cheapness in handling, greater uniformity on the market and consequently lower dockage for mixed grain.

Turkey Red wheat has only one serious objection, and that is, the straw is weak, which gives it a tendency to lodge when the yield is heavy, especially on very rich lands. But in spite of this defect, it will produce more bushels of grain per acre of a better quality for the market and for milling than any of the types of wheat so far experimented with.

The Fultz wheat will grow under our irrigated conditions, but is not adapted at all for dry land conditions. Fultz wheat is a semi-hard red wheat. It has stiffer straw than Turkey, but one year with another will not yield as well by several bushels per acre. It is, therefore, not recommended for general planting. Besides, the introduction of Fultz wheat, unless it is grown exclusively in a neighborhood, complicates the question of marketing, because it introduces mixed wheat into the market. Mixed grains always command a lower price than a single good type.

Of the spring varieties there is not as much uniformity in adaptability. For irrigated conditions, Defiance is better adapt-

ed for more Colorado situations than any other one variety so far tested. Defiance is a heavy yielder in the normal Colorado season, namely a season which is dry at the filling stage of growth and at harvest. Occasionally when we have a wet season Defiance lodges badly and does not do as well as two or three other varieties, but in our normal Colorado season, dry for the last growth and for harvest, no spring wheat is equal to Defiance for Colorado irrigated conditions.

Marquis is a hard, red, early-maturing spring wheat which originated in Canada. It will mature in about 10 days less than the Defiance. In seasons which are wet at the ripening and harvest period, Marquis is superior to Defiance in yield. In normal seasons it is not as high a yielder. It is well adapted for growing in short season localities because of its ability to ripen earlier. As a consequence it is better adapted for some of the high mountain valleys and high mountain mesas than Defiance because of its early maturity.

Bearded Red Fife has done very well. It does not mature usually quite as early as the Marquis, but matures earlier than Defiance. In wet seasons it will out-yield Defiance. In dry seasons it is not as heavy a yielder. Both Marquis and Red Fife are better adapted to dry land growing than Defiance.

A wheat which was originated by selection in Logan County by Mr. Charles Green, known as the Red Russian, has done very well in northeastern Colorado.

The Durum wheats are quite drouth resistant and are among the best of the spring dry land wheats for certain types of soil. The Durums do well on the black silt and black sandy lands of northeastern Colorado. There are a number of spring varieties of common wheats which will do better under dry land than Durums, except on the black soils. Durums have another objection. Unless they are grown in quantity in a neighborhood, their marketing is difficult. The Durum wheat market is as high as the common wheat market, but mixtures of common wheat and Durum sell for from 5 to 20 cents per hundred less than pure wheat of either type. It is, therefore, inadvisable to grow Durums unless a neighborhood is especially adapted for these wheats, and grows them exclusively. The best varieties of the Durums are the Kubanka, Gharnovka and Arnautka.

PREPARATION OF SOIL

Preparation of the soil may be viewed from two standpoints: The system of land management, together with rotation and manuring which is followed, and, the immediate preparation for a particular crop. Under irrigated conditions wheat should always be grown as one crop of a rotation in which alfalfa and cultivated crops constitute the other crops of the rotation or cropping system. Wheat should preferably follow alfalfa or if sugar

beets or potatoes are grown in the rotation, should follow sugar beets or potatoes.

The immediate preparation of the land must be considered from the standpoint of dry farming and irrigated farming. For winter wheat under irrigated farming, better results can be obtained by early and relatively deep plowing. The seed bed for irrigated winter wheat should be put in shape for seeding by disking the plowed land or disking and harrowing, followed by careful leveling. The seed bed on dry land for winter wheat should be prepared by plowing in June or July if possible; if not, early in August. Plowing late in the fall will give lower yields, and frequently will result in a failure of the crop, unless favorable fall rains come after plowing. On the lighter dry lands wheat may well be grown in a rotation system with a partial fallow one year in four, winter wheat constituting one crop, corn or beans one crop and some spring grain the third crop. For such a rotation, the land is plowed but once and that after the partial fallow. Such a system reduces the amount of work and prepares an efficient seed bed for the wheat crop.

SEEDING

Winter wheat on the dry lands should be seeded at a lower rate than on irrigated land because there is a lower supply of water available to grow the crop. Early seeding requires a smaller number of pounds per acre than late seeding, because early seeding stools heavier. For most dry land not over 30 pounds of seed should be used. If seeded early in September, 20 pounds on most dry lands will be enough of Turkey Red seed.

Seeding on most dry lands should be done about the middle of September, for our Plains region. In many mountain districts, seeding may be done by the middle of August. Earliness of seeding depends upon the season which is normal for a locality. If seeding is early enough so that the wheat joints in the fall, winter killing is inevitable. For most of our Plains regions, therefore, the middle of September is early enough. Large growers will sometimes have to plant a portion earlier than this, and a portion later, in order to get in their crop. Seeding on well prepared seed beds can take place on the plains east of the Rocky Mountains as late as the middle of October most seasons. Late seeding on poorly prepared seed beds is inadvisable.

On irrigated land, winter wheat should be seeded at the rate of about 60 pounds per acre. Spring wheat on irrigated land should be seeded at the rate of about 90 pounds per acre. On dry lands, spring wheat should be put in at the rate of 40 to 45 pounds per acre.

Winter wheat is so much better adapted for dry land growing under our conditions that it is far preferable to spring

wheat for dry farming. Spring wheat can be put in as early as possible in the spring and still miss heavy freezes. For most of our regions the bulk of spring wheat will be seeded in April. Occasionally some will be seeded as early as March. On irrigated lands with good water rights, seeding may be done as late as the 10th of May. On dry lands, spring wheat should never be seeded after the 20th of April, because of the character of our rainfall during the summer season.

SEED TREATMENT

Wheat is exceedingly susceptible to certain diseases, among which are smut, rust, blight, and others. There is no remedy under control of the grower which will help the rust situation. However, smut may be almost absolutely controlled by proper seed treatment. It is known that in the dry land regions the thrashing of smutty grain, especially contiguous to fallow land, will often infect the fallow fields. In such cases seed treatment is not an absolute preventive, but in any case, seed treatment very greatly reduces smut losses and often entirely prevents them.

The cleanest, cheapest and easiest method of smut treatment is the formaldehyde method. In using this method 1 pound (pint) of formaldehyde is mixed with 40 to 45 gallons of water just before the seed is to be treated. This treating solution may be put in a barrel and the grain in bags dipped into it, allowed to remain about ten minutes, pulled out and drained, covered up for two hours and then opened to the air. A very simple and easy method, however, is to put the seed to be treated in a wagon box, use a common garden sprinkler and treat the seed by shoveling, turning and sprinkling the grain until all is wet, after which it should be covered with tarpaulin or blankets for a couple of hours, and then opened to the air. It must be remembered that the formaldehyde treatment will kill all the smut on the outside of the kernels of the wheat treated, but that the treatment does not prevent reinfection if dirty bags, a dirty drill or other undisinfected appliance are used in handling the wheat after treatment.

The copper sulfate method may be used. In using this method 1 pound of copper sulphate to 15 gallons of water is about the right proportion. In this method it is preferable to dip the seed, leaving it in the treating solution ten minutes, allow it to drain and set it aside to be planted or dried out.

Either of these methods is effective in protecting the wheat from smut. By carefully planning the work, it is possible to treat seed wheat for smut for not over 10 cents an acre. When proper treatment is used, smut is almost absolutely prevented. Ten cents an acre is very cheap insurance. Consequently all seed wheat should be treated before planting. If all seed wheat in Colorado in 1917 had been treated before planting, it would

have meant over one million bushels more wheat grown in Colorado this year. Wheat is now selling for better than \$1.80 per bushel. Seed treatment, therefore, is the cheapest insurance in which the wheat grower may invest.

CULTIVATION

Occasionally on irrigated lands the surface is so smooth that blowing takes place. Where such is the case the blowing may often be stopped by rolling with a corrugated roller. Dry land wheat may be cultivated by harrowing with the spike tooth harrow or spring tooth weeder. A better practice, however, on the dry lands, is to roll with a corrugated roller for either spring or winter wheat, taking care, if possible, to roll when the surface is just a trifle moist, but not wet. If the surface of the soil is cracked on winter wheat, rolling with the corrugated roller is the best type of cultivation which may be given.

MANURING

On the dry lands, manure may be spread lightly on top of winter wheat. If a manure spreader is used such treatment will result in increased yields. On irrigated lands, it is advisable to apply the manure to other crops in the rotation system, letting the wheat get the residual benefits from the use of the manure.

HARVESTING

Best results are obtained in harvesting wheat by cutting at the yellow ripe stage; that is, when the grain is completely ripe, but not yet dried out, allowing the drying and curing to take place in the shock. Of course, in years when the straw is short on the dry lands and when the header is used, the grain must be allowed to get riper because it is taken directly from the header to the stack.

In a large proportion of Colorado wheat growing sections, wheat should be stacked unless the thrasher can be put to work as soon as the shocked grain has dried out and gone thru its sweat. Large wheat growers are finding it advisable to own small thrashing outfits, especially where they are plowing with tractors. By doing so, they can thrash when the grain is ready and thus expedite their work very greatly. The sooner wheat is off the land the sooner the land may be disked or given other treatment for the next crop. Unless thrashed immediately out of the shock, stacking is advisable, in order to clear the land and to save loss of grain by shattering and possible wetting.