

# Kansas State Agricultural College

## EXPERIMENT STATION.

### BOTANICAL DEPARTMENT.

## Importation of Seed Wheat.

The wholesale importation of seed wheat, advocated by some who are desirous of improving conditions in wheat growing in Kansas would be inadvisable, since it affords no remedy for existing conditions. Where wheat "runs out" it is due to one of several

facts:

1. Deterioration in size and quality of the grain, owing to poor soil and poor culture. This can be remedied by proper rotation, manuring, and cultivation.

2. Deterioration in variety. Wheat frequently consists of several strains of different value, in which certain ones of inferior quality get the upper hand under given conditions of soil and climate. The remedy for this form of running out lies in selective breeding of superior strains, beginning with single superior plants as starting points, the progeny of which have been tested for a sufficient number of generations to prove their worth. This is a very different thing from selecting a mass of superior looking grain, whether imported or domestic, for seeding purposes.

3. Deterioration may be due to an accidental mixture of different varieties in which one of the varieties in the mixture, though undesirable, may supplant the other. This case is similar to the preceding. These mixtures can be avoided by sowing a pure strain of the desired variety by itself for seed. The introduction of other wheat by means of travelling separators can be avoided by threshing the seed wheat after the general field has been threshed.

4. Deterioration in the hardness of wheat, where the wheat appears to become softer from year to year. If this is not due to the gradual increase of soft wheat originally present in the seed, it is due to the presence of "yellow berry" the appearance of soft, starchy grains in hard wheat — which occurs even in pure-bred strains coming from a single mother plant. The yellow berry is partly a climatic product, and as such cannot be cured by importations, since the new wheat will, if it already has the tendency, inevitably produce yellow berry in our climate. Yellow berry, however, does not occur in all wheat plants to the same extent. Breeding experiments at the Kansas Experiment Station show that it is, to a certain extent, a hereditary or racial tendency. The Botanical Department of the Experiment Station finds that strains free from yellow berry in 1906 gave rise to but 4 per cent of yellow berry in 1907, while strains with 75 to 100 per cent of yellow berry in 1906 have but 24 per cent in 1907. It is probable that the yellow berry can be bred out of our wheat. The Botanical Department now has in the field nearly 400 pure-bred strains of wheat in their third year, each of which came from a single head of wheat in 1906. Most of these are hard wheats. Some are absolutely free from yellow berry and are better than any imported wheat that has ever come into the State, in color, shape and body of the berry, high gluten content, hardness, and weight of kernel. All of our pure-bred wheats have preserved all of the

characters, unimpaired, since they were selected in 1906. None of them are running out. Of some of these we shall have enough seed to plant five-acre plots a year from next September.

We also have in our breeding grounds wheats immensely superior in yield. A comparative yield test of 367 of our own pure-bred wheats was made in 1908 by the Botanical Department, in which each pedigree or pure-bred row grew alternately with a check or standard row of Kharkov, hitherto the best hard red winter wheat grown at the Station. In this test each row was made 66 feet long and was planted

with 250 seeds. All the grain of each row was carefully harvested separately and weighed. As a result, 42 pure-breds exceeded the total Kharkov average yield for the entire field, and 47 others exceeded the yield of both the adjoining Kharkov rows.

We have all the wheats that equaled or exceeded the Kharkov now growing in the field. The Kansas wheat grower need import no wheat to secure varieties of superior yield or quality. The Kansas Experiment Station has pure-bred strains growing which show these superior qualities over best imported wheats.

Approved:

E. D. H. WEBSTER,  
*Director.*

MANHATTAN, KAN., January 6, 1909.

H. F. ROBERTS,  
*Botanist, Kansas Experiment Station.*

A report of Professor Robert's trip to European wheat countries will be published in a short time.

Prof. A. M. TenEyck visited Alberta, as reported in Press Bulletin No. 157, and Prof. C. W. Burkett investigated conditions in Russia and Turkey, the result of which was published in Press Bulletin No. 104. Copies of these Press Bulletins may be secured by addressing the Director of the Kansas Experiment Station, Manhattan, Kansas.

These investigations were carried on under an act of the legislature, 1907, providing for an investigation of the seed-wheat supply.

The general conclusions are well summarized by Professor Roberts in the above press notice, and it seems desirable that the work of wheat breeding be encouraged rather than the wholesale importation of seed wheat.

E. D. H. WEBSTER, *Director.*