

MICHIGAN AGRICULTURAL COLLEGE

EXPERIMENT STATION.

PRESS BULLETIN NO. 14.—SPELT A MENACE TO THE WHEAT CROP.

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Complaints from all sections of the state of Michigan came to the station in the late spring of 1905 that wheat fields were badly infested with rye. Rye is easily distinguished from wheat. Its greater height, bluish green color and peculiarly shaped head point it out with certainty and the farmer has little difficulty in cutting practically all the rye from his wheat fields if he feels so disposed. Rye flour differs enough from wheat flour to seriously injure the latter if rye forms any large share of the crop.

Within the past few years a variety or species of wheat known as "spelt" has been introduced into the state as a stock food. Spelt is sown in the autumn, as fall wheat is, and ripens at practically the same time the following summer. It closely resembles wheat when growing, but the threshed spelt usually resembles barley much more than it does wheat since the chaff is not removed by the machine but is left firmly attached to the kernels. Moreover two kernels are usually attached to each other in the threshed spelt, since the head is broken up by the threshing machine into the spikelets, and not into the individual kernels. Millers are complaining, however, that wheat is coming in containing some spelt from which the chaff has been removed and that the wheat is therefore adulterated with a seed indistinguishable from the wheat kernels themselves. The flour of the spelt differs from that of the wheat so far that it does not make good bread when the two are mixed.

It becomes important for the farmer to be able to distinguish wheat from spelt, either when growing or when in the threshed grain.

The straw of spelt and wheat are practically identical and we shall have to look for the distinguishing differences in the head.

The heads of wheat and of spelt are both broader in one direction than in the other and are flattened on two opposite sides. Now if a wheat head be laid upon a smooth table upon one of its broad, flattened sides, with the straw end pointing to the observer, the little spikelets containing the kernels and together forming the head, will be on the upper and lower sides; if a head of spelt be similarly placed on its broadest side, the spikelets will

be on the right and left sides, not on the top and bottom. In other words the spikelets of wheat are broad, holding sometimes as many as four kernels, in rather loose chaff, while the spikelets of spelt are narrow, held snugly together by the enveloping chaff and contain but two kernels.

Again in the wheat head, the straw is continuous through the whole length, very crooked indeed, yet it is there; in the spelt, on the other hand, there is no continuous straw running through the head but the spikelets are held together by joining one to the upper inside surface of the next below by a little stalk or pedicel. The spikelets are thus alternately arranged in the head, first one on one side then the next on the other side, packed closely together and forming a compact head. In threshing the wheat, kernels readily fall from the loose hull or chaff which surrounds them; the spelt kernels find the chaff incurved about them and the two in the same spikelet are so closely bound together that the head breaks up, each spikelet being torn loose from its neighbors by the breaking of the pedicels which hold them together. A better threshing machine may easily break up these spikelets and turn out the spelt grain free from its enveloping hulls.

Turn now to the kernels themselves which are liable to be found in seed wheat. Here, too, are differences so well marked that the two species of wheat may readily be distinguished from each other. Place a grain of wheat and a grain of spelt on the table side by side, the groove side down. It is noted at once that the upper side of the wheat kernel presents an irregular, broken contour while that of the spelt is a fairly even curve from one end to the other. Next the germ of the wheat is sunken and broadly oval while the germ of the spelt is narrower, elliptical and elevated to form part of the somewhat regular curve of the back of the kernel. The wheat kernel is relatively broad, short and blunt, while the kernel of the spelt is longer, relatively narrower and drawn out to more of a point at each end.

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