

COMMUNICATION TO THE EDITOR

Application of the Raikai Milling Process to Sprouted Wheat

DEAR SIR:

Sprouting of wheat in the ear is occasionally a problem in New Zealand and in several other wheat-producing countries. The crumb of bread made from sprouted wheat is doughy and may lack structure, because of excessive alpha-amylase activity. Koz'mina has reported (4) that the activity of amylolytic enzymes in grain can be lowered by application of the Raikai process (3,5), which removes the germ-end of grain.

In this laboratory twenty samples of sprouted wheat were cut by hand to remove the germ-ends. The proportion of the grain removed varied from 25 to 30% by weight. The distal- or brush-end fractions and the corresponding whole grain samples were finely ground and assayed for alpha-amylase by either Hagberg's penetrometer method (1) which requires 50 g. of material, or by the fluidity method (2) which requires only 7 g. of material; two samples were assayed by both methods. The activities are reported in Fig. 1 as "Sprout Units."

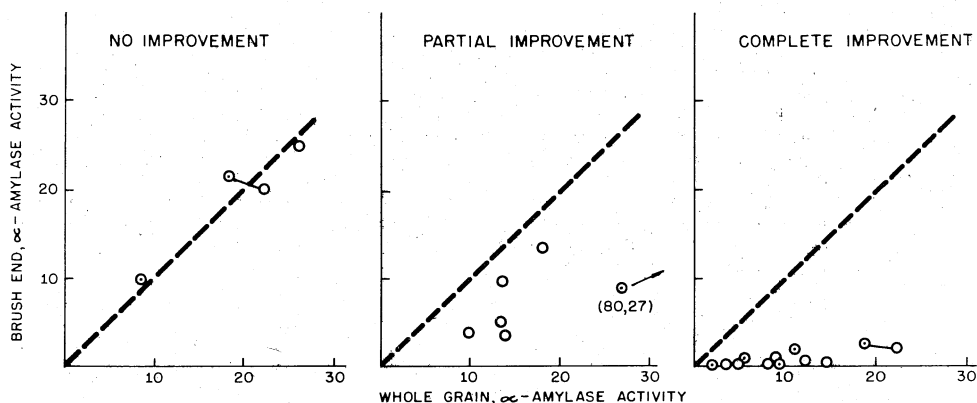


Fig. 1. Comparison of alpha-amylase activities of whole-wheat samples and the corresponding cut samples. Closed circles, by penetrometer method. Open circles, by fluidity method.

The results generally confirm those of Koz'mina (4), but the alpha-amylase activity of some samples was reduced only slightly and in a few samples it was not reduced at all.

For white flours, but not always for whole wheats, 50 "sprout units"

are equivalent to one SKB unit (6). Wheat containing up to two "sprout units" of alpha-amylase activity was considered suitable for milling into bread flour; while wheat with more than four units of activity produced flour which was unsuitable for production of bread to be machine-sliced. Flour produced from wheat with more than 15 units of alpha-amylase was useless for breadmaking. Since seven of the twenty samples, even after cutting, would have been unsuitable for milling into bread flour unless diluted with sound grain, it is clear that application of the Raikai process is not capable of rendering all samples of sprouted wheat suitable for breadmaking.

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