

EFFECTS OF STORAGE ON POTATO QUALITY¹

By Rae H. Harris²

Processors usually recommend that potatoes be conditioned by holding for approximately a week at about 60° F. to offset the undesirable effects of low temperature storage. Recent evidence, however, shows that storage below 40° F. for more than a few days tends to produce potatoes that will remain unfit for processing regardless of subsequent treatment. The authors of this paper studied the conditioning of poor quality table potatoes of high sugar content. The varieties were Green Mountain, Katahdan, and Earlane No. 2, all grown near Presque Isle, Maine. Samples of each variety were stored at 32°, 36° and 40° F. for periods of two, four and eight weeks. The samples were then conditioned for two, four and six weeks at 60° F. and dehydrated to prevent further biochemical changes. When convenient, the dehydrated material was reconstituted, cooked, and scored for color, texture, flavor and general table quality. These tests were all made at the same time so that direct comparisons could be obtained.

It was found that sugar content increased directly with length of storage period; the rate of increase was inversely related to storage temperature. Fairly consistent decreases in sugar content occurred on conditioning, with rather inconsistent increases in starch content. There was no apparent relationship between these changes and variations in general table quality. Reduction in sweetness was accompanied by the development of an abnormal flavor and increased tendency to discolor.

All varieties, which were judged "good to very good" originally, were rated as "good" after storage for eight weeks at 40° F. In general, conditioning at 60° F. effected little improvement in quality when an undesirable sugar content had accumulated at low temperatures for long storage periods. These results showed that 40° F. is the minimum safe storage temperature.

¹Condensed from the paper, "How Good Will They Be After Storage?" R. C. Wright, T. M. Whiteman, J. S. Caldwell, C. W. Culpepper and Margaret C. Hutchins. Food Industries 21 (9): 1229, September 1949.

²Cereal Technologist.