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Effects of Long-term Storage on Quality of Wheat Packaged in No. 10 Cans

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RESULTS AND DISCUSSION

Can Analysis

Figure 1 shows the overall acceptance of the bread to the consumer. The bread was rated above 7.0 in all cases with good scores (ranging from 8.0 to 8.5) for most samples. Sample age was not correlated with acceptability.

Wheat Analysis

Wheat moisture content was low enough in all samples to prevent mold growth (Table 1) (Wang and Flores 1999). CIE L* values for wheat kernels ranged from 43.93 - 54.37. The L* scale ranges from zero (black) to 100 (white). Protein content ranged from 13.6 - 15.0%, indicating all samples were hard wheat. Minimum, L*, and protein content were not correlated with sample age. Figure 2 shows the relationship between wheat quality and headspace oxygen level over time. Results indicate that the protein content in hard wheat kernels was not affected by aging. This is consistent with other studies on the long-term storage of wheat (Pomeranz 1988).

Baking Quality

Baking quality of the bread produced from stored wheat varied (Table 2) (Figure 3). While the bread produced from stored wheat was generally of acceptable quality, some samples, particularly those stored for 24 and 27 months, had lower overall acceptability scores.

Conclusions

In conclusion, storage of wheat kernels increased free fatty acid content and decreased loaf volume, with no significant change in water absorption or measurable nutritional quality parameters. The effects of long-term storage on quality are significant and should be considered in food storage regimens.

REFERENCES


