

Technical Note 02

Aeration helps maintain processing quality during storage

Millers and bakers have long been concerned at the way flour processing properties deteriorate over the time the grain is stored. To find out how to avoid this deterioration, Quality Wheat CRC and George Weston Food Laboratories have compared dough made from wheat stored at 35°C, 30°C, 20°C, 15°C and 4°C.

Dough properties were stable throughout a year's storage of the grain at 4°C, 15°C or 20°C. However, the longer grain was stored at 30°C or 35°C, the more dough properties deteriorated. This is important for growers and bulk handlers to know, because grain is a good insulator, and when harvested at warmer temperatures will tend to remain warm if it is not aerated or cooled.

Significant changes became obvious after 140 days at 30°C or 35°C:

- the mixing time of the dough increased
- it was less extensible and had higher resistance, and
- it produced loaves with significantly lower volumes.

Reducing the oxygen concentration of the storage atmosphere (1% compared with 21% for storage in air) had no effect on the rate of change in flour quality.

With the assistance of CSIRO's Stored Grain Research Laboratory, this work is continuing, to determine what happens over a year at temperatures from 20°C–30°C, and to take into account the sort of variations you would expect in aerated and/or cooled storage. The previous results certainly suggest that if grain can be stored at lower temperatures, there should be less deterioration in processing quality further down the line. There is also the advantage that insect and mould reproduction are minimised at low temperatures, as we have already discussed.

The industry partners of Quality Wheat CRC support aerated storage and are considering making it a requirement when setting purchase contracts. The advantages include:

- a reduced need for quality testing if quality is more predictable following storage
- reduced exposure to pesticides and
- improved product specifications.

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