

# Preharvest sprouting research – 20 years later

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Preharvest sprouting in wheat is the result of continuous rainfall just prior to or during harvest time. The net result of such sprouting is the formation of excess *alpha*-amylase, along with other enzymes, which renders the wheat flour unsuitable for use in food products.

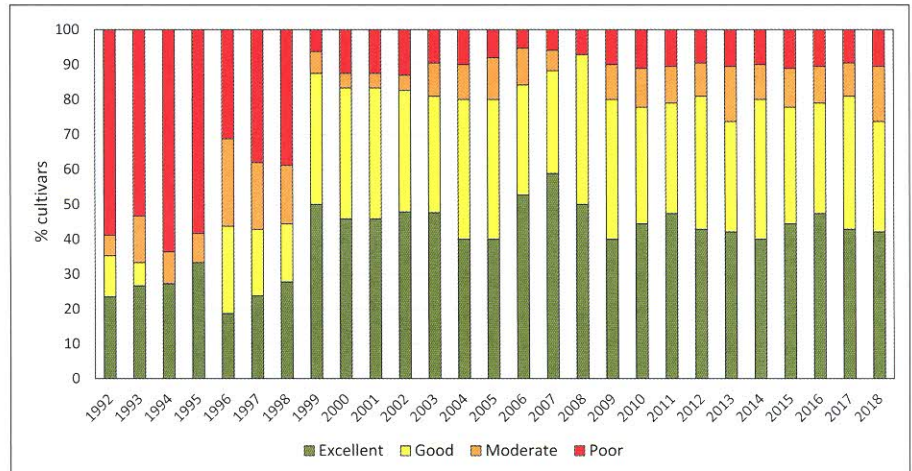
Until 1997 the wheat industry in South Africa was characterised by a single marketing channel and was controlled by a centralised Wheat Board who fixed wheat prices and controlled imports and exports. The deregulation of the Wheat Board in 1998 has led to various changes, including the introduction of the falling number method, which is widely used to estimate *alpha*-amylase activity in wheat grain, as part of the South African grading regulations.

Wheat producers in South Africa were confused by this new method which was included in the quality description of wheat sold by producers. The test was incorporated within the South African wheat grading regulations, without prior testing or impact studies being performed. Before its incorporation, wheat was indirectly evaluated for low falling number through a visual screening test that required that a 25 g wheat sample should not contain more than 2% sprouted wheat.

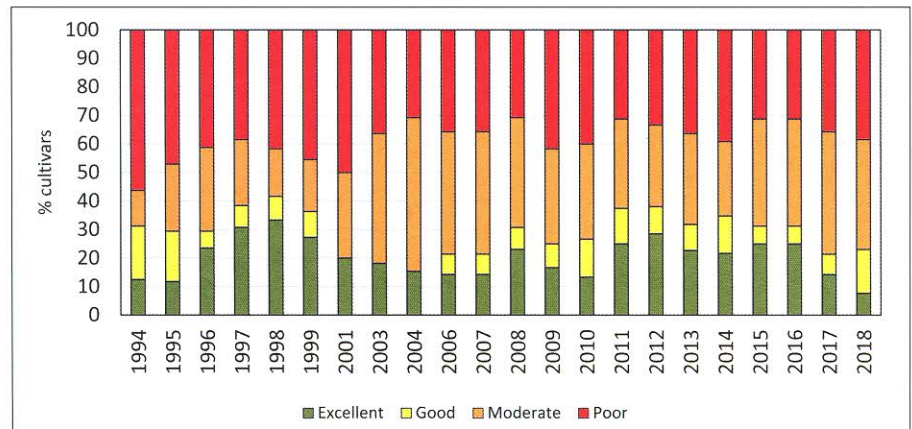
Initially a minimum of 250 sec falling number were required for the highest grade. It soon, however, became obvious that various factors, other than sprouted wheat, had an influence on the falling number of wheat, as numerous reports of low falling number wheat without visual sprouting were received throughout the summer rainfall wheat producing areas of South Africa, resulting in enormous financial implications for the producers.

Once the lack of stability of the test was realised, a 30 sec grace fraction was implemented that stipulated that a falling number minimum of 220 sec is required to obtain grade B1 to B3, depending on the protein content and hectolitre mass. A falling number of 200 sec is required for grade 4, with wheat being downgraded to utility grade if the falling number is below 150 sec.

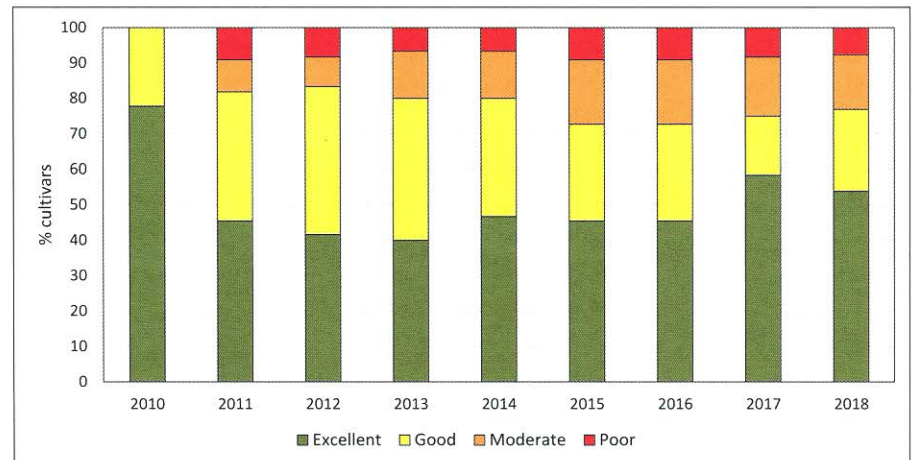
Even with the new regulations in place, producers continued to experience prob-



Graph 1: An indication of the progress in preharvest sprouting tolerance in dryland wheat cultivars from 1992 to 2018.



Graph 2: The preharvest sprouting levels of cultivars released for production in the irrigation areas since 1994.



Graph 3: Cultivars from the winter rainfall area of the Western Cape showing high levels of preharvest sprouting tolerance.

