

QUALITY DIFFERENCES BETWEEN WHEAT GRADES 1 TO 4

Grade 1 wheat gave on average a higher percentage extraction (about 2,0 % higher) than the average percentage extraction from grade 4 wheat.

The farinogram also gave on average about 2,0 % higher water absorption on grade 1 wheat than on grade 4 wheat. The farinogram development time also gave a better result on grade 1 wheat than on grade 4 wheat. A definite trend can be seen, with both the farinogram water absorption percentage and farinogram development time giving better results with grade 1 wheat and declining through grade 2, grade 3 to grade 4. This correlates with a higher protein content which mainly separates the four wheat classes.

The same trend could be seen with the alveogram strength, which increased from 35,3 cm² (grade 4 wheat) to 42,3 cm² (grade 1 wheat) on average. The extensogram extensibility (cm) also increased from 16,5 cm (grade 4 wheat) to 18,7 cm (grade 1 wheat) on average.

MYCOTOXINS

Mycotoxins, as secondary metabolites of moulds or fungi, can exert toxic effects on humans and animals consuming contaminated foods and feeds. Cereal grains can become contaminated with mycotoxins during the pre- and postharvest periods. Mycotoxins in human and animal health will be an issue which will need continual monitoring, research, intervention and control.

This was the first crop quality survey in which mycotoxin analyses were done. Thirty samples (representing the different regions) were randomly selected for the mycotoxin analyses. The average aflatoxin was 5,4 ppb. According to Act 54 of 1972, Foodstuffs, Cosmetics and Disinfectants, the allowable level of total aflatoxin is 10 ppb (µg/kg). According to Act 36 of 1947, Fertilizers, Farm Feeds, Agricultural and Stock Remedies the allowable level of total aflatoxin is 10 to 50 ppb (µg/kg).

The average fumonisin was 0,71 ppm. A tolerance level of 0,1 to 0,2 ppm (mg/kg) total fumonisins has provisionally been recommended for maize and maize-based products intended for human consumption in Africa, based on risk assessment studies. These recommendations can be applied to wheat. In the interim, the South African grain industry should aim at a "tolerance level" of 0,3 ppm (maximum of 0,3 mg/kg) at most of total fumonisins for human consumption, until further international developments are made known.

Aflatoxin and fumonisin were detected in all 30 samples tested.

No deoxynivalenol was detected. Suggested levels for deoxynivalenol of less than 2,0 ppm for animal feeds and 1,0 ppm for commodities destined for human consumption are recommended.

Zearalenone were present in all 30 samples tested, but was all lower than the method's detection limit of 0,1 ppm. According to experts, samples containing more than 0,1 to 0,2 ppm (mg/kg) zearalenone can pose a health risk.

An average of 0,16 ppm T - 2 were detected. T - 2 toxin is considered ten times more toxic than deoxynivalenol (DON). The average level of ochratoxin was 0,52 ppb. Little is known about the accepted levels.