Main maize producing provinces – comparison of results

The quality of the maize produced in the three main maize production provinces, namely the Free State (regions 21 to 28), Mpumalanga (regions 29 to 33) and North West (regions 12 to 20) are compared below, the values provided are all weighted averages.

Average test weights expressed in kilogram per hectoliter for white maize, ranged between 74.8 in North West, 75.6 in the Free State and 76.7 in Mpumalanga. Yellow maize varied from 74.7 kg/hl in the Free State to 74.8 kg/hl in North West and 76.0 kg/hl in Mpumalanga. The white maize 100 kernel mass values ranged from 34.0 g in Mpumalanga and 35.4 g in North West, the Free State averaged 35.3 g. Yellow maize kernels had the highest average 100 kernel mass in North West with 31.5 g, followed by 30.5 g in Mpumalanga and 30.3 g in the Free State.

Kernel sizes are indicated by the percentage of sample above a 10 mm sieve as well as the percentages above and below a 8 mm sieve. The largest white kernel size with regards to the percentage of kernels above the 10 mm sieve, was found in the Free State (31.7%), followed by North West (31.4%). Mpumalanga had the smallest white kernel sizes (16.9%) on average. North West had the largest yellow maize kernels, averaging 13.4% kernels above the 10 mm sieve, followed by Mpumalanga with 10.1% and the Free State with 8.8%.

Mpumalanga showed the least susceptibility to breakage (lowest percentage below the sieve), with 0.7% for white and 1.0 % for yellow maize passing through the 6.35 mm sieve. North West averaged 1.2% and 1.6% for white and yellow maize respectively and the Free State 1.4% and 1.0% for white and yellow maize respectively. The percentage stress cracks on white maize ranged from 10% in North West, 11% in Mpumalanga and 12% in the Free State. On yellow maize these averages varied between 10% in both Mpumalanga and North West, to 12% in the Free State.

The percentage total defective kernels, is the sum of the defective kernels that remained above the 6.35 mm sieve and the defective kernels which passed through the 6.35 mm sieve. Defective kernels include amongst others, mouldy, discoloured, insect damaged and small kernels that can pass through the 6.35 mm round hole sieve. The averages for white maize in the production regions of these three provinces ranged from 5.2% in Mpumalanga, 8.2% in the Free State and 8.4% in North West. The highest percentage total defective kernels on yellow maize (8.8%) was found in North West, followed by the Free State with 6.0% and Mpumalanga with 4.6%. Please see page 105 for the definition of Defective maize kernels as quoted from the Grading Regulations.

The average milling index on white and yellow maize (yellow maize in brackets) was as follows: Mpumalanga averaged 72 (74), the Free State 68 (71) and North West 66 (76). The highest percentage total extraction as determined on the Roff laboratory mill, was found on white maize from the Free State (76.8%), followed by Mpumalanga (76.4%) and North West with 75.8%.

The meal obtained from the white maize in North West gave an average whiteness index of 39.3 (unsifted) and 37.0 (sifted). The Free State gave an average of 39.3 (unsifted) and 35.1 (sifted) while Mpumalanga averaged 37.4 (unsifted) and 33.5 (sifted).

The nutritional component analyses namely crude fat, crude protein, crude fibre and total starch compared well between the three provinces and reported values within narrow ranges. North West and the Free State both averaged 4.0% fat on white maize, Mpumalanga averaged 3.9%. The average fat content on yellow maize was 3.9% in both North West and the Free State while Mpumalanga averaged 3.8%. The lowest average protein content on white maize was found in North West and the Free State, both with 8.0%, Mpumalanga averaged 8.2%. The protein content on yellow maize varied from 8.4% in Mpumalanga to 8.5% in both the Free State and North West. Crude fibre on white maize in all three of these provinces, averaged 2.2%. Crude fibre on yellow maize reported 2.2% for both North West and Mpumalanga, the Free State averaged 2.3%. The Free State had the highest average starch content on white maize, namely 76.2%, followed closely by North West with 76.1% and Mpumalanga with 75.6%. The yellow maize starch content ranged from a low of 74.7% in North West to a high of 75.1% in the Free State. Mpumalanga averaged 75.0%. These values are all reported on a dry basis.