

**SOUTH AFRICAN  
WINTER RAINFALL WHEAT  
Western Cape Province**

| PRODUCTION REGION                | (1)<br>Namaqualand |            |            |              |           | (2)<br>Swartland<br>Western Region                  |            |            |              |           |           |            |
|----------------------------------|--------------------|------------|------------|--------------|-----------|-----------------------------------------------------|------------|------------|--------------|-----------|-----------|------------|
|                                  | Intake silos       |            |            |              |           | Bergrivier<br>Darling<br>Koperfontein<br>Vredenburg |            |            |              |           |           |            |
| <b>WHEAT</b>                     |                    |            |            |              |           |                                                     |            |            |              |           |           |            |
|                                  | <b>ave</b>         | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                          | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Protein (12% mb), %              | 11.5               | 9.4        | 13.4       | 1.8          |           | 10.6                                                | 9.2        | 13.6       | 0.9          |           |           |            |
| Falling number, sec              | 397                | 363        | 421        | 20.7         |           | 374                                                 | 303        | 407        | 23.1         |           |           |            |
| 1000 Kernel mass (13% mb), g     | 42.1               | 37.7       | 48.9       | 4.8          |           | 36.5                                                | 29.0       | 41.0       | 2.4          |           |           |            |
| Hectolitre mass (dirty), kg/hl   | 77.4               | 75.6       | 79.2       | 1.2          |           | 75.0                                                | 70.1       | 77.8       | 1.8          |           |           |            |
| Screenings (<1.8mm), %           | 1.7                | 1.0        | 2.6        | 0.5          |           | 3.2                                                 | 2.0        | 20.2       | 3.7          |           |           |            |
| Total damaged kernels, %         | 0.5                | 0.4        | 0.7        | 0.1          |           | 0.2                                                 | 0.0        | 0.6        | 0.1          |           |           |            |
| <b>Number of samples</b>         | <b>6</b>           |            |            |              |           | <b>23</b>                                           |            |            |              |           |           |            |
| <b>CULTIVARS</b>                 |                    |            |            |              |           |                                                     |            |            |              |           |           |            |
|                                  | SST 015            |            |            |              | 43.2      | SST 027                                             |            |            |              | 44.5      |           |            |
| cultivars                        | SST 027            |            |            |              | 16.2      | SST 88                                              |            |            |              | 27.4      |           |            |
| with highest %                   | SST 035            |            |            |              | 12.7      | SST 015                                             |            |            |              | 15.2      |           |            |
| occurrence                       | SST 88             |            |            |              | 12.0      | SST 57                                              |            |            |              | 9.8       |           |            |
|                                  | SST 57             |            |            |              | 8.8       | SST 035                                             |            |            |              | 2.0       |           |            |
| <b>Number of samples</b>         | <b>6</b>           |            |            |              |           | <b>23</b>                                           |            |            |              |           |           |            |
| <b>MIXOGRAM (Quadromat)</b>      |                    |            |            |              |           |                                                     |            |            |              |           |           |            |
|                                  | <b>ave</b>         | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                          | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Peak time, min                   | 2.7                | 2.2        | 3.3        | 0.5          |           | 3.2                                                 | 2.5        | 3.7        | 0.3          |           |           |            |
| Tail height (6min), mm           | 48                 | 44         | 51         | 3.2          |           | 44                                                  | 40         | 47         | 2.1          |           |           |            |
| <b>Number of samples</b>         | <b>6</b>           |            |            |              |           | <b>23</b>                                           |            |            |              |           |           |            |
| <b>BÜHLER EXTRACTION, %</b>      |                    |            |            |              |           |                                                     |            |            |              |           |           |            |
|                                  | <b>B1</b>          | <b>B2</b>  | <b>B3</b>  | <b>B4</b>    | <b>UT</b> | <b>COW</b>                                          | <b>B1</b>  | <b>B2</b>  | <b>B3</b>    | <b>B4</b> | <b>UT</b> | <b>COW</b> |
|                                  | 74.7               | 73.8       |            | 73.3         |           |                                                     |            | 73.6       | 74.7         | 73.3      | 73.4      |            |
| <b>FLOUR</b>                     |                    |            |            |              |           |                                                     |            |            |              |           |           |            |
| Protein (12% mb), %              | 12.7               | 10.9       |            | 8.5          |           |                                                     |            | 10.5       | 9.6          | 8.8       | 9.1       |            |
| Colour, KJ                       | -2.5               | -2.2       |            | -2.9         |           |                                                     |            | -0.9       | -2.3         | -2.6      | -2.8      |            |
| <b>FARINOGRAM</b>                |                    |            |            |              |           |                                                     |            |            |              |           |           |            |
| Water absorption (14% mb), %     | 62.6               | 60.6       |            | 57.7         |           |                                                     |            | 59.4       | 58.1         | 57.1      | 57.2      |            |
| Development time, min            | 5.2                | 3.8        |            | 1.5          |           |                                                     |            | 2.8        | 2.2          | 1.8       | 1.8       |            |
| Stability, min                   | 12.2               | 7.5        |            | 4.5          |           |                                                     |            | 6.8        | 6.3          | 4.3       | 4.7       |            |
| Mixing tolerance index, BU       | 30                 | 43         |            | 56           |           |                                                     |            | 41         | 42           | 58        | 57        |            |
| <b>EXTENSOGRAM (45 min pull)</b> |                    |            |            |              |           |                                                     |            |            |              |           |           |            |
| Area, cm2                        | 110                | 85         |            | 83           |           |                                                     |            | 68         | 82           | 72        | 79        |            |
| Maximum height, BU               | 375                | 330        |            | 395          |           |                                                     |            | 315        | 385          | 360       | 370       |            |
| Extensibility, mm                | 206                | 180        |            | 143          |           |                                                     |            | 145        | 144          | 136       | 146       |            |
| <b>ALVEOGRAM</b>                 |                    |            |            |              |           |                                                     |            |            |              |           |           |            |
| Strength (S), cm2                | 48.8               | 43.7       |            | 33.3         |           |                                                     |            | 34.6       | 37.6         | 31.0      | 31.8      |            |
| Stability (P), mm                | 82                 | 91         |            | 82           |           |                                                     |            | 84         | 82           | 77        | 79        |            |
| Distensibility (L), mm           | 136                | 110        |            | 84           |           |                                                     |            | 93         | 100          | 87        | 82        |            |
| Configuration ratio (P/L)        | 0.60               | 0.83       |            | 0.98         |           |                                                     |            | 0.89       | 0.83         | 0.88      | 0.96      |            |
| <b>MIXOGRAM</b>                  |                    |            |            |              |           |                                                     |            |            |              |           |           |            |
| Peak time, min                   | 2.2                | 2.8        |            | 2.9          |           |                                                     |            | 2.8        | 3.2          | 3.5       | 3.0       |            |
| <b>100g BAKING TEST</b>          |                    |            |            |              |           |                                                     |            |            |              |           |           |            |
| Loaf volume, cm3                 | 890                | 830        |            | 735          |           |                                                     |            | 725        | 780          | 705       | 745       |            |
| Evaluation                       | 2                  | 1          |            | 0            |           |                                                     |            | 4          | 0            | 1         | 0         |            |

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION



**SOUTH AFRICAN  
WINTER RAINFALL WHEAT  
Western Cape Province**

| PRODUCTION REGION                | (3)<br>Swartland<br>Central Region |            |            |              |           | (4)<br>Swartland<br>Eastern Region                                       |            |            |              |           |           |            |  |  |
|----------------------------------|------------------------------------|------------|------------|--------------|-----------|--------------------------------------------------------------------------|------------|------------|--------------|-----------|-----------|------------|--|--|
|                                  | Intake silos                       |            |            |              |           | Ceres<br>Gouda<br>Halfmanshof<br>Leliedam<br>Porterville<br>Riebeeck-Wes |            |            |              |           |           |            |  |  |
| <b>WHEAT</b>                     | <b>ave</b>                         | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                                               | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |  |  |
| Protein (12% mb), %              | 10.4                               | 8.7        | 12.6       | 0.9          |           | 10.5                                                                     | 8.7        | 14.3       | 1.1          |           |           |            |  |  |
| Falling number, sec              | 373                                | 316        | 421        | 22.5         |           | 366                                                                      | 322        | 410        | 24.0         |           |           |            |  |  |
| 1000 Kernel mass (13% mb), g     | 38.5                               | 33.0       | 42.6       | 2.0          |           | 38.1                                                                     | 33.2       | 44.3       | 2.8          |           |           |            |  |  |
| Hectolitre mass (dirty), kg/hl   | 77.8                               | 74.3       | 81.0       | 1.6          |           | 78.1                                                                     | 74.5       | 81.8       | 1.9          |           |           |            |  |  |
| Screenings (<1.8mm), %           | 1.0                                | 0.1        | 3.4        | 1.0          |           | 1.4                                                                      | 0.2        | 3.4        | 1.0          |           |           |            |  |  |
| Total damaged kernels, %         | 0.4                                | 0.0        | 3.7        | 0.5          |           | 0.3                                                                      | 0.0        | 1.0        | 0.3          |           |           |            |  |  |
| <b>Number of samples</b>         | <b>78</b>                          |            |            |              |           | <b>35</b>                                                                |            |            |              |           |           |            |  |  |
| <b>CULTIVARS</b>                 |                                    |            |            |              |           |                                                                          |            |            |              |           |           |            |  |  |
|                                  | SST 027 40.5                       |            |            |              |           | SST 027 41.5                                                             |            |            |              |           |           |            |  |  |
| cultivars                        | SST 88 23.4                        |            |            |              |           | SST 88 22.5                                                              |            |            |              |           |           |            |  |  |
| with highest %                   | SST 015 22.8                       |            |            |              |           | SST 015 18.5                                                             |            |            |              |           |           |            |  |  |
| occurrence                       | SST 57 8.6                         |            |            |              |           | SST 57 12.8                                                              |            |            |              |           |           |            |  |  |
|                                  | SST 65 1.5                         |            |            |              |           | SST 035 2.3                                                              |            |            |              |           |           |            |  |  |
| <b>Number of samples</b>         | <b>78</b>                          |            |            |              |           | <b>35</b>                                                                |            |            |              |           |           |            |  |  |
| <b>MIXOGRAM (Quadromat)</b>      | <b>ave</b>                         | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                                               | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |  |  |
| Peak time, min                   | 3.0                                | 2.1        | 4.2        | 0.4          |           | 3.0                                                                      | 2.3        | 3.8        | 0.4          |           |           |            |  |  |
| Tail height (6min), mm           | 46                                 | 38         | 53         | 2.9          |           | 45                                                                       | 40         | 52         | 2.9          |           |           |            |  |  |
| <b>Number of samples</b>         | <b>78</b>                          |            |            |              |           | <b>35</b>                                                                |            |            |              |           |           |            |  |  |
| <b>BÜHLER EXTRACTION, %</b>      | <b>B1</b>                          | <b>B2</b>  | <b>B3</b>  | <b>B4</b>    | <b>UT</b> | <b>COW</b>                                                               | <b>B1</b>  | <b>B2</b>  | <b>B3</b>    | <b>B4</b> | <b>UT</b> | <b>COW</b> |  |  |
|                                  | 74.4                               | 74.4       | 74.5       | 74.0         | 74.5      |                                                                          | 74.2       | 74.4       | 74.2         | 74.6      | 74.5      |            |  |  |
| <b>FLOUR</b>                     |                                    |            |            |              |           |                                                                          |            |            |              |           |           |            |  |  |
| Protein (12% mb), %              | 12.1                               | 10.8       | 9.6        | 8.6          | 8.4       |                                                                          | 11.8       | 10.7       | 9.4          | 8.3       | 7.7       |            |  |  |
| Colour, KJ                       | -2.5                               | -2.8       | -2.7       | -3.0         | -3.1      |                                                                          | -2.3       | -2.9       | -2.9         | -3.0      | -2.8      |            |  |  |
| <b>FARINOGRAM</b>                |                                    |            |            |              |           |                                                                          |            |            |              |           |           |            |  |  |
| Water absorption (14% mb), %     | 61.1                               | 58.7       | 58.9       | 58.5         | 56.4      |                                                                          | 59.4       | 58.4       | 57.8         | 57.6      | 57.3      |            |  |  |
| Development time, min            | 4.5                                | 4.0        | 1.8        | 1.8          | 1.9       |                                                                          | 5.2        | 4.2        | 2.3          | 1.8       | 1.3       |            |  |  |
| Stability, min                   | 9.4                                | 8.7        | 5.4        | 5.3          | 5.5       |                                                                          | 10.5       | 8.3        | 6.8          | 4.9       | 3.0       |            |  |  |
| Mixing tolerance index, BU       | 29                                 | 33         | 50         | 50           | 52        |                                                                          | 29         | 37         | 36           | 56        | 68        |            |  |  |
| <b>EXTENSOGRAM (45 min pull)</b> |                                    |            |            |              |           |                                                                          |            |            |              |           |           |            |  |  |
| Area, cm <sup>2</sup>            | 105                                | 96         | 79         | 71           | 91        |                                                                          | 105        | 112        | 100          | 77        | 77        |            |  |  |
| Maximum height, BU               | 380                                | 400        | 460        | 365          | 420       |                                                                          | 405        | 425        | 410          | 400       | 410       |            |  |  |
| Extensibility, mm                | 193                                | 166        | 155        | 135          | 151       |                                                                          | 182        | 184        | 166          | 138       | 128       |            |  |  |
| <b>ALVEOGRAM</b>                 |                                    |            |            |              |           |                                                                          |            |            |              |           |           |            |  |  |
| Strength (S), cm <sup>2</sup>    | 36.5                               | 43.7       | 36.1       | 32.7         | 28.7      |                                                                          | 45.6       | 39.9       | 33.5         | 29.7      | 30.6      |            |  |  |
| Stability (P), mm                | 87                                 | 79         | 86         | 88           | 74        |                                                                          | 85         | 75         | 77           | 82        | 87        |            |  |  |
| Distensibility (L), mm           | 122                                | 123        | 91         | 79           | 83        |                                                                          | 120        | 127        | 99           | 73        | 69        |            |  |  |
| Configuration ratio (P/L)        | 0.71                               | 0.65       | 0.94       | 1.11         | 0.89      |                                                                          | 0.71       | 0.59       | 0.78         | 1.12      | 1.25      |            |  |  |
| <b>MIXOGRAM</b>                  |                                    |            |            |              |           |                                                                          |            |            |              |           |           |            |  |  |
| Peak time, min                   | 2.5                                | 2.8        | 2.8        | 2.8          | 3.3       |                                                                          | 2.8        | 2.8        | 2.8          | 2.9       | 3.0       |            |  |  |
| <b>100g BAKING TEST</b>          |                                    |            |            |              |           |                                                                          |            |            |              |           |           |            |  |  |
| Loaf volume, cm <sup>3</sup>     | 850                                | 860        | 755        | 700          | 695       |                                                                          | 800        | 840        | 735          | 675       | 655       |            |  |  |
| Evaluation                       | 2                                  | 0          | 1          | 1            | 0         |                                                                          | 3          | 0          | 1            | 1         | 0         |            |  |  |

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

**MIXOGRAM**

3

4

**FARINOGRAM**

3

4

**EXTENSOGRAM**

3

4

**ALVEOGRAM**

3

4

**SOUTH AFRICAN  
WINTER RAINFALL WHEAT  
Western Cape Province**

| PRODUCTION REGION                         | (5)<br>Rüens<br>Western Region                                                             |            |            |              |           | (6)<br>Rüens<br>Eastern Region                                                                                       |            |            |              |           |           |            |
|-------------------------------------------|--------------------------------------------------------------------------------------------|------------|------------|--------------|-----------|----------------------------------------------------------------------------------------------------------------------|------------|------------|--------------|-----------|-----------|------------|
|                                           | Intake silos                                                                               |            |            |              |           |                                                                                                                      |            |            |              |           |           |            |
|                                           | Bredasdorp<br>Caledon<br>Klipdale<br>Krige<br>Napier<br>Protém<br>Rietpoel<br>Villiersdorp |            |            |              |           | Albertinia<br>Ashton<br>Camfer<br>Heidelberg<br>Karringmelksrivier<br>Kleinberg<br>Protém<br>Riversdal<br>Swellendam |            |            |              |           |           |            |
| <b>WHEAT</b>                              |                                                                                            |            |            |              |           |                                                                                                                      |            |            |              |           |           |            |
|                                           | <b>ave</b>                                                                                 | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                                                                                           | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Protein (12% mb), %                       | 11.0                                                                                       | 9.6        | 12.8       | 1.0          |           | 10.5                                                                                                                 | 8.8        | 12.2       | 0.9          |           |           |            |
| Falling number, sec                       | 370                                                                                        | 344        | 390        | 13.0         |           | 362                                                                                                                  | 291        | 413        | 23.3         |           |           |            |
| 1000 Kernel mass (13% mb), g              | 40.9                                                                                       | 38.4       | 43.5       | 1.4          |           | 40.9                                                                                                                 | 35.8       | 46.5       | 2.5          |           |           |            |
| Hectolitre mass (dirty), kg/hl            | 78.7                                                                                       | 77.7       | 80.4       | 0.8          |           | 78.5                                                                                                                 | 75.8       | 79.9       | 1.2          |           |           |            |
| Screenings (<1.8mm), %                    | 1.8                                                                                        | 0.7        | 2.1        | 0.4          |           | 1.8                                                                                                                  | 0.5        | 3.5        | 0.8          |           |           |            |
| Total damaged kernels, %                  | 0.1                                                                                        | 0.0        | 0.4        | 0.2          |           | 0.3                                                                                                                  | 0.0        | 0.8        | 0.2          |           |           |            |
| <b>Number of samples</b>                  | <b>15</b>                                                                                  |            |            |              |           | <b>34</b>                                                                                                            |            |            |              |           |           |            |
| <b>CULTIVARS</b>                          |                                                                                            |            |            |              |           |                                                                                                                      |            |            |              |           |           |            |
|                                           | SST 027                                                                                    |            |            |              |           | SST 027                                                                                                              |            |            |              |           |           |            |
|                                           | SST 88                                                                                     |            |            |              |           | SST 88                                                                                                               |            |            |              |           |           |            |
| cultivars<br>with highest %<br>occurrence | SST 015                                                                                    |            |            |              |           | SST 015                                                                                                              |            |            |              |           |           |            |
|                                           | SST 57                                                                                     |            |            |              |           | SST 57                                                                                                               |            |            |              |           |           |            |
|                                           | PAN 3408                                                                                   |            |            |              |           | SST 035                                                                                                              |            |            |              |           |           |            |
| <b>Number of samples</b>                  | <b>15</b>                                                                                  |            |            |              |           | <b>34</b>                                                                                                            |            |            |              |           |           |            |
| <b>MIXOGRAM (Quadromat)</b>               |                                                                                            |            |            |              |           |                                                                                                                      |            |            |              |           |           |            |
|                                           | <b>ave</b>                                                                                 | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                                                                                           | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Peak time, min                            | 2.5                                                                                        | 2.3        | 2.8        | 0.2          |           | 2.8                                                                                                                  | 2.4        | 3.5        | 0.2          |           |           |            |
| Tail height (6min), mm                    | 48                                                                                         | 42         | 55         | 3.4          |           | 47                                                                                                                   | 43         | 51         | 2.1          |           |           |            |
| <b>Number of samples</b>                  | <b>15</b>                                                                                  |            |            |              |           | <b>34</b>                                                                                                            |            |            |              |           |           |            |
| <b>BÜHLER EXTRACTION, %</b>               |                                                                                            |            |            |              |           |                                                                                                                      |            |            |              |           |           |            |
|                                           | <b>B1</b>                                                                                  | <b>B2</b>  | <b>B3</b>  | <b>B4</b>    | <b>UT</b> | <b>COW</b>                                                                                                           | <b>B1</b>  | <b>B2</b>  | <b>B3</b>    | <b>B4</b> | <b>UT</b> | <b>COW</b> |
|                                           | 75.3                                                                                       | 75.0       | 75.4       | 74.8         |           |                                                                                                                      | 74.1       | 74.9       | 75.0         | 75.4      | 74.9      |            |
| <b>FLOUR</b>                              |                                                                                            |            |            |              |           |                                                                                                                      |            |            |              |           |           |            |
| Protein (12% mb), %                       | 12.4                                                                                       | 10.7       | 9.8        | 8.6          |           |                                                                                                                      | 11.7       | 10.8       | 9.8          | 8.8       | 8.6       |            |
| Colour, KJ                                | -2.4                                                                                       | -2.5       | -2.6       | -2.4         |           |                                                                                                                      | -2.5       | -2.3       | -2.5         | -2.2      | -2.4      |            |
| <b>FARINOGRAM</b>                         |                                                                                            |            |            |              |           |                                                                                                                      |            |            |              |           |           |            |
| Water absorption (14% mb), %              | 62.2                                                                                       | 60.1       | 59.3       | 58.5         |           |                                                                                                                      | 61.4       | 60.1       | 59.3         | 58.1      | 58.0      |            |
| Development time, min                     | 4.8                                                                                        | 2.2        | 2.8        | 2.2          |           |                                                                                                                      | 2.4        | 3.5        | 2.7          | 1.7       | 2.2       |            |
| Stability, min                            | 8.3                                                                                        | 7.1        | 6.3        | 5.0          |           |                                                                                                                      | 8.0        | 7.4        | 6.9          | 5.7       | 5.9       |            |
| Mixing tolerance index, BU                | 33                                                                                         | 32         | 48         | 58           |           |                                                                                                                      | 29         | 38         | 35           | 46        | 45        |            |
| <b>EXTENSOGRAM (45 min pull)</b>          |                                                                                            |            |            |              |           |                                                                                                                      |            |            |              |           |           |            |
| Area, cm2                                 | 123                                                                                        | 93         | 93         | 65           |           |                                                                                                                      | 98         | 90         | 85           | 70        | 81        |            |
| Maximum height, BU                        | 395                                                                                        | 350        | 365        | 320          |           |                                                                                                                      | 360        | 360        | 385          | 360       | 360       |            |
| Extensibility, mm                         | 210                                                                                        | 185        | 172        | 139          |           |                                                                                                                      | 193        | 171        | 150          | 135       | 153       |            |
| <b>ALVEOGRAM</b>                          |                                                                                            |            |            |              |           |                                                                                                                      |            |            |              |           |           |            |
| Strength (S), cm2                         | 46.2                                                                                       | 36.1       | 33.9       | 30.3         |           |                                                                                                                      | 42.7       | 39.4       | 35.3         | 32.0      | 31.3      |            |
| Stability (P), mm                         | 90                                                                                         | 75         | 79         | 83           |           |                                                                                                                      | 90         | 85         | 85           | 82        | 80        |            |
| Distensibility (L), mm                    | 122                                                                                        | 117        | 101        | 79           |           |                                                                                                                      | 108        | 109        | 94           | 85        | 86        |            |
| Configuration ratio (P/L)                 | 0.73                                                                                       | 0.64       | 0.78       | 1.05         |           |                                                                                                                      | 0.83       | 0.79       | 0.91         | 0.97      | 0.92      |            |
| <b>MIXOGRAM</b>                           |                                                                                            |            |            |              |           |                                                                                                                      |            |            |              |           |           |            |
| Peak time, min                            | 2.2                                                                                        | 2.4        | 2.4        | 2.8          |           |                                                                                                                      | 2.3        | 2.8        | 2.6          | 2.8       | 2.7       |            |
| <b>100g BAKING TEST</b>                   |                                                                                            |            |            |              |           |                                                                                                                      |            |            |              |           |           |            |
| Loaf volume, cm3                          | 910                                                                                        | 800        | 775        | 710          |           |                                                                                                                      | 875        | 810        | 730          | 725       | 725       |            |
| Evaluation                                | 1                                                                                          | 1          | 0          | 0            |           |                                                                                                                      | 1          | 1          | 2            | 0         | 0         |            |

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

**MIXOGRAM**

5

6

**FARINOGRAM**

5

6

**EXTENSOGRAM**

5

6

**ALVEOGRAM**

5

6

**SOUTH AFRICAN  
IRRIGATION WHEAT  
Vaal and Orange river area**

| PRODUCTION REGION                | (10)<br>Griqualand - West                                                                                                    |            |            |              |            | (11)<br>Vaalharts                                         |            |              |           |           |           |            |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------|------------|--------------|------------|-----------------------------------------------------------|------------|--------------|-----------|-----------|-----------|------------|
|                                  | Intake silos                                                                                                                 |            |            |              |            | Barkly-Wes<br>Hartswater<br>Jan Kemp<br>Magogong<br>Taung |            |              |           |           |           |            |
|                                  | Britstown<br>Douglas<br>Havenga Brug<br>Marydale<br>Modderrivier<br>Oranjerivierstasie<br>Prieska<br>Rietrivier<br>Uppington |            |            |              |            |                                                           |            |              |           |           |           |            |
| <b>WHEAT</b>                     |                                                                                                                              |            |            |              |            |                                                           |            |              |           |           |           |            |
|                                  | <b>ave</b>                                                                                                                   | <b>min</b> | <b>max</b> | <b>stdev</b> | <b>ave</b> | <b>min</b>                                                | <b>max</b> | <b>stdev</b> |           |           |           |            |
| Protein (12% mb), %              | 11.0                                                                                                                         | 9.6        | 12.4       | 0.8          | 11.3       | 10.2                                                      | 12.1       | 0.6          |           |           |           |            |
| Falling number, sec              | 413                                                                                                                          | 371        | 497        | 31.5         | 388        | 344                                                       | 423        | 25.8         |           |           |           |            |
| 1000 Kernel mass (13% mb), g     | 39.8                                                                                                                         | 32.2       | 42.7       | 2.5          | 36.7       | 34.5                                                      | 39.5       | 1.5          |           |           |           |            |
| Hectolitre mass (dirty), kg/hl   | 79.4                                                                                                                         | 77.2       | 81.5       | 1.0          | 78.2       | 75.6                                                      | 79.5       | 1.5          |           |           |           |            |
| Screenings (<1.8mm), %           | 1.3                                                                                                                          | 0.2        | 7.3        | 1.6          | 3.0        | 2.3                                                       | 4.2        | 0.6          |           |           |           |            |
| Total damaged kernels, %         | 0.4                                                                                                                          | 0.1        | 0.8        | 0.2          | 0.8        | 0.1                                                       | 3.1        | 0.9          |           |           |           |            |
| <b>Number of samples</b>         | <b>17</b>                                                                                                                    |            |            |              |            | <b>9</b>                                                  |            |              |           |           |           |            |
| <b>CULTIVARS</b>                 |                                                                                                                              |            |            |              |            |                                                           |            |              |           |           |           |            |
|                                  |                                                                                                                              | CRN 826    | 32.2       |              |            | CRN 826                                                   | 83.1       |              |           |           |           |            |
| cultivars                        |                                                                                                                              | SST 806    | 26.4       |              |            | SST 806                                                   | 7.2        |              |           |           |           |            |
| with highest %                   |                                                                                                                              | PAN 3434   | 14.2       |              |            | Duzi                                                      | 3.1        |              |           |           |           |            |
| occurrence                       |                                                                                                                              | Duzi       | 8.8        |              |            | Krokodil                                                  | 1.9        |              |           |           |           |            |
|                                  |                                                                                                                              | SST 876    | 8.1        |              |            | SST 876                                                   | 1.4        |              |           |           |           |            |
| <b>Number of samples</b>         | <b>17</b>                                                                                                                    |            |            |              |            | <b>9</b>                                                  |            |              |           |           |           |            |
| <b>MIXOGRAM (Quadromat)</b>      |                                                                                                                              |            |            |              |            |                                                           |            |              |           |           |           |            |
|                                  | <b>ave</b>                                                                                                                   | <b>min</b> | <b>max</b> | <b>stdev</b> | <b>ave</b> | <b>min</b>                                                | <b>max</b> | <b>stdev</b> |           |           |           |            |
| Peak time, min                   | 2.5                                                                                                                          | 2.0        | 2.8        | 0.2          | 2.4        | 2.2                                                       | 2.7        | 0.2          |           |           |           |            |
| Tail height (6min), mm           | 46                                                                                                                           | 39         | 52         | 3.0          | 50         | 45                                                        | 55         | 3.4          |           |           |           |            |
| <b>Number of samples</b>         | <b>17</b>                                                                                                                    |            |            |              |            | <b>9</b>                                                  |            |              |           |           |           |            |
| <b>BÜHLER EXTRACTION, %</b>      | <b>B1</b>                                                                                                                    | <b>B2</b>  | <b>B3</b>  | <b>B4</b>    | <b>UT</b>  | <b>COW</b>                                                | <b>B1</b>  | <b>B2</b>    | <b>B3</b> | <b>B4</b> | <b>UT</b> | <b>COW</b> |
|                                  | 76.0                                                                                                                         | 76.9       | 76.9       | 77.9         |            |                                                           |            | 77.0         |           |           | 76.6      |            |
| <b>FLOUR</b>                     |                                                                                                                              |            |            |              |            |                                                           |            |              |           |           |           |            |
| Protein (12% mb), %              | 12.0                                                                                                                         | 11.1       | 10.1       | 8.9          |            |                                                           | 10.9       |              |           |           | 11.4      |            |
| Colour, KJ                       | -2.2                                                                                                                         | -2.5       | -3.0       | -3.0         |            |                                                           | -2.3       |              |           |           | -2.1      |            |
| <b>FARINOGRAM</b>                |                                                                                                                              |            |            |              |            |                                                           |            |              |           |           |           |            |
| Water absorption (14% mb), %     | 62.2                                                                                                                         | 61.5       | 58.8       | 57.8         |            |                                                           | 61.1       |              |           |           | 61.7      |            |
| Development time, min            | 4.7                                                                                                                          | 3.5        | 3.8        | 3.7          |            |                                                           | 3.9        |              |           |           | 4.5       |            |
| Stability, min                   | 6.9                                                                                                                          | 6.3        | 6.0        | 4.9          |            |                                                           | 5.9        |              |           |           | 6.5       |            |
| Mixing tolerance index, BU       | 49                                                                                                                           | 44         | 55         | 65           |            |                                                           | 49         |              |           |           | 52        |            |
| <b>EXTENSOGRAM (45 min pull)</b> |                                                                                                                              |            |            |              |            |                                                           |            |              |           |           |           |            |
| Area, cm2                        | 69                                                                                                                           | 96         | 76         | 67           |            |                                                           | 79         |              |           |           | 80        |            |
| Maximum height, BU               | 260                                                                                                                          | 335        | 325        | 310          |            |                                                           | 315        |              |           |           | 310       |            |
| Extensibility, mm                | 185                                                                                                                          | 190        | 166        | 148          |            |                                                           | 172        |              |           |           | 179       |            |
| <b>ALVEOGRAM</b>                 |                                                                                                                              |            |            |              |            |                                                           |            |              |           |           |           |            |
| Strength (S), cm2                | 41.7                                                                                                                         | 37.5       | 32.0       | 28.1         |            |                                                           | 35.8       |              |           |           | 38.4      |            |
| Stability (P), mm                | 83                                                                                                                           | 81         | 68         | 67           |            |                                                           | 78         |              |           |           | 80        |            |
| Distensibility (L), mm           | 117                                                                                                                          | 106        | 117        | 109          |            |                                                           | 112        |              |           |           | 120       |            |
| Configuration ratio (P/L)        | 0.71                                                                                                                         | 0.77       | 0.58       | 0.62         |            |                                                           | 0.70       |              |           |           | 0.67      |            |
| <b>MIXOGRAM</b>                  |                                                                                                                              |            |            |              |            |                                                           |            |              |           |           |           |            |
| Peak time, min                   | 2.3                                                                                                                          | 2.3        | 2.6        | 2.4          |            |                                                           | 2.3        |              |           |           | 2.3       |            |
| <b>100g BAKING TEST</b>          |                                                                                                                              |            |            |              |            |                                                           |            |              |           |           |           |            |
| Loaf volume, cm3                 | 880                                                                                                                          | 855        | 855        | 815          |            |                                                           | 890        |              |           |           | 900       |            |
| Evaluation                       | 1                                                                                                                            | 0          | 0          | 0            |            |                                                           | 0          |              |           |           | 0         |            |

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

**MIXOGRAM**

10

11

**FARINOGRAM**

10

11

**EXTENSOGRAM**

10

11

**ALVEOGRAM**

10

11



**SOUTH AFRICAN  
MAINLY IRRIGATION  
North-West Province**

| PRODUCTION REGION                | (12)                                                                                                                                                  |            |            |              |           | (14)                                                                                                                                       |            |            |              |           |           |            |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|--------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|--------------|-----------|-----------|------------|
|                                  | North-West<br>Western Region                                                                                                                          |            |            |              |           | North-West<br>Southern Region                                                                                                              |            |            |              |           |           |            |
| Intake silos                     | Bloubank<br>Buhmannsdrif<br>Kameel<br>Kraaipan<br>Madibogo<br>Mafikeng<br>Mareetsane<br>Piet Plessis<br>Springbokpan<br>Vergeleë<br>Vryburg<br>Vryhof |            |            |              |           | Amalia<br>Barberspan<br>Delareyville<br>Excelsior<br>Geysdorp<br>Hallat's Hope<br>Migdol<br>Nooitgedacht<br>Schweizer-Reneke<br>Taaibospan |            |            |              |           |           |            |
| <b>WHEAT</b>                     | <b>ave</b>                                                                                                                                            | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                                                                                                                 | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Protein (12% mb), %              | 11.8                                                                                                                                                  | 11.4       | 12.4       | 0.6          |           | 12.1                                                                                                                                       | 11.1       | 12.5       | 0.5          |           |           |            |
| Falling number, sec              | 363                                                                                                                                                   | 284        | 404        | 68.4         |           | 381                                                                                                                                        | 358        | 412        | 20.4         |           |           |            |
| 1000 Kernel mass (13% mb), g     | 34.4                                                                                                                                                  | 32.6       | 36.1       | 1.8          |           | 37.3                                                                                                                                       | 34.7       | 42.8       | 2.8          |           |           |            |
| Hectolitre mass (dirty), kg/hl   | 74.9                                                                                                                                                  | 70.8       | 79.0       | 4.1          |           | 74.7                                                                                                                                       | 71.7       | 78.4       | 2.7          |           |           |            |
| Screenings (<1.8mm), %           | 5.4                                                                                                                                                   | 4.6        | 7.0        | 1.3          |           | 1.1                                                                                                                                        | 0.8        | 1.5        | 0.2          |           |           |            |
| Total damaged kernels, %         | 0.5                                                                                                                                                   | 0.2        | 0.7        | 0.2          |           | 0.4                                                                                                                                        | 0.2        | 0.7        | 0.2          |           |           |            |
| <b>Number of samples</b>         | <b>3</b>                                                                                                                                              |            |            |              |           | <b>6</b>                                                                                                                                   |            |            |              |           |           |            |
| <b>CULTIVARS</b>                 |                                                                                                                                                       |            |            |              |           |                                                                                                                                            |            |            |              |           |           |            |
| cultivars                        | CRN 826 52.3                                                                                                                                          |            |            |              |           | SST 822 31.2                                                                                                                               |            |            |              |           |           |            |
| with highest % occurrence        | SST 806 30.7                                                                                                                                          |            |            |              |           | CRN 826 28.8                                                                                                                               |            |            |              |           |           |            |
|                                  | SST 876 13.7                                                                                                                                          |            |            |              |           | SST 806 12.7                                                                                                                               |            |            |              |           |           |            |
|                                  | SST 822 3.3                                                                                                                                           |            |            |              |           | Duzi 8.8                                                                                                                                   |            |            |              |           |           |            |
|                                  |                                                                                                                                                       |            |            |              |           | Kariega 7.8                                                                                                                                |            |            |              |           |           |            |
| <b>Number of samples</b>         | <b>3</b>                                                                                                                                              |            |            |              |           | <b>6</b>                                                                                                                                   |            |            |              |           |           |            |
| <b>MIXOGRAM (Quadromat)</b>      | <b>ave</b>                                                                                                                                            | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                                                                                                                 | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Peak time, min                   | 2.8                                                                                                                                                   | 2.8        | 2.9        | 0.1          |           | 3.0                                                                                                                                        | 2.7        | 3.2        | 0.2          |           |           |            |
| Tail height (6min), mm           | 49                                                                                                                                                    | 47         | 50         | 1.5          |           | 51                                                                                                                                         | 47         | 54         | 2.5          |           |           |            |
| <b>Number of samples</b>         | <b>3</b>                                                                                                                                              |            |            |              |           | <b>6</b>                                                                                                                                   |            |            |              |           |           |            |
| <b>BÜHLER EXTRACTION, %</b>      | <b>B1</b>                                                                                                                                             | <b>B2</b>  | <b>B3</b>  | <b>B4</b>    | <b>UT</b> | <b>COW</b>                                                                                                                                 | <b>B1</b>  | <b>B2</b>  | <b>B3</b>    | <b>B4</b> | <b>UT</b> | <b>COW</b> |
|                                  |                                                                                                                                                       |            |            |              | 76.2      |                                                                                                                                            | 76.4       | 76.1       | 75.9         |           |           |            |
| <b>FLOUR</b>                     |                                                                                                                                                       |            |            |              |           |                                                                                                                                            |            |            |              |           |           |            |
| Protein (12% mb), %              |                                                                                                                                                       |            |            |              | 11.7      |                                                                                                                                            | 11.6       | 11.3       | 12.2         |           |           |            |
| Colour, KJ                       |                                                                                                                                                       |            |            |              | -0.7      |                                                                                                                                            | -2.1       | -1.3       | -2.1         |           |           |            |
| <b>FARINOGRAM</b>                |                                                                                                                                                       |            |            |              |           |                                                                                                                                            |            |            |              |           |           |            |
| Water absorption (14% mb), %     |                                                                                                                                                       |            |            |              | 61.4      |                                                                                                                                            | 61.4       | 59.9       | 62.5         |           |           |            |
| Development time, min            |                                                                                                                                                       |            |            |              | 2.7       |                                                                                                                                            | 3.2        | 4.4        | 5.0          |           |           |            |
| Stability, min                   |                                                                                                                                                       |            |            |              | 6.1       |                                                                                                                                            | 7.5        | 7.3        | 8.2          |           |           |            |
| Mixing tolerance index, BU       |                                                                                                                                                       |            |            |              | 38        |                                                                                                                                            | 34         | 44         | 42           |           |           |            |
| <b>EXTENSOGRAM (45 min pull)</b> |                                                                                                                                                       |            |            |              |           |                                                                                                                                            |            |            |              |           |           |            |
| Area, cm2                        |                                                                                                                                                       |            |            |              | 90        |                                                                                                                                            | 80         | 82         | 92           |           |           |            |
| Maximum height, BU               |                                                                                                                                                       |            |            |              | 325       |                                                                                                                                            | 310        | 300        | 330          |           |           |            |
| Extensibility, mm                |                                                                                                                                                       |            |            |              | 194       |                                                                                                                                            | 177        | 195        | 196          |           |           |            |
| <b>ALVEOGRAM</b>                 |                                                                                                                                                       |            |            |              |           |                                                                                                                                            |            |            |              |           |           |            |
| Strength (S), cm2                |                                                                                                                                                       |            |            |              | 39.1      |                                                                                                                                            | 39.4       | 35.3       | 47.9         |           |           |            |
| Stability (P), mm                |                                                                                                                                                       |            |            |              | 70        |                                                                                                                                            | 76         | 66         | 83           |           |           |            |
| Distensibility (L), mm           |                                                                                                                                                       |            |            |              | 139       |                                                                                                                                            | 130        | 135        | 137          |           |           |            |
| Configuration ratio (P/L)        |                                                                                                                                                       |            |            |              | 0.50      |                                                                                                                                            | 0.59       | 0.49       | 0.60         |           |           |            |
| <b>MIXOGRAM</b>                  |                                                                                                                                                       |            |            |              |           |                                                                                                                                            |            |            |              |           |           |            |
| Peak time, min                   |                                                                                                                                                       |            |            |              | 2.5       |                                                                                                                                            | 2.6        | 2.7        | 2.8          |           |           |            |
| <b>100g BAKING TEST</b>          |                                                                                                                                                       |            |            |              |           |                                                                                                                                            |            |            |              |           |           |            |
| Loaf volume, cm3                 |                                                                                                                                                       |            |            |              | 880       |                                                                                                                                            | 960        | 890        | 925          |           |           |            |
| Evaluation                       |                                                                                                                                                       |            |            |              | 1         |                                                                                                                                            | 0          | 0          | 0            |           |           |            |

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

**MIXOGRAM**

12

14

**FARINOGRAM**

12

14

**EXTENSOGRAM**

12

14

**ALVEOGRAM**

12

14

**SOUTH AFRICAN  
MAINLY IRRIGATION  
North-West Province**

| PRODUCTION REGION                | (15)                                                            |            |            |              |           | (17)                                                                                                     |            |            |              |           |           |            |
|----------------------------------|-----------------------------------------------------------------|------------|------------|--------------|-----------|----------------------------------------------------------------------------------------------------------|------------|------------|--------------|-----------|-----------|------------|
|                                  | North-West<br>South-Eastern Region                              |            |            |              |           | North-West<br>Central Northern Region (Ottosdal)                                                         |            |            |              |           |           |            |
| Intake silos                     | Bloemhof<br>Christiana<br>Hertzogville<br>Hoopstad<br>Kingswood |            |            |              |           | Bospoort<br>Hartbeesfontein<br>Kleinharth<br>Melliodora<br>Ottosdal<br>Rostrataville<br>Vermaas<br>Werda |            |            |              |           |           |            |
| <b>WHEAT</b>                     |                                                                 |            |            |              |           |                                                                                                          |            |            |              |           |           |            |
|                                  | <b>ave</b>                                                      | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                                                                               | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Protein (12% mb), %              | 11.8                                                            | 10.6       | 13.5       | 1.0          |           | 11.8                                                                                                     | 11.6       | 12.1       | 0.3          |           |           |            |
| Falling number, sec              | 400                                                             | 299        | 437        | 41.3         |           | 399                                                                                                      | 378        | 412        | 18.4         |           |           |            |
| 1000 Kernel mass (13% mb), g     | 37.2                                                            | 25.6       | 41.3       | 5.0          |           | 37.0                                                                                                     | 36.9       | 37.0       | 0.1          |           |           |            |
| Hectolitre mass (dirty), kg/hl   | 77.6                                                            | 75.2       | 79.5       | 1.7          |           | 77.1                                                                                                     | 75.5       | 79.3       | 2.0          |           |           |            |
| Screenings (<1.8mm), %           | 1.1                                                             | 0.2        | 5.1        | 1.5          |           | 1.6                                                                                                      | 1.0        | 2.2        | 0.6          |           |           |            |
| Total damaged kernels, %         | 0.6                                                             | 0.1        | 1.1        | 0.4          |           | 0.4                                                                                                      | 0.1        | 0.6        | 0.2          |           |           |            |
| <b>Number of samples</b>         | <b>10</b>                                                       |            |            |              |           | <b>3</b>                                                                                                 |            |            |              |           |           |            |
| <b>CULTIVARS</b>                 |                                                                 |            |            |              |           |                                                                                                          |            |            |              |           |           |            |
|                                  |                                                                 | CRN 826    | 43.9       |              |           |                                                                                                          | CRN 826    | 45.3       |              |           |           |            |
| cultivars                        |                                                                 | SST 806    | 24.3       |              |           |                                                                                                          | SST 822    | 34.7       |              |           |           |            |
| with highest %                   |                                                                 | PAN 3118   | 14.7       |              |           |                                                                                                          | SST 876    | 12.7       |              |           |           |            |
| occurrence                       |                                                                 | SST 835    | 5.5        |              |           |                                                                                                          | SST 806    | 5.7        |              |           |           |            |
|                                  |                                                                 | SST 935    | 4.4        |              |           |                                                                                                          | PAN 3434   | 1.7        |              |           |           |            |
| <b>Number of samples</b>         | <b>10</b>                                                       |            |            |              |           | <b>3</b>                                                                                                 |            |            |              |           |           |            |
| <b>MIXOGRAM (Quadromat)</b>      |                                                                 |            |            |              |           |                                                                                                          |            |            |              |           |           |            |
|                                  | <b>ave</b>                                                      | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                                                                               | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Peak time, min                   | 3.0                                                             | 2.4        | 3.5        | 0.3          |           | 2.9                                                                                                      | 2.8        | 3.0        | 0.1          |           |           |            |
| Tail height (6min), mm           | 51                                                              | 47         | 59         | 4.0          |           | 50                                                                                                       | 50         | 51         | 0.6          |           |           |            |
| <b>Number of samples</b>         | <b>10</b>                                                       |            |            |              |           | <b>3</b>                                                                                                 |            |            |              |           |           |            |
| <b>BÜHLER EXTRACTION, %</b>      | <b>B1</b>                                                       | <b>B2</b>  | <b>B3</b>  | <b>B4</b>    | <b>UT</b> | <b>COW</b>                                                                                               | <b>B1</b>  | <b>B2</b>  | <b>B3</b>    | <b>B4</b> | <b>UT</b> | <b>COW</b> |
|                                  | 75.1                                                            | 77.3       | 77.5       |              | 74.2      |                                                                                                          |            | 76.8       |              |           |           |            |
| <b>FLOUR</b>                     |                                                                 |            |            |              |           |                                                                                                          |            |            |              |           |           |            |
| Protein (12% mb), %              | 13.0                                                            | 11.1       | 10.5       |              | 11.7      |                                                                                                          |            | 11.9       |              |           |           |            |
| Colour, KJ                       | -2.0                                                            | -2.0       | -2.4       |              | -1.1      |                                                                                                          |            | -1.8       |              |           |           |            |
| <b>FARINOGRAM</b>                |                                                                 |            |            |              |           |                                                                                                          |            |            |              |           |           |            |
| Water absorption (14% mb), %     | 65.1                                                            | 61.0       | 59.8       |              | 60.0      |                                                                                                          |            | 61.0       |              |           |           |            |
| Development time, min            | 6.8                                                             | 4.8        | 4.2        |              | 4.8       |                                                                                                          |            | 4.7        |              |           |           |            |
| Stability, min                   | 16.2                                                            | 7.5        | 6.2        |              | 10.5      |                                                                                                          |            | 8.7        |              |           |           |            |
| Mixing tolerance index, BU       | 19                                                              | 45         | 54         |              | 35        |                                                                                                          |            | 36         |              |           |           |            |
| <b>EXTENSOGRAM (45 min pull)</b> |                                                                 |            |            |              |           |                                                                                                          |            |            |              |           |           |            |
| Area, cm2                        | 125                                                             | 96         | 100        |              | 128       |                                                                                                          |            | 125        |              |           |           |            |
| Maximum height, BU               | 425                                                             | 365        | 315        |              | 485       |                                                                                                          |            | 410        |              |           |           |            |
| Extensibility, mm                | 206                                                             | 184        | 222        |              | 181       |                                                                                                          |            | 212        |              |           |           |            |
| <b>ALVEOGRAM</b>                 |                                                                 |            |            |              |           |                                                                                                          |            |            |              |           |           |            |
| Strength (S), cm2                | 66.7                                                            | 43.7       | 34.4       |              | 55.7      |                                                                                                          |            | 50.2       |              |           |           |            |
| Stability (P), mm                | 121                                                             | 86         | 68         |              | 97        |                                                                                                          |            | 79         |              |           |           |            |
| Distensibility (L), mm           | 105                                                             | 116        | 123        |              | 124       |                                                                                                          |            | 156        |              |           |           |            |
| Configuration ratio (P/L)        | 1.14                                                            | 0.75       | 0.55       |              | 0.79      |                                                                                                          |            | 0.51       |              |           |           |            |
| <b>MIXOGRAM</b>                  |                                                                 |            |            |              |           |                                                                                                          |            |            |              |           |           |            |
| Peak time, min                   | 2.9                                                             | 2.7        | 2.8        |              | 3.0       |                                                                                                          |            | 2.5        |              |           |           |            |
| <b>100g BAKING TEST</b>          |                                                                 |            |            |              |           |                                                                                                          |            |            |              |           |           |            |
| Loaf volume, cm3                 | 925                                                             | 905        | 920        |              | 905       |                                                                                                          |            | 880        |              |           |           |            |
| Evaluation                       | 2                                                               | 0          | 0          |              | 0         |                                                                                                          |            | 1          |              |           |           |            |

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

**MIXOGRAM**

15

17



**FARINOGRAM**

15

17



**EXTENSOGRAM**

15

17



**ALVEOGRAM**

15

17



**SOUTH AFRICAN  
MAINLY IRRIGATION  
North-West Province**

| PRODUCTION REGION                | (18)<br>North-West<br>Central Region (Ventersdorp)                                                |            |            |              |           | (19)<br>North-West<br>Central Region (Lichtenburg)                       |            |            |              |           |           |            |
|----------------------------------|---------------------------------------------------------------------------------------------------|------------|------------|--------------|-----------|--------------------------------------------------------------------------|------------|------------|--------------|-----------|-----------|------------|
|                                  | Intake silos                                                                                      |            |            |              |           | Intake silos                                                             |            |            |              |           |           |            |
|                                  | Bodenstein<br>Buckingham<br>Coligny<br>Enselspruit<br>Makokskraal<br>Potchefstroom<br>Ventersdorp |            |            |              |           | Grootpan<br>Halfpad<br>Hibernia<br>Lichtenburg<br>Lottiehalte<br>Lusthof |            |            |              |           |           |            |
| <b>WHEAT</b>                     | <b>ave</b>                                                                                        | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                                               | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Protein (12% mb), %              | 11.1                                                                                              | 10.4       | 11.9       | 0.7          |           | 11.4                                                                     | 10.5       | 12.1       | 0.7          |           |           |            |
| Falling number, sec              | 365                                                                                               | 349        | 411        | 23.2         |           | 385                                                                      | 348        | 413        | 23.5         |           |           |            |
| 1000 Kernel mass (13% mb), g     | 38.4                                                                                              | 37.5       | 39.1       | 0.5          |           | 40.1                                                                     | 32.1       | 44.2       | 3.4          |           |           |            |
| Hectolitre mass (dirty), kg/hl   | 77.3                                                                                              | 76.7       | 78.3       | 0.6          |           | 77.6                                                                     | 74.2       | 79.3       | 1.7          |           |           |            |
| Screenings (<1.8mm), %           | 0.6                                                                                               | 0.5        | 0.7        | 0.1          |           | 1.3                                                                      | 0.3        | 3.1        | 0.8          |           |           |            |
| Total damaged kernels, %         | 0.7                                                                                               | 0.5        | 1.1        | 0.2          |           | 0.5                                                                      | 0.3        | 1.1        | 0.2          |           |           |            |
| <b>Number of samples</b>         | <b>6</b>                                                                                          |            |            |              |           | <b>10</b>                                                                |            |            |              |           |           |            |
| <b>CULTIVARS</b>                 |                                                                                                   |            |            |              |           |                                                                          |            |            |              |           |           |            |
|                                  | SST 806                                                                                           |            | 53.7       |              |           | SST 806                                                                  |            | 35.0       |              |           |           |            |
| cultivars                        | CRN 826                                                                                           |            | 40.8       |              |           | CRN 826                                                                  |            | 33.9       |              |           |           |            |
| with highest %                   | Olifants                                                                                          |            | 3.7        |              |           | SST 876                                                                  |            | 17.2       |              |           |           |            |
| occurrence                       | SST 876                                                                                           |            | 1.8        |              |           | SST 822                                                                  |            | 6.4        |              |           |           |            |
|                                  |                                                                                                   |            |            |              |           | SST 835                                                                  |            | 5.5        |              |           |           |            |
| <b>Number of samples</b>         | <b>6</b>                                                                                          |            |            |              |           | <b>10</b>                                                                |            |            |              |           |           |            |
| <b>MIXOGRAM (Quadromat)</b>      | <b>ave</b>                                                                                        | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                                               | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Peak time, min                   | 2.8                                                                                               | 2.7        | 3.0        | 0.1          |           | 2.7                                                                      | 2.3        | 3.0        | 0.2          |           |           |            |
| Tail height (6min), mm           | 50                                                                                                | 47         | 52         | 1.7          |           | 49                                                                       | 46         | 51         | 1.6          |           |           |            |
| <b>Number of samples</b>         | <b>6</b>                                                                                          |            |            |              |           | <b>10</b>                                                                |            |            |              |           |           |            |
| <b>BÜHLER EXTRACTION, %</b>      | <b>B1</b>                                                                                         | <b>B2</b>  | <b>B3</b>  | <b>B4</b>    | <b>UT</b> | <b>COW</b>                                                               | <b>B1</b>  | <b>B2</b>  | <b>B3</b>    | <b>B4</b> | <b>UT</b> | <b>COW</b> |
|                                  |                                                                                                   | 78.0       | 77.8       |              |           |                                                                          | 77.3       | 78.3       |              |           |           | 76.8       |
| <b>FLOUR</b>                     |                                                                                                   |            |            |              |           |                                                                          |            |            |              |           |           |            |
| Protein (12% mb), %              |                                                                                                   | 11.4       | 9.8        |              |           |                                                                          | 11.9       | 10.8       |              |           |           | 10.7       |
| Colour, KJ                       |                                                                                                   | -1.4       | -1.8       |              |           |                                                                          | -1.8       | -1.9       |              |           |           | -1.5       |
| <b>FARINOGRAM</b>                |                                                                                                   |            |            |              |           |                                                                          |            |            |              |           |           |            |
| Water absorption (14% mb), %     |                                                                                                   | 62.8       | 60.0       |              |           |                                                                          | 62.9       | 61.0       |              |           |           | 60.5       |
| Development time, min            |                                                                                                   | 5.0        | 3.5        |              |           |                                                                          | 4.9        | 5.0        |              |           |           | 4.3        |
| Stability, min                   |                                                                                                   | 6.5        | 6.5        |              |           |                                                                          | 5.7        | 6.4        |              |           |           | 7.0        |
| Mixing tolerance index, BU       |                                                                                                   | 59         | 46         |              |           |                                                                          | 61         | 62         |              |           |           | 48         |
| <b>EXTENSOGRAM (45 min pull)</b> |                                                                                                   |            |            |              |           |                                                                          |            |            |              |           |           |            |
| Area, cm2                        |                                                                                                   | 99         | 88         |              |           |                                                                          | 103        | 100        |              |           |           | 88         |
| Maximum height, BU               |                                                                                                   | 335        | 350        |              |           |                                                                          | 330        | 345        |              |           |           | 335        |
| Extensibility, mm                |                                                                                                   | 204        | 175        |              |           |                                                                          | 218        | 202        |              |           |           | 185        |
| <b>ALVEOGRAM</b>                 |                                                                                                   |            |            |              |           |                                                                          |            |            |              |           |           |            |
| Strength (S), cm2                |                                                                                                   | 45.6       | 34.6       |              |           |                                                                          | 44.6       | 39.1       |              |           |           | 38.2       |
| Stability (P), mm                |                                                                                                   | 85         | 76         |              |           |                                                                          | 81         | 77         |              |           |           | 75         |
| Distensibility (L), mm           |                                                                                                   | 129        | 109        |              |           |                                                                          | 134        | 124        |              |           |           | 125        |
| Configuration ratio (P/L)        |                                                                                                   | 0.65       | 0.69       |              |           |                                                                          | 0.61       | 0.62       |              |           |           | 0.60       |
| <b>MIXOGRAM</b>                  |                                                                                                   |            |            |              |           |                                                                          |            |            |              |           |           |            |
| Peak time, min                   |                                                                                                   | 2.5        | 2.7        |              |           |                                                                          | 2.3        | 2.3        |              |           |           | 2.8        |
| <b>100g BAKING TEST</b>          |                                                                                                   |            |            |              |           |                                                                          |            |            |              |           |           |            |
| Loaf volume, cm3                 |                                                                                                   | 940        | 855        |              |           |                                                                          | 950        | 850        |              |           |           | 850        |
| Evaluation                       |                                                                                                   | 0          | 0          |              |           |                                                                          | 0          | 0          |              |           |           | 0          |

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION



**SOUTH AFRICAN  
MAINLY IRRIGATION  
North-West Province**

**SUMMER RAINFALL WHEAT  
(AND IRRIGATION)  
Free State Province (Central)**

| PRODUCTION REGION                | (20)                                                                                    |            |            |              | (21)                                                                                                                |            |            |              |           |           |           |            |
|----------------------------------|-----------------------------------------------------------------------------------------|------------|------------|--------------|---------------------------------------------------------------------------------------------------------------------|------------|------------|--------------|-----------|-----------|-----------|------------|
|                                  | North-West<br>Eastern Region                                                            |            |            |              | Free State<br>North-Western Region (Viljoenskroon)                                                                  |            |            |              |           |           |           |            |
| Intake silos                     | Battery<br>Boons<br>Brits<br>Derby<br>Koster<br>Rustenburg<br>Swartruggens<br>Syferbult |            |            |              | Attie<br>Groenebloem<br>Heuningspruit<br>Koppies<br>Rooiwal<br>Vierfontein<br>Viljoenskroon<br>Vredefort<br>Weiveld |            |            |              |           |           |           |            |
| <b>WHEAT</b>                     | <b>ave</b>                                                                              | <b>min</b> | <b>max</b> | <b>stdev</b> | <b>ave</b>                                                                                                          | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |           |            |
| Protein (12% mb), %              | 11.2                                                                                    | 9.8        | 12.6       | 0.7          | 12.0                                                                                                                | 11.2       | 13.0       | 0.7          |           |           |           |            |
| Falling number, sec              | 360                                                                                     | 310        | 400        | 27.2         | 354                                                                                                                 | 278        | 462        | 67.4         |           |           |           |            |
| 1000 Kernel mass (13% mb), g     | 41.4                                                                                    | 37.6       | 45.1       | 1.9          | 36.9                                                                                                                | 33.0       | 38.3       | 1.8          |           |           |           |            |
| Hectolitre mass (dirty), kg/hl   | 77.4                                                                                    | 69.9       | 79.1       | 2.5          | 78.4                                                                                                                | 74.8       | 80.0       | 1.9          |           |           |           |            |
| Screenings (<1.8mm), %           | 1.3                                                                                     | 0.1        | 2.6        | 0.6          | 2.3                                                                                                                 | 1.3        | 4.6        | 1.1          |           |           |           |            |
| Total damaged kernels, %         | 1.8                                                                                     | 0.5        | 5.2        | 1.4          | 1.0                                                                                                                 | 0.5        | 1.2        | 0.2          |           |           |           |            |
| <b>Number of samples</b>         | <b>13</b>                                                                               |            |            |              | <b>8</b>                                                                                                            |            |            |              |           |           |           |            |
| <b>CULTIVARS</b>                 |                                                                                         |            |            |              |                                                                                                                     |            |            |              |           |           |           |            |
| cultivars                        | CRN 826 25.4                                                                            |            |            |              | Elands 35.6                                                                                                         |            |            |              |           |           |           |            |
| with highest % occurrence        | SST 806 21.4                                                                            |            |            |              | CRN 826 19.9                                                                                                        |            |            |              |           |           |           |            |
|                                  | Kariega 13.2                                                                            |            |            |              | SST 806 17.9                                                                                                        |            |            |              |           |           |           |            |
|                                  | SST 876 11.2                                                                            |            |            |              | PAN 3118 14.6                                                                                                       |            |            |              |           |           |           |            |
|                                  | SST 835 9.9                                                                             |            |            |              | Betta-DN 5.4                                                                                                        |            |            |              |           |           |           |            |
| <b>Number of samples</b>         | <b>13</b>                                                                               |            |            |              | <b>8</b>                                                                                                            |            |            |              |           |           |           |            |
| <b>MIXOGRAM (Quadromat)</b>      | <b>ave</b>                                                                              | <b>min</b> | <b>max</b> | <b>stdev</b> | <b>ave</b>                                                                                                          | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |           |            |
| Peak time, min                   | 2.7                                                                                     | 2.3        | 3.3        | 0.3          | 3.6                                                                                                                 | 3.2        | 4.4        | 0.5          |           |           |           |            |
| Tail height (6min), mm           | 49                                                                                      | 45         | 55         | 3.3          | 55                                                                                                                  | 51         | 60         | 2.8          |           |           |           |            |
| <b>Number of samples</b>         | <b>13</b>                                                                               |            |            |              | <b>8</b>                                                                                                            |            |            |              |           |           |           |            |
| <b>BÜHLER EXTRACTION, %</b>      | <b>B1</b>                                                                               | <b>B2</b>  | <b>B3</b>  | <b>B4</b>    | <b>UT</b>                                                                                                           | <b>COW</b> | <b>B1</b>  | <b>B2</b>    | <b>B3</b> | <b>B4</b> | <b>UT</b> | <b>COW</b> |
|                                  | 76.7                                                                                    | 77.8       | 76.9       |              |                                                                                                                     | 77.7       | 75.4       | 76.1         |           |           |           |            |
| <b>FLOUR</b>                     |                                                                                         |            |            |              |                                                                                                                     |            |            |              |           |           |           |            |
| Protein (12% mb), %              | 12.2                                                                                    | 11.1       | 10.5       |              |                                                                                                                     | 10.3       | 12.6       | 11.1         |           |           |           |            |
| Colour, KJ                       | -1.2                                                                                    | -1.4       | -1.3       |              |                                                                                                                     | -1.7       | -1.0       | -1.6         |           |           |           |            |
| <b>FARINOGRAM</b>                |                                                                                         |            |            |              |                                                                                                                     |            |            |              |           |           |           |            |
| Water absorption (14% mb), %     | 65.0                                                                                    | 62.0       | 59.8       |              |                                                                                                                     | 58.9       | 60.8       | 58.8         |           |           |           |            |
| Development time, min            | 5.2                                                                                     | 2.5        | 3.2        |              |                                                                                                                     | 3.8        | 5.9        | 2.0          |           |           |           |            |
| Stability, min                   | 9.4                                                                                     | 6.2        | 7.7        |              |                                                                                                                     | 6.1        | 12.7       | 10.8         |           |           |           |            |
| Mixing tolerance index, BU       | 33                                                                                      | 41         | 36         |              |                                                                                                                     | 55         | 25         | 10           |           |           |           |            |
| <b>EXTENSOGRAM (45 min pull)</b> |                                                                                         |            |            |              |                                                                                                                     |            |            |              |           |           |           |            |
| Area, cm2                        | 127                                                                                     | 90         | 108        |              |                                                                                                                     | 95         | 138        | 139          |           |           |           |            |
| Maximum height, BU               | 405                                                                                     | 300        | 375        |              |                                                                                                                     | 335        | 485        | 535          |           |           |           |            |
| Extensibility, mm                | 217                                                                                     | 210        | 199        |              |                                                                                                                     | 197        | 194        | 186          |           |           |           |            |
| <b>ALVEOGRAM</b>                 |                                                                                         |            |            |              |                                                                                                                     |            |            |              |           |           |           |            |
| Strength (S), cm2                | 54.9                                                                                    | 39.1       | 41.9       |              |                                                                                                                     | 32.7       | 56.3       | 49.5         |           |           |           |            |
| Stability (P), mm                | 109                                                                                     | 78         | 79         |              |                                                                                                                     | 59         | 99         | 91           |           |           |           |            |
| Distensibility (L), mm           | 106                                                                                     | 121        | 122        |              |                                                                                                                     | 140        | 110        | 112          |           |           |           |            |
| Configuration ratio (P/L)        | 1.03                                                                                    | 0.64       | 0.65       |              |                                                                                                                     | 0.42       | 0.90       | 0.81         |           |           |           |            |
| <b>MIXOGRAM</b>                  |                                                                                         |            |            |              |                                                                                                                     |            |            |              |           |           |           |            |
| Peak time, min                   | 2.5                                                                                     | 2.6        | 2.9        |              |                                                                                                                     | 2.5        | 3.7        | 3.7          |           |           |           |            |
| <b>100g BAKING TEST</b>          |                                                                                         |            |            |              |                                                                                                                     |            |            |              |           |           |           |            |
| Loaf volume, cm3                 | 830                                                                                     | 900        | 870        |              |                                                                                                                     | 830        | 900        | 865          |           |           |           |            |
| Evaluation                       | 3                                                                                       | 0          | 0          |              |                                                                                                                     | 0          | 2          | 0            |           |           |           |            |

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION





# SOUTH AFRICAN

## SUMMER RAINFALL WHEAT (AND IRRIGATION)

### Free State Province (Central)

| PRODUCTION REGION                | (26)                                                                                            |            |            |              |           | (27)                                                                       |            |            |              |           |           |            |
|----------------------------------|-------------------------------------------------------------------------------------------------|------------|------------|--------------|-----------|----------------------------------------------------------------------------|------------|------------|--------------|-----------|-----------|------------|
|                                  | Free State<br>South-Eastern Region (Senekal)                                                    |            |            |              |           | Free State<br>Northern Region                                              |            |            |              |           |           |            |
| Intake silos                     | Arlington<br>Kaallaagte<br>Libertas<br>Marquard<br>Meets<br>Monte Video<br>Senekal<br>Steynsrus |            |            |              |           | Gottenburg<br>Heilbron<br>Hoogte<br>Mooigeleë<br>Petrus Steyn<br>Wolwehoek |            |            |              |           |           |            |
| <b>WHEAT</b>                     | <b>ave</b>                                                                                      | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                                                 | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Protein (12% mb), %              | 11.1                                                                                            | 9.4        | 13.1       | 1.0          |           | 11.1                                                                       | 9.2        | 13.7       | 1.2          |           |           |            |
| Falling number, sec              | 312                                                                                             | 227        | 392        | 34.2         |           | 298                                                                        | 209        | 378        | 59.8         |           |           |            |
| 1000 Kernel mass (13% mb), g     | 38.4                                                                                            | 34.2       | 42.1       | 2.4          |           | 39.8                                                                       | 36.6       | 42.1       | 1.6          |           |           |            |
| Hectolitre mass (dirty), kg/hl   | 79.2                                                                                            | 75.9       | 81.3       | 1.4          |           | 80.2                                                                       | 78.0       | 82.2       | 1.4          |           |           |            |
| Screenings (<1.8mm), %           | 1.5                                                                                             | 0.6        | 3.2        | 0.7          |           | 0.7                                                                        | 0.2        | 1.1        | 0.3          |           |           |            |
| Total damaged kernels, %         | 0.4                                                                                             | 0.0        | 1.0        | 0.3          |           | 0.7                                                                        | 0.1        | 3.0        | 0.8          |           |           |            |
| <b>Number of samples</b>         | <b>26</b>                                                                                       |            |            |              |           | <b>10</b>                                                                  |            |            |              |           |           |            |
| <b>CULTIVARS</b>                 |                                                                                                 |            |            |              |           |                                                                            |            |            |              |           |           |            |
| cultivars                        | Elands 32.1                                                                                     |            |            |              |           | Elands 47.8                                                                |            |            |              |           |           |            |
| with highest % occurrence        | Gariiep 31.0                                                                                    |            |            |              |           | PAN 3377 12.0                                                              |            |            |              |           |           |            |
|                                  | PAN 3377 10.8                                                                                   |            |            |              |           | CRN 826 10.2                                                               |            |            |              |           |           |            |
|                                  | PAN 3118 5.3                                                                                    |            |            |              |           | SST 806 6.7                                                                |            |            |              |           |           |            |
|                                  | Betta-DN 5.0                                                                                    |            |            |              |           | SST 356 5.4                                                                |            |            |              |           |           |            |
| <b>Number of samples</b>         | <b>26</b>                                                                                       |            |            |              |           | <b>10</b>                                                                  |            |            |              |           |           |            |
| <b>MIXOGRAM (Quadromat)</b>      | <b>ave</b>                                                                                      | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                                                 | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Peak time, min                   | 3.6                                                                                             | 2.8        | 5.0        | 0.5          |           | 3.2                                                                        | 2.4        | 3.8        | 0.5          |           |           |            |
| Tail height (6min), mm           | 54                                                                                              | 46         | 62         | 4.2          |           | 53                                                                         | 47         | 65         | 5.0          |           |           |            |
| <b>Number of samples</b>         | <b>26</b>                                                                                       |            |            |              |           | <b>10</b>                                                                  |            |            |              |           |           |            |
| <b>BÜHLER EXTRACTION, %</b>      | <b>B1</b>                                                                                       | <b>B2</b>  | <b>B3</b>  | <b>B4</b>    | <b>UT</b> | <b>COW</b>                                                                 | <b>B1</b>  | <b>B2</b>  | <b>B3</b>    | <b>B4</b> | <b>UT</b> | <b>COW</b> |
|                                  | 75.0                                                                                            | 75.0       | 75.4       | 75.0         | 74.7      |                                                                            |            | 74.9       | 74.5         | 74.1      |           |            |
| <b>FLOUR</b>                     |                                                                                                 |            |            |              |           |                                                                            |            |            |              |           |           |            |
| Protein (12% mb), %              | 12.8                                                                                            | 11.5       | 10.1       | 9.1          | 9.1       |                                                                            |            | 10.8       | 9.9          | 8.9       |           |            |
| Colour, KJ                       | -1.6                                                                                            | 1.8        | -0.3       | -1.9         | -1.0      |                                                                            |            | -0.7       | -1.8         | -2.0      |           |            |
| <b>FARINOGRAM</b>                |                                                                                                 |            |            |              |           |                                                                            |            |            |              |           |           |            |
| Water absorption (14% mb), %     | 62.4                                                                                            | 61.5       | 61.1       | 62.1         | 58.9      |                                                                            |            | 62.9       | 62.9         | 62.2      |           |            |
| Development time, min            | 3.8                                                                                             | 3.5        | 2.2        | 1.8          | 1.4       |                                                                            |            | 4.5        | 2.3          | 1.9       |           |            |
| Stability, min                   | 13.1                                                                                            | 8.9        | 6.1        | 3.4          | 3.0       |                                                                            |            | 7.5        | 6.2          | 3.7       |           |            |
| Mixing tolerance index, BU       | 18                                                                                              | 26         | 46         | 71           | 66        |                                                                            |            | 44         | 43           | 66        |           |            |
| <b>EXTENSOGRAM (45 min pull)</b> |                                                                                                 |            |            |              |           |                                                                            |            |            |              |           |           |            |
| Area, cm2                        | 142                                                                                             | 124        | 95         | 85           | 96        |                                                                            |            | 94         | 82           | 85        |           |            |
| Maximum height, BU               | 520                                                                                             | 475        | 455        | 405          | 395       |                                                                            |            | 390        | 365          | 405       |           |            |
| Extensibility, mm                | 191                                                                                             | 187        | 150        | 146          | 151       |                                                                            |            | 166        | 156          | 145       |           |            |
| <b>ALVEOGRAM</b>                 |                                                                                                 |            |            |              |           |                                                                            |            |            |              |           |           |            |
| Strength (S), cm2                | 57.3                                                                                            | 52.1       | 43.6       | 36.5         | 34.6      |                                                                            |            | 48.2       | 43.0         | 37.6      |           |            |
| Stability (P), mm                | 114                                                                                             | 108        | 118        | 129          | 97        |                                                                            |            | 109        | 113          | 119       |           |            |
| Distensibility (L), mm           | 92                                                                                              | 94         | 65         | 46           | 66        |                                                                            |            | 93         | 73           | 56        |           |            |
| Configuration ratio (P/L)        | 1.23                                                                                            | 1.15       | 1.82       | 2.78         | 1.46      |                                                                            |            | 1.17       | 1.53         | 2.13      |           |            |
| <b>MIXOGRAM</b>                  |                                                                                                 |            |            |              |           |                                                                            |            |            |              |           |           |            |
| Peak time, min                   | 3.5                                                                                             | 2.8        | 3.3        | 2.9          | 2.7       |                                                                            |            | 2.5        | 3.2          | 2.3       |           |            |
| <b>100g BAKING TEST</b>          |                                                                                                 |            |            |              |           |                                                                            |            |            |              |           |           |            |
| Loaf volume, cm3                 | 885                                                                                             | 825        | 785        | 550          | 725       |                                                                            |            | 800        | 715          | 645       |           |            |
| Evaluation                       | 3                                                                                               | 2          | 1          | 6            | 1         |                                                                            |            | 2          | 3            | 4         |           |            |

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

**MIXOGRAM**

26

27



**FARINOGRAM**

26

27



**EXTENSOGRAM**

26

27



**ALVEOGRAM**

26

27



# SOUTH AFRICAN

## SUMMER RAINFALL WHEAT (AND IRRIGATION)

### Free State Province (North-Western)

| PRODUCTION REGION                | (22)                                                                                |            |            |              | (23)                                                                               |            |            |              |           |           |           |            |
|----------------------------------|-------------------------------------------------------------------------------------|------------|------------|--------------|------------------------------------------------------------------------------------|------------|------------|--------------|-----------|-----------|-----------|------------|
|                                  | Free-State<br>North-Western Region (Bothaville)                                     |            |            |              | Free-State<br>North-Western Region (Bultfontein)                                   |            |            |              |           |           |           |            |
| Intake silos                     | Allanridge<br>Bothaville<br>Mirage<br>Odendaalsrus<br>Schoonspruit<br>Schuttendraai |            |            |              | Bultfontein<br>Losdoorns<br>Protespan<br>Tierfontein<br>Wesselsbron<br>Willemsrust |            |            |              |           |           |           |            |
| <b>WHEAT</b>                     | <b>ave</b>                                                                          | <b>min</b> | <b>max</b> | <b>stdev</b> | <b>ave</b>                                                                         | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |           |            |
| Protein (12% mb), %              | 12.1                                                                                | 11.0       | 12.6       | 0.7          | 11.5                                                                               | 9.0        | 13.9       | 1.1          |           |           |           |            |
| Falling number, sec              | 383                                                                                 | 294        | 431        | 64.2         | 367                                                                                | 151        | 445        | 65.3         |           |           |           |            |
| 1000 Kernel mass (13% mb), g     | 36.6                                                                                | 33.3       | 38.8       | 1.8          | 35.7                                                                               | 22.0       | 39.4       | 3.6          |           |           |           |            |
| Hectolitre mass (dirty), kg/hl   | 77.8                                                                                | 76.0       | 79.6       | 1.3          | 77.7                                                                               | 66.9       | 81.6       | 3.0          |           |           |           |            |
| Screenings (<1.8mm), %           | 1.6                                                                                 | 0.6        | 2.3        | 0.6          | 2.1                                                                                | 0.9        | 8.3        | 1.4          |           |           |           |            |
| Total damaged kernels, %         | 1.7                                                                                 | 0.5        | 4.3        | 1.4          | 0.5                                                                                | 0.1        | 2.4        | 0.5          |           |           |           |            |
| <b>Number of samples</b>         | <b>6</b>                                                                            |            |            |              | <b>25</b>                                                                          |            |            |              |           |           |           |            |
| <b>CULTIVARS</b>                 |                                                                                     |            |            |              |                                                                                    |            |            |              |           |           |           |            |
| cultivars                        | CRN 826                                                                             |            | 33.0       |              | CRN 826                                                                            |            | 40.3       |              |           |           |           |            |
| with highest % occurrence        | PAN 3377                                                                            |            | 14.8       |              | PAN 3118                                                                           |            | 26.9       |              |           |           |           |            |
|                                  | SST 806                                                                             |            | 12.3       |              | PAN 3120                                                                           |            | 7.4        |              |           |           |           |            |
|                                  | PAN 3118                                                                            |            | 9.8        |              | SST 334                                                                            |            | 3.7        |              |           |           |           |            |
|                                  | SST 835                                                                             |            | 7.5        |              | SST 806                                                                            |            | 3.5        |              |           |           |           |            |
| <b>Number of samples</b>         | <b>6</b>                                                                            |            |            |              | <b>25</b>                                                                          |            |            |              |           |           |           |            |
| <b>MIXOGRAM (Quadromat)</b>      | <b>ave</b>                                                                          | <b>min</b> | <b>max</b> | <b>stdev</b> | <b>ave</b>                                                                         | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |           |            |
| Peak time, min                   | 2.7                                                                                 | 2.2        | 3.5        | 0.6          | 3.0                                                                                | 2.3        | 3.8        | 0.5          |           |           |           |            |
| Tail height (6min), mm           | 54                                                                                  | 48         | 59         | 4.6          | 53                                                                                 | 46         | 68         | 5.2          |           |           |           |            |
| <b>Number of samples</b>         | <b>6</b>                                                                            |            |            |              | <b>25</b>                                                                          |            |            |              |           |           |           |            |
| <b>BÜHLER EXTRACTION, %</b>      | <b>B1</b>                                                                           | <b>B2</b>  | <b>B3</b>  | <b>B4</b>    | <b>UT</b>                                                                          | <b>COW</b> | <b>B1</b>  | <b>B2</b>    | <b>B3</b> | <b>B4</b> | <b>UT</b> | <b>COW</b> |
|                                  |                                                                                     | 75.9       | 75.5       |              |                                                                                    |            | 75.3       | 75.6         | 76.3      | 73.0      | 74.7      | 71.5       |
| <b>FLOUR</b>                     |                                                                                     |            |            |              |                                                                                    |            |            |              |           |           |           |            |
| Protein (12% mb), %              |                                                                                     | 12.2       | 11.2       |              |                                                                                    |            | 11.9       | 11.2         | 10.6      | 8.8       | 10.9      | 12.6       |
| Colour, KJ                       |                                                                                     | -1.7       | -1.7       |              |                                                                                    |            | -1.9       | -1.9         | -2.3      | -2.4      | -2.2      | 0.0        |
| <b>FARINOGRAM</b>                |                                                                                     |            |            |              |                                                                                    |            |            |              |           |           |           |            |
| Water absorption (14% mb), %     |                                                                                     | 61.6       | 60.9       |              |                                                                                    |            | 63.0       | 61.1         | 59.1      | 62.4      | 60.7      | 62.0       |
| Development time, min            |                                                                                     | 5.5        | 4.7        |              |                                                                                    |            | 6.0        | 4.8          | 4.0       | 1.7       | 3.0       | 5.2        |
| Stability, min                   |                                                                                     | 9.0        | 7.2        |              |                                                                                    |            | 9.4        | 8.7          | 6.9       | 3.5       | 7.8       | 9.2        |
| Mixing tolerance index, BU       |                                                                                     | 40         | 43         |              |                                                                                    |            | 37         | 37           | 42        | 62        | 33        | 42         |
| <b>EXTENSOGRAM (45 min pull)</b> |                                                                                     |            |            |              |                                                                                    |            |            |              |           |           |           |            |
| Area, cm <sup>2</sup>            |                                                                                     | 119        | 110        |              |                                                                                    |            | 95         | 98           | 93        | 69        | 92        | 132        |
| Maximum height, BU               |                                                                                     | 400        | 375        |              |                                                                                    |            | 365        | 410          | 355       | 355       | 390       | 445        |
| Extensibility, mm                |                                                                                     | 204        | 200        |              |                                                                                    |            | 187        | 167          | 179       | 132       | 165       | 204        |
| <b>ALVEOGRAM</b>                 |                                                                                     |            |            |              |                                                                                    |            |            |              |           |           |           |            |
| Strength (S), cm <sup>2</sup>    |                                                                                     | 54.1       | 44.6       |              |                                                                                    |            | 56.6       | 48.6         | 39.1      | 34.6      | 45.1      | 58.7       |
| Stability (P), mm                |                                                                                     | 90         | 87         |              |                                                                                    |            | 104        | 91           | 73        | 135       | 96        | 100        |
| Distensibility (L), mm           |                                                                                     | 134        | 117        |              |                                                                                    |            | 114        | 115          | 134       | 41        | 99        | 118        |
| Configuration ratio (P/L)        |                                                                                     | 0.67       | 0.74       |              |                                                                                    |            | 0.91       | 0.79         | 0.54      | 3.26      | 0.98      | 0.85       |
| <b>MIXOGRAM</b>                  |                                                                                     |            |            |              |                                                                                    |            |            |              |           |           |           |            |
| Peak time, min                   |                                                                                     | 2.8        | 2.5        |              |                                                                                    |            | 2.8        | 2.5          | 2.5       | 4.0       | 2.8       | 3.3        |
| <b>100g BAKING TEST</b>          |                                                                                     |            |            |              |                                                                                    |            |            |              |           |           |           |            |
| Loaf volume, cm <sup>3</sup>     |                                                                                     | 950        | 880        |              |                                                                                    |            | 950        | 910          | 850       | 660       | 765       | 835        |
| Evaluation                       |                                                                                     | 0          | 0          |              |                                                                                    |            | 0          | 0            | 0         | 3         | 3         | 4          |

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

## MIXOGRAM

22

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## FARINOGRAM

22

23



## EXTENSOGRAM

22

23



## ALVEOGRAM

22

23



**SOUTH AFRICAN  
SUMMER RAINFALL WHEAT (AND IRRIGATION)  
Free State Province (Eastern)**

| PRODUCTION REGION                | (25)<br>Free State<br>South-Eastern Region (Bethlehem) |            |            |              |           | (28)<br>Free State<br>Eastern Region |            |            |              |           |           |            |
|----------------------------------|--------------------------------------------------------|------------|------------|--------------|-----------|--------------------------------------|------------|------------|--------------|-----------|-----------|------------|
|                                  | Intake silos                                           |            |            |              |           |                                      |            |            |              |           |           |            |
|                                  | Bethlehem                                              |            |            |              |           | Afrikaskop                           |            |            |              |           |           |            |
|                                  | Clocolan                                               |            |            |              |           | Ascent                               |            |            |              |           |           |            |
|                                  | De Wetsdorp                                            |            |            |              |           | Cornelia                             |            |            |              |           |           |            |
|                                  | Ficksburg                                              |            |            |              |           | Daniëlsrus                           |            |            |              |           |           |            |
|                                  | Fouriesburg                                            |            |            |              |           | Eeram                                |            |            |              |           |           |            |
|                                  | Marseilles                                             |            |            |              |           | Frankfort                            |            |            |              |           |           |            |
|                                  | Modderpoort                                            |            |            |              |           | Harrismith                           |            |            |              |           |           |            |
|                                  | Slabberts                                              |            |            |              |           | Jim Fouché                           |            |            |              |           |           |            |
|                                  | Tweespruit                                             |            |            |              |           | Kransfontein                         |            |            |              |           |           |            |
|                                  | Westminster                                            |            |            |              |           | Memel                                |            |            |              |           |           |            |
|                                  | Zastron                                                |            |            |              |           | Reitz                                |            |            |              |           |           |            |
|                                  |                                                        |            |            |              |           | Tweeling                             |            |            |              |           |           |            |
|                                  |                                                        |            |            |              |           | Villiers                             |            |            |              |           |           |            |
|                                  |                                                        |            |            |              |           | Vrede                                |            |            |              |           |           |            |
|                                  |                                                        |            |            |              |           | Warden                               |            |            |              |           |           |            |
|                                  |                                                        |            |            |              |           | Windfield                            |            |            |              |           |           |            |
| <b>WHEAT</b>                     |                                                        |            |            |              |           |                                      |            |            |              |           |           |            |
|                                  | <b>ave</b>                                             | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                           | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Protein (12% mb), %              | 10.6                                                   | 8.8        | 13.3       | 1.0          |           | 10.8                                 | 9.2        | 12.4       | 0.8          |           |           |            |
| Falling number, sec              | 325                                                    | 228        | 444        | 38.9         |           | 337                                  | 278        | 446        | 40.7         |           |           |            |
| 1000 Kernel mass (13% mb), g     | 39.8                                                   | 34.7       | 45.3       | 2.7          |           | 40.9                                 | 36.5       | 44.8       | 2.0          |           |           |            |
| Hectolitre mass (dirty), kg/hl   | 78.1                                                   | 64.4       | 81.3       | 3.5          |           | 80.5                                 | 76.7       | 82.7       | 1.3          |           |           |            |
| Screenings (<1.8mm), %           | 1.8                                                    | 0.5        | 4.2        | 1.1          |           | 0.8                                  | 0.1        | 4.8        | 0.9          |           |           |            |
| Total damaged kernels, %         | 0.4                                                    | 0.1        | 1.3        | 0.2          |           | 0.4                                  | 0.0        | 1.1        | 0.3          |           |           |            |
| <b>Number of samples</b>         | <b>32</b>                                              |            |            |              |           | <b>32</b>                            |            |            |              |           |           |            |
| <b>CULTIVARS</b>                 |                                                        |            |            |              |           |                                      |            |            |              |           |           |            |
|                                  |                                                        |            | Elands     | 40.9         |           |                                      |            | Elands     | 51.5         |           |           |            |
| cultivars                        |                                                        |            | Gariep     | 10.6         |           |                                      |            | SST 835    | 7.4          |           |           |            |
| with highest %                   |                                                        |            | Matlabas   | 7.7          |           |                                      |            | Betta-DN   | 6.6          |           |           |            |
| occurrence                       |                                                        |            | Betta-DN   | 7.0          |           |                                      |            | PAN 3377   | 6.4          |           |           |            |
|                                  |                                                        |            | SST 399    | 6.3          |           |                                      |            | CRN 826    | 4.9          |           |           |            |
| <b>Number of samples</b>         | <b>32</b>                                              |            |            |              |           | <b>32</b>                            |            |            |              |           |           |            |
| <b>MIXOGRAM (Quadromat)</b>      |                                                        |            |            |              |           |                                      |            |            |              |           |           |            |
|                                  | <b>ave</b>                                             | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                           | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Peak time, min                   | 3.5                                                    | 1.7        | 4.8        | 0.6          |           | 3.3                                  | 2.3        | 5.0        | 0.5          |           |           |            |
| Tail height (6min), mm           | 52                                                     | 45         | 60         | 3.7          |           | 54                                   | 46         | 63         | 3.9          |           |           |            |
| <b>Number of samples</b>         | <b>32</b>                                              |            |            |              |           | <b>32</b>                            |            |            |              |           |           |            |
|                                  | <b>B1</b>                                              | <b>B2</b>  | <b>B3</b>  | <b>B4</b>    | <b>UT</b> | <b>COW</b>                           | <b>B1</b>  | <b>B2</b>  | <b>B3</b>    | <b>B4</b> | <b>UT</b> | <b>COW</b> |
| <b>BÜHLER EXTRACTION, %</b>      | 75.6                                                   | 75.0       | 75.0       | 74.7         | 75.0      | 75.2                                 | 75.5       | 76.0       | 75.0         | 74.5      |           |            |
|                                  |                                                        |            |            |              |           |                                      |            |            |              |           |           |            |
| <b>FLOUR</b>                     |                                                        |            |            |              |           |                                      |            |            |              |           |           |            |
| Protein (12% mb), %              | 12.6                                                   | 11.3       | 10.4       | 9.2          | 9.7       | 12.1                                 | 12.1       | 11.1       | 10.1         | 9.0       |           |            |
| Colour, KJ                       | -2.1                                                   | -1.7       | -1.8       | -2.1         | -0.7      | -0.3                                 | -1.4       | -1.5       | -1.6         | -2.0      |           |            |
|                                  |                                                        |            |            |              |           |                                      |            |            |              |           |           |            |
| <b>FARINOGRAM</b>                |                                                        |            |            |              |           |                                      |            |            |              |           |           |            |
| Water absorption (14% mb), %     | 65.7                                                   | 63.2       | 62.7       | 62.6         | 62.2      | 61.6                                 | 66.2       | 63.4       | 61.7         | 61.4      |           |            |
| Development time, min            | 4.5                                                    | 2.7        | 2.2        | 2.0          | 2.3       | 4.7                                  | 4.7        | 2.0        | 1.4          | 1.8       |           |            |
| Stability, min                   | 7.1                                                    | 8.8        | 7.7        | 4.2          | 6.2       | 9.3                                  | 9.3        | 9.9        | 6.1          | 3.0       |           |            |
| Mixing tolerance index, BU       | 41                                                     | 38         | 35         | 59           | 42        | 35                                   | 30         | 13         | 44           | 70        |           |            |
|                                  |                                                        |            |            |              |           |                                      |            |            |              |           |           |            |
| <b>EXTENSOGRAM (45 min pull)</b> |                                                        |            |            |              |           |                                      |            |            |              |           |           |            |
| Area, cm2                        | 74                                                     | 114        | 116        | 100          | 88        | 113                                  | 109        | 100        | 90           | 81        |           |            |
| Maximum height, BU               | 300                                                    | 465        | 470        | 450          | 385       | 430                                  | 390        | 415        | 410          | 405       |           |            |
| Extensibility, mm                | 175                                                    | 173        | 173        | 154          | 157       | 183                                  | 195        | 169        | 152          | 137       |           |            |
|                                  |                                                        |            |            |              |           |                                      |            |            |              |           |           |            |
| <b>ALVEOGRAM</b>                 |                                                        |            |            |              |           |                                      |            |            |              |           |           |            |
| Strength (S), cm2                | 44.5                                                   | 53.7       | 51.7       | 41.7         | 40.7      | 53.2                                 | 64.2       | 57.2       | 42.8         | 36.5      |           |            |
| Stability (P), mm                | 106                                                    | 120        | 133        | 140          | 114       | 101                                  | 132        | 120        | 117          | 125       |           |            |
| Distensibility (L), mm           | 85                                                     | 87         | 70         | 50           | 70        | 106                                  | 98         | 94         | 66           | 48        |           |            |
| Configuration ratio (P/L)        | 1.25                                                   | 1.37       | 1.91       | 2.80         | 1.64      | 0.96                                 | 1.34       | 1.27       | 1.78         | 2.59      |           |            |
|                                  |                                                        |            |            |              |           |                                      |            |            |              |           |           |            |
| <b>MIXOGRAM</b>                  |                                                        |            |            |              |           |                                      |            |            |              |           |           |            |
| Peak time, min                   | 2.2                                                    | 2.7        | 3.3        | 3.7          | 3.0       | 2.9                                  | 2.7        | 3.3        | 3.7          | 3.7       |           |            |
|                                  |                                                        |            |            |              |           |                                      |            |            |              |           |           |            |
| <b>100g BAKING TEST</b>          |                                                        |            |            |              |           |                                      |            |            |              |           |           |            |
| Loaf volume, cm3                 | 750                                                    | 850        | 780        | 700          | 790       | 875                                  | 850        | 840        | 685          | 625       |           |            |
| Evaluation                       | 6                                                      | 1          | 2          | 2            | 0         | 2                                    | 2          | 1          | 4            | 5         |           |            |

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION



# SOUTH AFRICAN

## SUMMER RAINFALL WHEAT (AND IRRIGATION) Free State Province (South-Western)

## OTHER SUMMER RAINFALL WHEAT AND IRRIGATION

### Mpumalanga

| PRODUCTION REGION                | (24)<br>Free State<br>Central Region |            |            |              | (29)<br>Mpumalanga<br>Southern Region                                                                      |            |            |              |           |           |           |            |
|----------------------------------|--------------------------------------|------------|------------|--------------|------------------------------------------------------------------------------------------------------------|------------|------------|--------------|-----------|-----------|-----------|------------|
|                                  | Intake silos                         |            |            |              | Balfour<br>Greylingstad<br>Grootvlei<br>Harvard<br>Holmdene<br>Leeuspruit<br>Platrand<br>Standerton<br>Val |            |            |              |           |           |           |            |
| <b>WHEAT</b>                     |                                      |            |            |              |                                                                                                            |            |            |              |           |           |           |            |
|                                  | <b>ave</b>                           | <b>min</b> | <b>max</b> | <b>stdev</b> | <b>ave</b>                                                                                                 | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |           |            |
| Protein (12% mb), %              | 11.6                                 | 9.4        | 12.6       | 0.6          | 12.6                                                                                                       | 12.5       | 12.8       | 0.2          |           |           |           |            |
| Falling number, sec              | 344                                  | 247        | 459        | 54.8         | 388                                                                                                        | 349        | 412        | 34.1         |           |           |           |            |
| 1000 Kernel mass (13% mb), g     | 36.3                                 | 33.1       | 39.5       | 1.8          | 38.0                                                                                                       | 37.1       | 38.6       | 0.8          |           |           |           |            |
| Hectolitre mass (dirty), kg/hl   | 77.7                                 | 74.0       | 81.4       | 2.0          | 78.1                                                                                                       | 77.8       | 78.7       | 0.5          |           |           |           |            |
| Screenings (<1.8mm), %           | 2.2                                  | 0.8        | 5.7        | 1.3          | 0.7                                                                                                        | 0.6        | 0.8        | 0.1          |           |           |           |            |
| Total damaged kernels, %         | 2.6                                  | 0.2        | 8.8        | 3.0          | 0.6                                                                                                        | 0.5        | 0.7        | 0.1          |           |           |           |            |
| <b>Number of samples</b>         | <b>26</b>                            |            |            |              | <b>3</b>                                                                                                   |            |            |              |           |           |           |            |
| <b>CULTIVARS</b>                 |                                      |            |            |              |                                                                                                            |            |            |              |           |           |           |            |
|                                  |                                      | CRN 826    | 25.2       |              | SST 806                                                                                                    | 47.7       |            |              |           |           |           |            |
| cultivars                        |                                      | PAN 3118   | 18.0       |              | CRN 826                                                                                                    | 40.7       |            |              |           |           |           |            |
| with highest %                   |                                      | Gariep     | 14.6       |              | SST 876                                                                                                    | 9.7        |            |              |           |           |           |            |
| occurrence                       |                                      | PAN 3377   | 9.4        |              | Olifants                                                                                                   | 2.0        |            |              |           |           |           |            |
|                                  |                                      | Elands     | 7.5        |              |                                                                                                            |            |            |              |           |           |           |            |
| <b>Number of samples</b>         | <b>26</b>                            |            |            |              | <b>3</b>                                                                                                   |            |            |              |           |           |           |            |
| <b>MIXOGRAM (Quadromat)</b>      |                                      |            |            |              |                                                                                                            |            |            |              |           |           |           |            |
|                                  | <b>ave</b>                           | <b>min</b> | <b>max</b> | <b>stdev</b> | <b>ave</b>                                                                                                 | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |           |            |
| Peak time, min                   | 2.9                                  | 2.3        | 3.7        | 0.4          | 2.3                                                                                                        | 2.2        | 2.5        | 0.2          |           |           |           |            |
| Tail height (6min), mm           | 53                                   | 41         | 63         | 4.8          | 50                                                                                                         | 48         | 51         | 1.5          |           |           |           |            |
| <b>Number of samples</b>         | <b>26</b>                            |            |            |              | <b>3</b>                                                                                                   |            |            |              |           |           |           |            |
| <b>BÜHLER EXTRACTION, %</b>      |                                      |            |            |              |                                                                                                            |            |            |              |           |           |           |            |
|                                  | <b>B1</b>                            | <b>B2</b>  | <b>B3</b>  | <b>B4</b>    | <b>UT</b>                                                                                                  | <b>COW</b> | <b>B1</b>  | <b>B2</b>    | <b>B3</b> | <b>B4</b> | <b>UT</b> | <b>COW</b> |
|                                  | 74.9                                 | 75.7       | 74.2       |              | 75.3                                                                                                       | 75.4       | 76.6       |              |           |           |           |            |
| <b>FLOUR</b>                     |                                      |            |            |              |                                                                                                            |            |            |              |           |           |           |            |
| Protein (12% mb), %              | 11.9                                 | 11.3       | 10.4       |              | 11.5                                                                                                       | 11.7       | 12.6       |              |           |           |           |            |
| Colour, KJ                       | -1.6                                 | -1.9       | -1.9       |              | -1.8                                                                                                       | -1.5       | -2.0       |              |           |           |           |            |
| <b>FARINOGRAM</b>                |                                      |            |            |              |                                                                                                            |            |            |              |           |           |           |            |
| Water absorption (14% mb), %     | 61.6                                 | 61.7       | 60.4       |              | 61.3                                                                                                       | 60.9       | 61.7       |              |           |           |           |            |
| Development time, min            | 5.5                                  | 4.2        | 2.2        |              | 5.0                                                                                                        | 4.7        | 5.2        |              |           |           |           |            |
| Stability, min                   | 11.2                                 | 7.9        | 6.0        |              | 9.7                                                                                                        | 7.7        | 6.1        |              |           |           |           |            |
| Mixing tolerance index, BU       | 28                                   | 45         | 47         |              | 33                                                                                                         | 41         | 56         |              |           |           |           |            |
| <b>EXTENSOGRAM (45 min pull)</b> |                                      |            |            |              |                                                                                                            |            |            |              |           |           |           |            |
| Area, cm <sup>2</sup>            | 134                                  | 106        | 97         |              | 113                                                                                                        | 103        | 90         |              |           |           |           |            |
| Maximum height, BU               | 480                                  | 390        | 440        |              | 430                                                                                                        | 370        | 305        |              |           |           |           |            |
| Extensibility, mm                | 194                                  | 191        | 159        |              | 179                                                                                                        | 194        | 202        |              |           |           |           |            |
| <b>ALVEOGRAM</b>                 |                                      |            |            |              |                                                                                                            |            |            |              |           |           |           |            |
| Strength (S), cm <sup>2</sup>    | 56.4                                 | 47.2       | 45.9       |              | 52.8                                                                                                       | 45.4       | 38.2       |              |           |           |           |            |
| Stability (P), mm                | 97                                   | 94         | 103        |              | 98                                                                                                         | 81         | 69         |              |           |           |           |            |
| Distensibility (L), mm           | 119                                  | 107        | 83         |              | 113                                                                                                        | 127        | 149        |              |           |           |           |            |
| Configuration ratio (P/L)        | 0.82                                 | 0.88       | 1.25       |              | 0.87                                                                                                       | 0.64       | 0.47       |              |           |           |           |            |
| <b>MIXOGRAM</b>                  |                                      |            |            |              |                                                                                                            |            |            |              |           |           |           |            |
| Peak time, min                   | 2.8                                  | 2.8        | 3.3        |              | 2.8                                                                                                        | 2.3        | 2.3        |              |           |           |           |            |
| <b>100g BAKING TEST</b>          |                                      |            |            |              |                                                                                                            |            |            |              |           |           |           |            |
| Loaf volume, cm <sup>3</sup>     | 855                                  | 850        | 740        |              | 825                                                                                                        | 900        | 965        |              |           |           |           |            |
| Evaluation                       | 2                                    | 1          | 3          |              | 2                                                                                                          | 0          | 0          |              |           |           |           |            |

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION





# SOUTH AFRICAN OTHER SUMMER RAINFALL WHEAT AND IRRIGATION Mpumalanga

| PRODUCTION REGION                | (30)<br>Mpumalanga<br>Eastern Region                                                                                                     |            |            |              |           | (32)<br>Mpumalanga<br>Western Region                                 |            |            |              |           |           |            |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|--------------|-----------|----------------------------------------------------------------------|------------|------------|--------------|-----------|-----------|------------|
| Intake silos                     | Amersfoort<br>Badplaas<br>Carolina<br>Davel<br>Ermelo<br>Estancia<br>Lothair<br>Maizefield<br>Mkondo<br>Morgenzon<br>Overvaal<br>Panbult |            |            |              |           | Argent<br>Dryden<br>Endicott<br>Elof<br>Hawerklip<br>Kendal<br>Ogies |            |            |              |           |           |            |
| <b>WHEAT</b>                     | <b>ave</b>                                                                                                                               | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                                           | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Protein (12% mb), %              | 11.3                                                                                                                                     | 11.1       | 11.4       | 0.1          |           | 12.3                                                                 | 11.7       | 12.6       | 0.5          |           |           |            |
| Falling number, sec              | 428                                                                                                                                      | 372        | 473        | 37.1         |           | 344                                                                  | 333        | 352        | 9.7          |           |           |            |
| 1000 Kernel mass (13% mb), g     | 41.9                                                                                                                                     | 41.2       | 43.0       | 0.8          |           | 38.1                                                                 | 35.2       | 39.9       | 2.5          |           |           |            |
| Hectolitre mass (dirty), kg/hl   | 78.2                                                                                                                                     | 77.4       | 79.0       | 0.8          |           | 77.8                                                                 | 75.6       | 79.1       | 1.9          |           |           |            |
| Screenings (<1.8mm), %           | 2.7                                                                                                                                      | 1.5        | 5.5        | 1.6          |           | 1.2                                                                  | 0.7        | 2.1        | 0.8          |           |           |            |
| Total damaged kernels, %         | 0.4                                                                                                                                      | 0.1        | 1.0        | 0.4          |           | 0.4                                                                  | 0.2        | 0.7        | 0.2          |           |           |            |
| <b>Number of samples</b>         | <b>5</b>                                                                                                                                 |            |            |              |           | <b>3</b>                                                             |            |            |              |           |           |            |
| <b>CULTIVARS</b>                 |                                                                                                                                          |            |            |              |           |                                                                      |            |            |              |           |           |            |
| cultivars                        | Kariega 22.8                                                                                                                             |            |            |              |           | SST 806 46.0                                                         |            |            |              |           |           |            |
| with highest % occurrence        | CRN 826 21.2                                                                                                                             |            |            |              |           | CRN 826 36.0                                                         |            |            |              |           |           |            |
|                                  | SST 806 20.6                                                                                                                             |            |            |              |           | SST 876 14.3                                                         |            |            |              |           |           |            |
|                                  | SST 876 16.6                                                                                                                             |            |            |              |           | SST 835 3.7                                                          |            |            |              |           |           |            |
|                                  | Duzi 11.4                                                                                                                                |            |            |              |           |                                                                      |            |            |              |           |           |            |
| <b>Number of samples</b>         | <b>5</b>                                                                                                                                 |            |            |              |           | <b>3</b>                                                             |            |            |              |           |           |            |
| <b>MIXOGRAM (Quadromat)</b>      | <b>ave</b>                                                                                                                               | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                                           | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Peak time, min                   | 2.3                                                                                                                                      | 2.3        | 2.4        | 0.0          |           | 2.8                                                                  | 2.7        | 3.0        | 0.2          |           |           |            |
| Tail height (6min), mm           | 48                                                                                                                                       | 47         | 50         | 1.3          |           | 51                                                                   | 50         | 53         | 1.5          |           |           |            |
| <b>Number of samples</b>         | <b>5</b>                                                                                                                                 |            |            |              |           | <b>3</b>                                                             |            |            |              |           |           |            |
| <b>BÜHLER EXTRACTION, %</b>      | <b>B1</b>                                                                                                                                | <b>B2</b>  | <b>B3</b>  | <b>B4</b>    | <b>UT</b> | <b>COW</b>                                                           | <b>B1</b>  | <b>B2</b>  | <b>B3</b>    | <b>B4</b> | <b>UT</b> | <b>COW</b> |
|                                  |                                                                                                                                          | 78.0       |            |              |           |                                                                      | 77.8       |            | 76.4         |           |           |            |
| <b>FLOUR</b>                     |                                                                                                                                          |            |            |              |           |                                                                      |            |            |              |           |           |            |
| Protein (12% mb), %              |                                                                                                                                          | 11.0       |            |              |           |                                                                      | 12.9       |            | 11.1         |           |           |            |
| Colour, KJ                       |                                                                                                                                          | -2.3       |            |              |           |                                                                      | -0.8       |            | -2.1         |           |           |            |
| <b>FARINOGRAM</b>                |                                                                                                                                          |            |            |              |           |                                                                      |            |            |              |           |           |            |
| Water absorption (14% mb), %     |                                                                                                                                          | 61.9       |            |              |           |                                                                      | 63.3       |            | 60.8         |           |           |            |
| Development time, min            |                                                                                                                                          | 3.4        |            |              |           |                                                                      | 5.9        |            | 4.0          |           |           |            |
| Stability, min                   |                                                                                                                                          | 5.8        |            |              |           |                                                                      | 8.2        |            | 8.2          |           |           |            |
| Mixing tolerance index, BU       |                                                                                                                                          | 51         |            |              |           |                                                                      | 43         |            | 38           |           |           |            |
| <b>EXTENSOGRAM (45 min pull)</b> |                                                                                                                                          |            |            |              |           |                                                                      |            |            |              |           |           |            |
| Area, cm2                        |                                                                                                                                          | 75         |            |              |           |                                                                      | 122        |            | 117          |           |           |            |
| Maximum height, BU               |                                                                                                                                          | 285        |            |              |           |                                                                      | 355        |            | 390          |           |           |            |
| Extensibility, mm                |                                                                                                                                          | 184        |            |              |           |                                                                      | 240        |            | 210          |           |           |            |
| <b>ALVEOGRAM</b>                 |                                                                                                                                          |            |            |              |           |                                                                      |            |            |              |           |           |            |
| Strength (S), cm2                |                                                                                                                                          | 37.5       |            |              |           |                                                                      | 48.6       |            | 43.4         |           |           |            |
| Stability (P), mm                |                                                                                                                                          | 76         |            |              |           |                                                                      | 80         |            | 82           |           |           |            |
| Distensibility (L), mm           |                                                                                                                                          | 123        |            |              |           |                                                                      | 148        |            | 126          |           |           |            |
| Configuration ratio (P/L)        |                                                                                                                                          | 0.62       |            |              |           |                                                                      | 0.54       |            | 0.65         |           |           |            |
| <b>MIXOGRAM</b>                  |                                                                                                                                          |            |            |              |           |                                                                      |            |            |              |           |           |            |
| Peak time, min                   |                                                                                                                                          | 2.3        |            |              |           |                                                                      | 2.5        |            | 2.6          |           |           |            |
| <b>100g BAKING TEST</b>          |                                                                                                                                          |            |            |              |           |                                                                      |            |            |              |           |           |            |
| Loaf volume, cm3                 |                                                                                                                                          | 890        |            |              |           |                                                                      | 1000       |            | 865          |           |           |            |
| Evaluation                       |                                                                                                                                          | 0          |            |              |           |                                                                      | 0          |            | 0            |           |           |            |

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

**MIXOGRAM**

30

32



**FARINOGRAM**

30

32



**EXTENSOGRAM**

30

32



**ALVEOGRAM**

30

32



**SOUTH AFRICAN  
OTHER SUMMER RAINFALL WHEAT AND IRRIGATION  
Gauteng and Limpopo Provinces**

| PRODUCTION REGION                | (34)<br>Gauteng |            |            |              |           | (35)<br>Limpopo                                                                                                                                                                                    |            |            |              |           |           |            |
|----------------------------------|-----------------|------------|------------|--------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|--------------|-----------|-----------|------------|
|                                  | Intake silos    |            |            |              |           | Alma<br>Crecy<br>Immerpan<br>Lehau<br>Naboomspruit<br>Northam<br>Nutfield<br>Nylstroom<br>Pienaarsrivier<br>Pietersburg<br>Potgietersrus<br>Roedtan<br>Settlers<br>Tzaneen<br>Vaalwater<br>Warmbad |            |            |              |           |           |            |
| <b>WHEAT</b>                     |                 |            |            |              |           |                                                                                                                                                                                                    |            |            |              |           |           |            |
|                                  | <b>ave</b>      | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                                                                                                                                                                         | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Protein (12% mb), %              | 11.5            | 9.8        | 13.4       | 1.1          |           | 11.4                                                                                                                                                                                               | 9.3        | 13.0       | 1.2          |           |           |            |
| Falling number, sec              | 378             | 323        | 411        | 28.4         |           | 402                                                                                                                                                                                                | 339        | 479        | 40.3         |           |           |            |
| 1000 Kernel mass (13% mb), g     | 39.3            | 34.4       | 49.4       | 4.2          |           | 37.6                                                                                                                                                                                               | 32.1       | 43.5       | 3.5          |           |           |            |
| Hectolitre mass (dirty), kg/hl   | 78.0            | 76.7       | 79.1       | 0.8          |           | 77.4                                                                                                                                                                                               | 73.4       | 79.4       | 2.0          |           |           |            |
| Screenings (<1.8mm), %           | 1.6             | 0.5        | 3.0        | 0.8          |           | 1.9                                                                                                                                                                                                | 0.5        | 4.5        | 1.2          |           |           |            |
| Total damaged kernels, %         | 0.6             | 0.1        | 1.4        | 0.4          |           | 0.6                                                                                                                                                                                                | 0.0        | 2.2        | 0.8          |           |           |            |
| <b>Number of samples</b>         | <b>11</b>       |            |            |              |           | <b>10</b>                                                                                                                                                                                          |            |            |              |           |           |            |
| <b>CULTIVARS</b>                 |                 |            |            |              |           |                                                                                                                                                                                                    |            |            |              |           |           |            |
|                                  |                 | CRN 826    | 36.4       |              |           |                                                                                                                                                                                                    | CRN 826    | 32.3       |              |           |           |            |
| cultivars                        |                 | SST 806    | 25.3       |              |           |                                                                                                                                                                                                    | Duzi       | 21.0       |              |           |           |            |
| with highest %                   |                 | Kariega    | 11.2       |              |           |                                                                                                                                                                                                    | SST 806    | 18.6       |              |           |           |            |
| occurrence                       |                 | Duzi       | 10.5       |              |           |                                                                                                                                                                                                    | SST 835    | 7.4        |              |           |           |            |
|                                  |                 | SST 876    | 8.0        |              |           |                                                                                                                                                                                                    | SST 876    | 4.9        |              |           |           |            |
| <b>Number of samples</b>         | <b>11</b>       |            |            |              |           | <b>10</b>                                                                                                                                                                                          |            |            |              |           |           |            |
| <b>MIXOGRAM (Quadromat)</b>      |                 |            |            |              |           |                                                                                                                                                                                                    |            |            |              |           |           |            |
|                                  | <b>ave</b>      | <b>min</b> | <b>max</b> | <b>stdev</b> |           | <b>ave</b>                                                                                                                                                                                         | <b>min</b> | <b>max</b> | <b>stdev</b> |           |           |            |
| Peak time, min                   | 2.6             | 2.3        | 3.3        | 0.3          |           | 2.7                                                                                                                                                                                                | 1.8        | 3.5        | 0.5          |           |           |            |
| Tail height (6min), mm           | 47              | 43         | 59         | 4.6          |           | 47                                                                                                                                                                                                 | 43         | 51         | 2.6          |           |           |            |
| <b>Number of samples</b>         | <b>11</b>       |            |            |              |           | <b>10</b>                                                                                                                                                                                          |            |            |              |           |           |            |
| <b>BÜHLER EXTRACTION, %</b>      | <b>B1</b>       | <b>B2</b>  | <b>B3</b>  | <b>B4</b>    | <b>UT</b> | <b>COW</b>                                                                                                                                                                                         | <b>B1</b>  | <b>B2</b>  | <b>B3</b>    | <b>B4</b> | <b>UT</b> | <b>COW</b> |
|                                  | 76.0            | 76.7       | 77.3       | 76.2         |           |                                                                                                                                                                                                    | 76.4       | 76.6       |              | 77.7      | 76.4      |            |
| <b>FLOUR</b>                     |                 |            |            |              |           |                                                                                                                                                                                                    |            |            |              |           |           |            |
| Protein (12% mb), %              | 12.4            | 11.0       | 9.8        | 8.6          |           |                                                                                                                                                                                                    | 12.3       | 11.1       |              | 9.1       | 11.1      |            |
| Colour, KJ                       | -1.2            | -2.0       | -1.7       | -1.7         |           |                                                                                                                                                                                                    | -0.1       | -1.5       |              | -2.1      | -1.6      |            |
| <b>FARINOGRAM</b>                |                 |            |            |              |           |                                                                                                                                                                                                    |            |            |              |           |           |            |
| Water absorption (14% mb), %     | 61.6            | 60.4       | 60.2       | 57.0         |           |                                                                                                                                                                                                    | 61.9       | 61.7       |              | 56.6      | 60.6      |            |
| Development time, min            | 4.5             | 4.0        | 2.3        | 2.2          |           |                                                                                                                                                                                                    | 4.7        | 4.3        |              | 1.9       | 3.4       |            |
| Stability, min                   | 6.7             | 5.8        | 6.0        | 4.6          |           |                                                                                                                                                                                                    | 6.7        | 6.7        |              | 6.4       | 6.7       |            |
| Mixing tolerance index, BU       | 52              | 56         | 46         | 57           |           |                                                                                                                                                                                                    | 46         | 48         |              | 41        | 41        |            |
| <b>EXTENSOGRAM (45 min pull)</b> |                 |            |            |              |           |                                                                                                                                                                                                    |            |            |              |           |           |            |
| Area, cm2                        | 96              | 87         | 79         | 68           |           |                                                                                                                                                                                                    | 85         | 84         |              | 79        | 104       |            |
| Maximum height, BU               | 345             | 295        | 330        | 310          |           |                                                                                                                                                                                                    | 315        | 330        |              | 355       | 345       |            |
| Extensibility, mm                | 195             | 192        | 170        | 146          |           |                                                                                                                                                                                                    | 191        | 180        |              | 153       | 213       |            |
| <b>ALVEOGRAM</b>                 |                 |            |            |              |           |                                                                                                                                                                                                    |            |            |              |           |           |            |
| Strength (S), cm2                | 41.4            | 34.1       | 39.9       | 24.0         |           |                                                                                                                                                                                                    | 42.2       | 37.0       |              | 34.1      | 35.8      |            |
| Stability (P), mm                | 74              | 72         | 86         | 64           |           |                                                                                                                                                                                                    | 80         | 78         |              | 64        | 74        |            |
| Distensibility (L), mm           | 142             | 120        | 103        | 87           |           |                                                                                                                                                                                                    | 127        | 113        |              | 130       | 117       |            |
| Configuration ratio (P/L)        | 0.52            | 0.60       | 0.84       | 0.74         |           |                                                                                                                                                                                                    | 0.63       | 0.70       |              | 0.49      | 0.63      |            |
| <b>MIXOGRAM</b>                  |                 |            |            |              |           |                                                                                                                                                                                                    |            |            |              |           |           |            |
| Peak time, min                   | 2.4             | 2.3        | 2.8        | 2.5          |           |                                                                                                                                                                                                    | 2.3        | 2.5        |              | 3.0       | 2.5       |            |
| <b>100g BAKING TEST</b>          |                 |            |            |              |           |                                                                                                                                                                                                    |            |            |              |           |           |            |
| Loaf volume, cm3                 | 920             | 865        | 820        | 805          |           |                                                                                                                                                                                                    | 950        | 860        |              | 800       | 850       |            |
| Evaluation                       | 1               | 0          | 0          | 0            |           |                                                                                                                                                                                                    | 0          | 0          |              | 0         | 1         |            |

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

**MIXOGRAM**

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**FARINOGRAM**

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**EXTENSOGRAM**

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**ALVEOGRAM**

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**SOUTH AFRICAN  
OTHER SUMMER RAINFALL WHEAT AND IRRIGATION  
KwaZulu-Natal Province**

| <b>(36)</b>                      |                                                                                                                     |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------|
| <b>PRODUCTION REGION</b>         | <b>KwaZulu-Natal</b>                                                                                                |
| Intake silos                     | Bergville<br>Bloedrivier<br>Dannhauser<br>Dundee<br>Mizpah<br>New Amalfi<br>Paulpietersburg<br>Vryheid<br>Winterton |
| <b>WHEAT</b>                     |                                                                                                                     |
|                                  | <b>ave      min      max      stdev</b>                                                                             |
| Protein (12% mb), %              | 12.8    11.8    13.5    0.6                                                                                         |
| Falling number, sec              | 292    101    390    96.6                                                                                           |
| 1000 Kernel mass (13% mb), g     | 38.9    36.1    41.9    1.5                                                                                         |
| Hectolitre mass (dirty), kg/hl   | 78.6    75.7    81.4    1.6                                                                                         |
| Screenings (<1.8mm), %           | 1.6    0.9    2.6    0.6                                                                                            |
| Total damaged kernels, %         | 2.4    0.4    11.1    2.7                                                                                           |
| <b>Number of samples</b>         | <b>15</b>                                                                                                           |
| <b>CULTIVARS</b>                 |                                                                                                                     |
|                                  | SST 806    42.9                                                                                                     |
| cultivars                        | CRN 826    28.1                                                                                                     |
| with highest %                   | SST 835    16.7                                                                                                     |
| occurrence                       | SST 825    3.5                                                                                                      |
|                                  | Kariega    3.3                                                                                                      |
| <b>Number of samples</b>         | <b>15</b>                                                                                                           |
| <b>MIXOGRAM (Quadromat)</b>      |                                                                                                                     |
|                                  | <b>ave      min      max      stdev</b>                                                                             |
| Peak time, min                   | 2.9    2.5    3.8    0.5                                                                                            |
| Tail height (6min), mm           | 51    48    55    2.5                                                                                               |
| <b>Number of samples</b>         | <b>15</b>                                                                                                           |
|                                  | <b>B1    B2    B3    B4    UT    COW</b>                                                                            |
| <b>BÜHLER EXTRACTION, %</b>      | 77.5    76.9             76.2    75.5                                                                               |
| <b>FLOUR</b>                     |                                                                                                                     |
| Protein (12% mb), %              | 12.2    11.4             12.3    12.8                                                                               |
| Colour, KJ                       | -1.1    -1.7             -0.4    0.3                                                                                |
| <b>FARINOGRAM</b>                |                                                                                                                     |
| Water absorption (14% mb), %     | 62.6    61.7             61.1    62.0                                                                               |
| Development time, min            | 5.3    5.2             4.8    3.4                                                                                   |
| Stability, min                   | 8.2    8.3             8.2    7.8                                                                                   |
| Mixing tolerance index, BU       | 46    45             42    39                                                                                       |
| <b>EXTENSOGRAM (45 min pull)</b> |                                                                                                                     |
| Area, cm <sup>2</sup>            | 121    110             137    152                                                                                   |
| Maximum height, BU               | 415    390             415    435                                                                                   |
| Extensibility, mm                | 202    200             219    237                                                                                   |
| <b>ALVEOGRAM</b>                 |                                                                                                                     |
| Strength (S), cm <sup>2</sup>    | 45.9    38.1             48.5    53.2                                                                               |
| Stability (P), mm                | 90    79             77    79                                                                                       |
| Distensibility (L), mm           | 115    114             141    145                                                                                   |
| Configuration ratio (P/L)        | 0.78    0.69             0.55    0.55                                                                               |
| <b>MIXOGRAM</b>                  |                                                                                                                     |
| Peak time, min                   | 2.7    2.6             3.0    3.2                                                                                   |
| <b>100g BAKING TEST</b>          |                                                                                                                     |
| Loaf volume, cm <sup>3</sup>     | 935    875             945    945                                                                                   |
| Evaluation                       | 0    0             0    1                                                                                           |

# RHEOLOGICAL GRAPHS PER PRODUCTION REGION

**MIXOGRAM**

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**FARINOGRAM**

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**EXTENSOGRAM**

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**ALVEOGRAM**

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