# CWRS Canada Western Red Spring

The most widely grown wheat class in Western Canada, CWRS is regarded for its superior milling and baking quality. This hard wheat has high protein content and high protein quality which means it can improve the quality of a blend if milled with lower-quality wheat.

## Top Five CWRS Varieties Grown in 2023

- 1 AAC Brandon
- 2 AAC Viewfield
- 3 AAC Wheatland
- 4 AAC Starbuck
- 5 CDC Landmark

2023 EXECUTIVE SUMMARY

PRODUCTION

(5-year average, 2018-2022)

### 19.9 million tonnes

TOTAL WHEAT GROWN IN CANADA

63%



Protein

13.8% protein content, which is similar to the 10-year average of 13.7%.



#### Advice from an Expert

Sound wheat with a balance of gluten strength and extensibility.



#### Milling Quality

Sound wheat with good test weight and low ash content.



### **Grading Factors**

97% of the 2023 CWRS crop has graded No. 1 and No. 2.



#### **Application Performance**

Baking: Very good bread quality. Noodles: Good colour retention and texture.





#### WESTERN COMPOSITE

# No. 1 CWRS

## Canada Western Red Spring

| Quality Parameter <sup>a</sup>             | Western Composite b |      |  |  |
|--|---------------------|------|--|--|
| Wheat                                      |                     |      |  |  |
| Test Weight, kg/hL                         | 82.4                | 83.6 |  |  |
| Weight Per 1000 Kernels, g                 | 34.0                | 33.6 |  |  |
| Protein Content, %                         | 14.3                | 13.9 |  |  |
| Protein Content, % (dry matter basis)      | 16.5                | 16.0 |  |  |
| Ash Content, %                             | 1.36                | 1.52 |  |  |
| Falling Number, s                          | 399                 | 423  |  |  |
| Particle Size Index, %                     | 54                  | 49   |  |  |
| Milling Flour Yield Bühler Laboratory Mill |                     |      |  |  |
| Total Products Basis, %                    | 75.1                | 75.2 |  |  |
| 0.50% Ash Basis, %                         | 78.6                | 78.2 |  |  |

#### **EASTERN COMPOSITE**

## 9 No. 1 CWRS

## Canada Western Red Spring

| Quality Parameter <sup>a</sup>             | Eastern Composite <sup>b</sup> |      |  |  |
|--|--------------------------------|------|--|--|
| Wheat                                      |                                |      |  |  |
| Test Weight, kg/hL                         | 82.9                           | 83.4 |  |  |
| Weight Per 1000 Kernels, g                 | 37.2                           | 33.0 |  |  |
| Protein Content, %                         | 14.1                           | 14.4 |  |  |
| Protein Content, % (dry matter basis)      | 16.3                           | 16.6 |  |  |
| Ash Content, %                             | 1.41                           | 1.60 |  |  |
| Falling Number, s                          | 384                            | 393  |  |  |
| Particle Size Index, %                     | 53                             | 51   |  |  |
| Milling Flour Yield Bühler Laboratory Mill |                                |      |  |  |
| Total Products Basis, %                    | 75.1                           | 76.3 |  |  |
| 0.50% Ash Basis, %                         | 77.6                           | 77.3 |  |  |

#### PRAIRIE COMPOSITE

## PNo. 2 CWRS

## Canada Western Red Spring

| Quality Parameter <sup>a</sup>             | Prairie Composite b |      |  |  |
|--|---------------------|------|--|--|
| Wheat                                      |                     |      |  |  |
| Test Weight, kg/hL                         | 81.8                | 81.2 |  |  |
| Weight Per 1000 Kernels, g                 | 36.1                | 34.3 |  |  |
| Protein Content, %                         | 13.5                | 13.8 |  |  |
| Protein Content, % (dry matter basis)      | 15.6                | 16.0 |  |  |
| Ash Content, %                             | 1.36                | 1.57 |  |  |
| Falling Number, s                          | 372                 | 352  |  |  |
| Particle Size Index, %                     | 52                  | 53   |  |  |
| Milling Flour Yield Bühler Laboratory Mill |                     |      |  |  |
| Total Products Basis, %                    | 75.8                | 75.2 |  |  |
| 0.50% Ash Basis, %                         | 79.8                | 77.2 |  |  |

b Refer to crop region map (Figure 1). Western composite = NW, SW, NC, SC regions (non-shaded area); Eastern composite = E region (shaded area); Prairie composite = all regions.









<sup>&</sup>lt;sup>a</sup> Data are reported on a 13.5% moisture basis.

# **CWRS** Quality Assessment

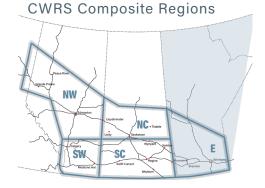
### WESTERN COMPOSITE

# Ŷ No. 1 CWRS

## Canada Western Red Spring

| Quality Parameter <sup>a</sup>             | Western Composite <sup>b</sup> |      |  |  |
|--|--------------------------------|------|--|--|
| Wheat                                      |                                |      |  |  |
| Test Weight, kg/hL                         | 82.4                           | 83.6 |  |  |
| Weight Per 1000 Kernels, g                 | 34.0                           | 33.6 |  |  |
| Protein Content, %                         | 14.3                           | 13.9 |  |  |
| Protein Content, % (dry matter basis)      | 16.5                           | 16.0 |  |  |
| Ash Content, %                             | 1.36                           | 1.52 |  |  |
| Falling Number, s                          | 399                            | 423  |  |  |
| Particle Size Index, %                     | 54                             | 49   |  |  |
| Milling Flour Yield Bühler Laboratory Mill |                                |      |  |  |
| Total Products Basis, %                    | 75.1                           | 75.2 |  |  |
| 0.50% Ash Basis, %                         | 78.6                           | 78.2 |  |  |

## FIGURE 1 2023 Western Canadian



| <sup>a</sup> Data are reported on a 13.5% moisture basis for wheat and a |
|--|
| 14.0% moisture basis for flour except Alveograph is on a 15.0%           |
| moisture basis and starch damage is as is.                               |

<sup>&</sup>lt;sup>b</sup> Refer to crop region map (Figure 1, non-shaded area). n/a - Not available (testing will not be conducted).

Harvest assessment composites represent grain available for export. Milling, analytical, and end-product analysis conducted by Cereals Canada following the Methods of Analysis on Cereals Canada's website (https://cerealscanada.ca/analytical-methods/).

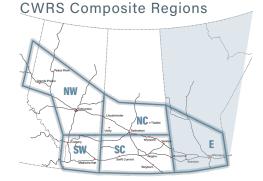
| Flour                               | Western Composite <sup>b</sup> 2023  |              |              | Western Composite <sup>b</sup> |             |             |
|-------------------------------------|--|--------------|--------------|--------------------------------|-------------|-------------|
| Flour                               | Observation to the Control of the Co |              |              | Obstala Ossala                 | 2022        |             |
| Extraction                          | Straight Grade 75.1%   | 74%          | 60%          | Straight Grade<br>75.2%        | 74%         | 60%         |
| Protein Content, %                  | 13.6   | 13.5         | 13.1         | 13.2                           | 13.1        | 12.7        |
| Protein Loss, %                     | 0.7  | 0.8          | 1.1          | 0.7                            | 0.8         | 1.2         |
| Wet Gluten Content, %               | 36.8   | 36.9         | 35.5         | 36.5                           | 36.5        | 33.5        |
| Gluten Index, %                     | 95   | 95           | 97           | 93                             | 91          | 97          |
| Ash Content, %                      | 0.43   | 0.43         | 0.38         | 0.44                           | 0.42        | 0.39        |
| Colour, L*                          | 84.6   | 85.1         | 85.4         | 85.1                           | 85.0        | 85.7        |
| Starch Damage, UCD                  | 24.2   | 24.2         | 23.5         | 25.3                           | 25.2        | 24.6        |
| Amylograph Peak Viscosity, BU       | 584  | 597          | 693          | 710                            | 764         | 801         |
| Farinograph                         |  |              |              |                                |             |             |
| Absorption, %                       | 62.4   | 62.2         | 61.8         | 65.2                           | 65.2        | 64.4        |
| Dough Development Time (DDT), min   | 8.4  | 7.9          | 10.9         | 7.5                            | 8.3         | 9.9         |
| Stability, min                      | 16.7   | 22.5         | 48.1         | 15.2                           | 16.9        | 35.4        |
| Mixing Tolerance Index (MTI), BU    | 21   | 14           | 9            | 18                             | 14          | 8           |
| Extensograph (135 min)              |  |              |              |                                |             |             |
| Maximum Resistance (Rmax), BU       | 695  | 801          | 880          | 563                            | 632         | 737         |
| Extensibility (length), cm          | 21.6   | 21.0         | 18.1         | 21.7                           | 20.0        | 18.9        |
| Area, cm <sup>2</sup>               | 187  | 205          | 190          | 151                            | 156         | 172         |
| Alveograph                          |  |              |              |                                |             |             |
| P (height x 1.1), mm                | 108  | 114          | 121          | 118                            | 116         | 124         |
| L (length), mm                      | 181  | 169          | 160          | 152                            | 143         | 141         |
| P/L                                 | 0.60   | 0.67         | 0.76         | 0.78                           | 0.81        | 0.88        |
| W, 10 <sup>-4</sup> J               | 594  | 607          | 611          | 590                            | 561         | 585         |
| le, %                               | 64.7   | 66.1         | 65.7         | 69.0                           | 68.7        | 68.3        |
| Baking (No Time Dough)              |  |              |              |                                |             |             |
| Absorption, %                       | 64   | n/a          | n/a          | 69                             | n/a         | n/a         |
| Mixing Time, min                    | 6.4  | n/a          | n/a          | 6.3                            | n/a         | n/a         |
| Specific Volume, cm³/g              | 7.7  | n/a          | n/a          | 7.9                            | n/a         | n/a         |
| Total Bread Score (out of 10)       | 9.3  | n/a          | n/a          | 9.1                            | n/a         | n/a         |
| Baking (Sponge & Dough)             |  |              |              |                                | .,,,,       | .,,,,       |
| Absorption, %                       | 63   | n/a          | 64           | 68                             | n/a         | 67          |
| Mixing Time, min                    | 7.6  | n/a          | 8.5          | 8.4                            | n/a         | 8.6         |
| Specific Volume, cm <sup>3</sup> /g | 7.1  | n/a          | 6.9          | 7.2                            | n/a         | 7.1         |
| Total Bread Score (out of 10)       | 9.2  | n/a          | 9.6          | 9.5                            | n/a         | 9.9         |
| Noodles (Fresh Yellow Alkaline)     | 3.2  | 11/0         | 3.0          | 5.5                            | 11/0        | 5.5         |
| Colour (3h / 24h) L*                | n/a  | 72.8 / 68.6  | 74.6 / 70.2  | n/a                            | 74.2 / 69.3 | 74.8 / 71.0 |
| a*                                  | n/a  | 0.09 / 0.69  | -0.14 / 0.39 | n/a                            | 0.15 / 0.69 | -0.10 / 0.4 |
| b*                                  | n/a  | 25.9 / 24.9  | 26.0 / 25.0  | n/a                            | 26.5 / 24.9 | 26.3 / 25.  |
| Cooked Noodle Max. Cutting Stress g |  | 20.3 / 24.3  | 20.0 / 25.0  | 11/0                           | 20.0 / 24.0 | 20.0 / 20.  |
| Cook Time - 3.5 min                 | n/a  | 38.5         | 38.7         | n/a                            | 37.1        | 36.3        |
| Noodles (Fresh White Salted)        | 11/ 0  | 30.3         | 30.7         | 11/ a                          | 37.1        | 30.3        |
|                                     | 2/2  | 74.0. / 71.0 | 75.2./ 72.0  | 2/2                            | 75.7 / 70.0 | 76.0 / 70   |
| Colour (3h / 24h) L*                | n/a  | 74.9 / 71.8  | 75.2 / 72.9  | n/a                            | 75.7 / 72.2 | 76.9 / 73.  |
| a*                                  | n/a  | 1.66 / 2.16  | 1.36 / 1.63  | n/a                            | 1.73 / 2.16 | 1.43 / 1.66 |
| b*                                  | n/a  | 25.2 / 24.7  | 25.4 / 24.9  | n/a                            | 25.3 / 24.9 | 25.5 / 25.3 |
| Cooked Noodle Max. Cutting Stress g | ı/mm²  |              |              |                                |             |             |

### **EASTERN COMPOSITE**

## No. 1 CWRS Canada Western Red Spring

| Quality Parameter <sup>a</sup>             | Eastern Composite b |      |  |  |
|--|---------------------|------|--|--|
| Wheat                                      |                     |      |  |  |
| Test Weight, kg/hL                         | 82.9                | 83.4 |  |  |
| Weight Per 1000 Kernels, g                 | 37.2                | 33.0 |  |  |
| Protein Content, %                         | 14.1                | 14.4 |  |  |
| Protein Content, % (dry matter basis)      | 16.3                | 16.6 |  |  |
| Ash Content, %                             | 1.41                | 1.60 |  |  |
| Falling Number, s                          | 384                 | 393  |  |  |
| Particle Size Index, %                     | 53                  | 51   |  |  |
| Milling Flour Yield Bühler Laboratory Mill |                     |      |  |  |
| Total Products Basis, %                    | 75.1                | 76.3 |  |  |
| 0.50% Ash Basis, %                         | 77.6                | 77.3 |  |  |

## FIGURE 1 2023 Western Canadian



<sup>a</sup> Data are reported on a 13.5% moisture basis for wheat and a 14.0% moisture basis for flour except Alveograph is on a 15.0% moisture basis and starch damage is as is.

<sup>b</sup> Refer to crop region map (Figure 1, shaded area) n/a - Not available (testing will not be conducted).

| Quality Parameter <sup>a</sup>        | Eastern Composite <sup>b</sup> |             | Eastern Composite b     |             |
|---------------------------------------|--------------------------------|-------------|-------------------------|-------------|
| Flour                                 | 2023                           |             | 2022                    |             |
| Extraction                            | Straight Grade<br>75.1%        | 74%         | Straight Grade<br>76.3% | 74%         |
| Protein Content, %                    | 13.3                           | 13.3        | 13.5                    | 13.3        |
| Protein Loss, %                       | 0.8                            | 0.8         | 0.9                     | 1.1         |
| Wet Gluten Content, %                 | 33.6                           | 34.7        | 36.3                    | 36.0        |
| Gluten Index, %                       | 96                             | 99          | 95                      | 95          |
| Ash Content, %                        | 0.45                           | 0.45        | 0.48                    | 0.43        |
| Colour, L*                            | 84.5                           | 84.7        | 84.7                    | 85.2        |
| Starch Damage, UCD                    | 23.8                           | 23.3        | 24.5                    | 24.3        |
| Amylograph Peak Viscosity, BU         | 562                            | 540         | 593                     | 592         |
| Farinograph                           |                                |             |                         |             |
| Absorption, %                         | 62.0                           | 61.9        | 64.9                    | 64.5        |
| Dough Development Time (DDT), min     | 8.5                            | 7.7         | 7.4                     | 7.1         |
| Stability, min                        | 17.5                           | 17.3        | 11.6                    | 13.5        |
| Mixing Tolerance Index (MTI), BU      | 20                             | 15          | 27                      | 22          |
| Extensograph (135 min)                |                                |             |                         |             |
| Maximum Resistance (Rmax), BU         | 746                            | 790         | 523                     | 583         |
| Extensibility (length), cm            | 20.6                           | 20.3        | 23.0                    | 22.6        |
| Area, cm <sup>2</sup>                 | 190                            | 196         | 152                     | 167         |
| Alveograph                            |                                |             |                         |             |
| P (height x 1.1), mm                  | 101                            | 111         | 97                      | 102         |
| L (length), mm                        | 183                            | 157         | 169                     | 178         |
| P/L                                   | 0.55                           | 0.71        | 0.57                    | 0.57        |
| W, 10 <sup>-4</sup> J                 | 555                            | 554         | 507                     | 572         |
| le, %                                 | 63.8                           | 65.3        | 66.9                    | 68.5        |
| Baking (No Time Dough)                |                                |             |                         |             |
| Absorption, %                         | 65                             | n/a         | 68                      | n/a         |
| Mixing Time, min                      | 6.6                            | n/a         | 6.6                     | n/a         |
| Specific Volume, cm³/g                | 7.5                            | n/a         | 7.5                     | n/a         |
| Total Bread Score (out of 10)         | 9.2                            | n/a         | 9.4                     | n/a         |
| Baking (Sponge & Dough)               |                                |             |                         |             |
| Absorption, %                         | 64                             | n/a         | 67                      | n/a         |
| Mixing Time, min                      | 7.1                            | n/a         | 7.7                     | n/a         |
| Specific Volume, cm³/g                | 7.2                            | n/a         | 7.4                     | n/a         |
| Total Bread Score (out of 10)         | 9.4                            | n/a         | 9.7                     | n/a         |
| Noodles (Fresh Yellow Alkaline)       |                                |             |                         |             |
| Colour (3h / 24h) L*                  | n/a                            | 72.0 / 68.0 | n/a                     | 72.7 / 69.0 |
| a*                                    | n/a                            | 0.21 / 0.67 | n/a                     | 0.45 / 0.79 |
| b*                                    | n/a                            | 25.7 / 24.8 | n/a                     | 26.0 / 25.0 |
| Cooked Noodle Max. Cutting Stress g/n |                                |             |                         |             |
| Cook Time - 3.5 min                   | n/a                            | 35.0        | n/a                     | 35.0        |
| Noodles (Fresh White Salted)          |                                |             |                         |             |
| Colour (3h / 24h) L*                  | n/a                            | 74.3 / 71.6 | n/a                     | 74.8 / 71.7 |
| a*                                    | n/a                            | 1.72 / 2.15 | n/a                     | 2.06 / 2.47 |
| b*                                    | n/a                            | 24.7 / 24.2 | n/a                     | 24.9 / 24.4 |
| Cooked Noodle Max. Cutting Stress g/n |                                | 051         | m /-                    | 20.2        |
| Cook Time - 3.5 min                   | n/a                            | 25.1        | n/a                     | 26.3        |

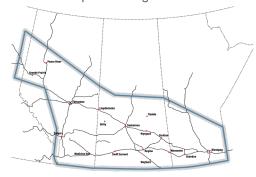
# **CWRS** Quality Assessment

#### PRAIRIE COMPOSITE

# No. 2 CWRS Canada Western Red Spring

| Quality Parameter <sup>a</sup>             | Prairie Composite <sup>b</sup> |      |  |  |
|--|--------------------------------|------|--|--|
| Wheat                                      |                                |      |  |  |
| Test Weight, kg/hL                         | 81.8                           | 81.2 |  |  |
| Weight Per 1000 Kernels, g                 | 36.1                           | 34.3 |  |  |
| Protein Content, %                         | 13.5                           | 13.8 |  |  |
| Protein Content, % (dry matter basis)      | 15.6                           | 16.0 |  |  |
| Ash Content, %                             | 1.36                           | 1.57 |  |  |
| Falling Number, s                          | 372                            | 352  |  |  |
| Particle Size Index, %                     | 52                             | 53   |  |  |
| Milling Flour Yield Bühler Laboratory Mill |                                |      |  |  |
| Total Products Basis, %                    | 75.8                           | 75.2 |  |  |
| 0.50% Ash Basis, %                         | 79.8                           | 77.2 |  |  |

FIGURE 2 2023 Western Canadian Prairie Composite Region



<sup>a</sup> Data are reported on a 13.5% moisture basis for wheat and a 14.0% moisture basis for flour except Alveograph is on a 15.0% moisture basis and starch damage is as is.

n/a - Not available (testing will not be conducted).

| Extraction   | Quality Parameter <sup>a</sup>        | Prairie Composite b |              | Prairie Composite <sup>b</sup> |  |
|--|---------------------------------------|---------------------|--------------|--------------------------------|--|
| Protein Content, %   | Flour                                 |                     |              |                                |  |
| Protein Loss, %  Wet Gluten Content, %  32.7 34.0 35.0  Gluten Index, %  98 98 98 98  Ash Content, %  0.42 0.41 0.46  Colour, L*  84.5 84.8 85.0  Starch Damage, UCD  23.5 23.3 24.6  Arnylograph Peak Viscosity, BU 475 497 407  Farinograph  Absorption, %  61.3 61.0 63.4  Dough Development Time (DDT), min 6.5 8.6 6.3  Stability, min 14.6 171 14.0  Mixing Tolerance Index (MTI), BU 18 21 17  Extensograph (185 min)  Maximum Resistance (Rmax), BU 626 879 612  Extensibility (length), cm 23.4 19.9 21.9  Area, cm² 187 215 171  Alveograph  P (height x 11), mm 102 111 98  L (length), mm 176 161 169  P/L 0.58 0.69 0.58  W, 10-1 J 550 570 536  Ie, % 64.3 66.0 679  Baking (No Time Dough)  Absorption, % 65 n/8 67  Mixing Time, min 6.7 n/8 6.6  Specific Volume, cm²/g 7.9 n/a 7.7  Total Bread Score (out of 10) 9.2 n/a 9.5  Baking (Sponge & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm²/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm²/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm²/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm²/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm²/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm²/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm²/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm²/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm²/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Mixing Time, min 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Mixing Time, min 7.8  Absorption, % 6.4  An 7.4 1.45 181 n/a 1.4  Bread Score (out of 10) 1.4  Bread Park Park Park Park Park Park Pa | Extraction                            |                     | 74%          | _                              |  |
| Wet Gluten Content, % Gluten Index, % 98 98 98 98 98 98 98 98 98 98 98 98 98   | Protein Content, %                    | 12.8                | 12.7         | 12.9                           |  |
| Gluten Index, % 98 98 98 98 98 98 98 Ash Content, % 0.42 0.41 0.46 Colour, L* 84.5 84.8 85.0 Starch Damage, UCD 23.5 23.3 24.6 Amylograph Peak Viscosity, BU 475 497 407 Farinograph Terrinograph Terrin | Protein Loss, %                       | 0.7                 | 0.8          | 0.9                            |  |
| Ash Content, %  O.42  O.41  O.46  Colour, L*  84.5  84.8  85.0  Starch Damage, UCD  23.5  23.3  24.6  Amylograph Peak Viscosity, BU  475  497  497  407  Förnograph  Absorption, %  O.48  Stability, min  14.6  171  14.0  Mixing Tolerance Index (MTI), BU  18  21  17  Extensograph (135 min)  Maximum Resistance (Rmax), BU  Extensibility (length), cm  23.4  19.9  21.9  Area, cm²  187  215  171  Alveograph  P (height x 1.1), mm  102  111  98  L (length), mm  176  161  199  P/L  0.58  0.69  0.58  W, 10 <sup>4</sup> J  150  570  536  1e, %  64.3  66.0  67.9  Baking (No Time Dough)  Absorption, %  65  n/a  66  Mixing Time, min  6.7  n/a  58pecific Volume, cm²/g  79  n/a  77  Total Bread Score (out of 10)  9.2  n/a  81  Specific Volume, cm²/g  72  n/a  77  Total Bread Score (out of 10)  9.5  Riving Gresh Yellow Alkaline)  Colour (3h / 24h) L*  n/a  n/a  n/a  10,4  145  145  147  140  36.4  149  140  36.4  149  36.4  149  36.6  37  38  38  48  61.0  63.4  53.4  61.0  63.4  53.4  140  63.4  140  63.4  140  63.4  140  63.4  140  63.4  140  63.4  171  140  Mixing Time, min  6.7  16.6  6.7  6.6  6.7  Mixing Time, min  6.5  n/a  8.1  Specific Volume, cm²/g  72  n/a  77  Total Bread Score (out of 10)  9.5  n/a  166  Mixing Time, min  6.5  n/a  176  177  170  170  170  170  170  170   | Wet Gluten Content, %                 | 32.7                | 34.0         | 35.0                           |  |
| Colour, L* 84.5 84.8 85.0  Starch Damage, UCD 23.5 23.3 24.6  Amylograph Peak Viscosity, BU 475 497 407  Forinograph  Absorption, % 61.3 61.0 63.4  Dough Development Time (DDT), min 6.5 8.6 6.3  Stability, min 14.6 17.1 14.0  Mixing Tolerance Index (MTI), BU 18 21 17  Extensograph (185 min)  Maximum Resistance (Rmax), BU 626 879 612  Extensibility (length), cm 23.4 19.9 21.9  Area, cm² 187 215 171  Alveograph  P (height x 1.1), mm 102 111 98  L (length), mm 176 161 199  P/L 0.58 0.69 0.58  W, 10⁴ J 560 570 536  Baking (No Time Dough)  Absorption, % 65 n/a 67  Baking (No Time Dough)  Absorption, % 65 n/a 67  Specific Volume, cm²/g 7.9 n/a 7.7  Total Bread Score (out of 10) 9.2 n/a 9.5  Baking (Spange & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm²/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.2 n/a 9.5  Baking (Spange & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm²/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Nocoles (Fresh Yellow Alkaline)  Colour (3h / 24h) L* n/a 7.3 / 69.4 n/a  a* n/a 0.05 / 0.56 n/a  b* n/a 24.9 / 24.4 n/a  Cooked Noodle Max. Cutting Stress g/mm²  Colour (3h / 24h) L* n/a 7.4 / 7.17 n/a  a* n/a 1.45 / 181 n/a  b* n/a 24.2 / 23.3 n/a  Cooked Noodle Max. Cutting Stress g/mm²   | Gluten Index, %                       | 98                  | 98           | 98                             |  |
| Starch Damage, UCD 23.5 23.3 24.6 Amylograph Peak Viscosity, BU 475 497 407 Farinograph Absorption, % 61.3 61.0 63.4 Dough Development Time (DDT), min 6.5 8.6 6.3 Stability, min 14.6 17.1 14.0 Mixing Tolerance Index (MTI), BU 18 21 17 Extensograph (135 min)  Maximum Resistance (Rimax), BU 626 879 612 Extensibility (length), cm 23.4 19.9 21.9 Area, cm² 187 215 171 Alveograph P(height x 1.1), mm 102 111 98 L (length), mm 176 161 169 P/L 0.58 0.69 0.58 W, 10-4 J 550 570 536 Ie, % 64.3 66.0 67.9 Baking (No Time Dough) Absorption, % 65 n/a 67 Mixing Time, min 6.7 n/a 6.6 Specific Volume, cm³/g 7.9 n/a 7.7 Total Bread Score (out of 10) 9.2 n/a 9.5 Baking (Sponge & Dough) Absorption, % 64 n/a 66 Mixing Time, min 6.5 n/a 8.1 Specific Volume, cm²/g 7.2 n/a 7.7 Total Bread Score (out of 10) 9.5 n/a 9.6 Noodles (Fresh Yellow Alkaline) Colour (3h / 24h) L* n/a 73.3 / 69.4 n/a a* n/a -0.05 / 0.56 n/a a* n/a -0.05 / 0.56 n/a b* n/a 74.4 / 71.7 n/a a* n/a 14.5 / 1.81 n/a b* n/a 74.4 / 71.7 n/a a* n/a 14.5 / 1.81 n/a b* n/a 24.2 / 23.3 n/a  | Ash Content, %                        | 0.42                | 0.41         | 0.46                           |  |
| Amylograph Peak Viscosity, BU 475 497 407 Farinograph Absorption, % 61.3 61.0 63.4 Dough Development Time (DDT), min 6.5 8.6 6.3 Stability, min 14.6 17.1 14.0 Mixing Tolerance Index (MTI), BU 18 21 17 Extensograph (135 min)  Maximum Resistance (Rmax), BU 626 879 612 Extensibility (length), cm 23.4 19.9 21.9 Area, cm² 187 215 171  Alveograph P (height x 1.1), mm 102 111 98 L (length), mm 176 161 169 P/L 0.58 0.69 0.58 W, 10-1 550 570 536 le, % 64.3 66.0 67.9 Baking (No Time Dough) Absorption, % 65 n/a 67 Mixing Time, min 6.7 n/a 6.6 Specific Volume, cm²/g 7.9 n/a 7.7 Total Bread Score (out of 10) 9.2 n/a 9.5 Baking (Sponge & Dough) Absorption, % 64 n/a 66 Mixing Time, min 6.5 n/a 8.1 Specific Volume, cm²/g 7.2 n/a 7.7 Total Bread Score (out of 10) 9.5 n/a 9.6 Nocotles (Fresh Yellow Alkaline) Colour (3h / 24h) L* n/a 7.3 / 69.4 n/a  a* n/a -0.05 / 0.56 n/a  b* n/a 7.4 / 7.7 n/a  a* n/a 3.6.4 n/a Noodles (Fresh Yellow Alkaline) Colour (3h / 24h) L* n/a 7.4 / 7.7 n/a a* n/a 1.45 / 1.81 n/a b* n/a 7.4 / 7.7 n/a a* n/a 1.45 / 1.81 n/a b* n/a 1.45 / 1.81 n/a b* n/a 1.45 / 1.81 n/a   | Colour, L*                            | 84.5                | 84.8         | 85.0                           |  |
| Farinograph Absorption, % 61.3 61.0 63.4  Dough Development Time (DDT), min 6.5 8.6 6.3  Stability, min 14.6 17.1 14.0  Mixing Tolerance Index (MTI), BU 18 21 17  Extensograph (135 min)  Maximum Resistance (Rmax), BU 626 879 612  Extensibility (length), cm 23.4 19.9 21.9  Area, cm² 187 215 171  Alveograph  P (height x 1:1), mm 102 111 98  L (length), mm 176 161 169  P/L 0.58 0.69 0.58  W, 10 ⁴ J 550 570 536  Ie, % 64.3 66.0 679  Baking (No Time Dough)  Absorption, % 65 n/a 67  Mixing Time, min 6.7 n/a 6.6  Specific Volume, cm³/g 7.9 n/a 7.7  Total Bread Score (out of 10) 9.2 n/a 9.5  Baking (Sponge & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 9.5  Baking (Sponge & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 9.5  Baking (Sponge & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 9.5  Baking (Sponge & Dough)  Colour (3h / 24h) L* n/a 7.3 / 69.4 n/a  a* n/a -0.05 / 0.56 n/a  b* n/a 24.9 / 24.4 n/a  Cooked Noodle Max. Cutting Stress g/mm²  Colour (3h / 24h) L* n/a 74.4 / 71.7 n/a  a* n/a 145 / 181 n/a  b* n/a 24.2 / 23.3 n/a  Cooked Noodle Max. Cutting Stress g/mm²   | Starch Damage, UCD                    | 23.5                | 23.3         | 24.6                           |  |
| Absorption, % 61.3 66.0 6.3 Stability, min 6.5 8.6 6.3 Stability, min 14.6 17.1 14.0 Mixing Tolerance Index (MTI), BU Extensograph (135 min) Maximum Resistance (Rmax), BU Extensibility (length), cm 23.4 19.9 21.9 21.9 21.9 21.9 21.9 21.9 21.9   | Amylograph Peak Viscosity, BU         | 475                 | 497          | 407                            |  |
| Dough Development Time (DDT), min   6.5   8.6   6.3  | Farinograph                           |                     |              |                                |  |
| Stability, min 14.6 17.1 14.0 Mixing Tolerance Index (MTI), BU 18 21 17  Extensograph (135 min)  Maximum Resistance (Rmax), BU 626 879 612  Extensibility (length), cm 23.4 19.9 21.9  Area, cm² 187 215 17.1  Alveograph  P (height x 1.1), mm 102 111 98  L (length), mm 176 161 169  P/L 0.58 0.69 0.58  W, 10-4 J 550 570 536 16, 9  Baking (No Time Dough)  Absorption, % 65 n/a 67  Mixing Time, min 6.7 n/a 6.6  Specific Volume, cm²/g 7.9 n/a 7.7  Total Bread Score (out of 10) 9.2 n/a 9.5  Baking (Sponge & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm²/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Noodles (Fresh Yellow Alkaline)  Colour (3h / 24h) L* n/a 7.3 / 6.94 n/a  a* n/a -0.05 / 0.56 n/a  n/a 145 / 1.81 n/a  b* n/a 24.2 / 23.3 n/a  Ccoked Noodle Max. Cutting Stress g/mm²  Cooked Noodle Max. Cutting Stress g/mm²  | Absorption, %                         | 61.3                | 61.0         | 63.4                           |  |
| Mixing Tolerance Index (MTI), BU 18 21 17  Extensograph (135 min)  Maximum Resistance (Rmax), BU 626 879 612  Extensibility (length), cm 23.4 19.9 21.9  Area, cm² 187 215 171  Alveograph  P (height x 13), mm 102 111 98  L (length), mm 176 161 169  P/L 0.58 0.69 0.58  W, 10 4 J 550 570 536  le, % 64.3 66.0 67.9  Baking (No Time Dough)  Absorption, % 65 n/a 67  Mixing Time, min 6.7 n/a 6.6  Specific Volume, cm³/g 7.9 n/a 7.7  Total Bread Score (out of 10) 9.2 n/a 9.5  Baking (Sponge & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm³/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Noodles (Fresh Yellow Alkaline)  Colour (3h / 24h) L* n/a 73.3 / 69.4 n/a  a* n/a -0.05 / 0.56 n/a  B* n/a 74.4 / 71.7 n/a  Cooked Noodle Max. Cutting Stress g/mm²  Cooked Noodle Max. Cutting Stress g/mm²   | Dough Development Time (DDT), min     | 6.5                 | 8.6          | 6.3                            |  |
| Extensograph (135 min)  Maximum Resistance (Rmax), BU 626 879 612  Extensibility (length), cm 23.4 19.9 21.9  Area, cm² 187 215 171  Alveograph  P (height x 11), mm 102 111 98  L (length), mm 176 161 169  P/L 0.58 0.69 0.58  W, 10⁴ J 550 570 536  le, % 64.3 66.0 67.9  Baking (No Time Dough)  Absorption, % 65 n/a 67  Mixing Time, min 6.7 n/a 6.6  Specific Volume, cm³/g 7.9 n/a 7.7  Total Bread Score (out of 10) 9.2 n/a 9.5  Baking (Sponge & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm³/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Noodles (Fresh Yellow Alkaline)  Colour (3h / 24h) L* n/a 73.3 / 69.4 n/a  a* n/a -0.05 / 0.56 n/a  D* n/a 74.4 / 71.7 n/a  a* n/a 74.4 / 71.7 n/a  b* n/a 24.2 / 23.3 n/a  Cooked Noodle Max. Cutting Stress g/mm²  | Stability, min                        | 14.6                | 17.1         | 14.0                           |  |
| Maximum Resistance (Rmax), BU 626 879 612  Extensibility (length), cm 23.4 19.9 21.9  Area, cm² 187 215 171  Alveograph  P (height x 11), mm 102 111 98  L (length), mm 176 161 169  P/L 0.58 0.69 0.58  W, 10-4 J 550 570 536  le, % 64.3 66.0 67.9  Baking (No Time Dough)  Absorption, % 65 n/a 67  Mixing Time, min 6.7 n/a 6.6  Specific Volume, cm³/g 7.9 n/a 7.7  Total Bread Score (out of 10) 9.2 n/a 9.5  Baking (Sponge & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm³/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Noodles (Fresh Yellow Alkaline)  Colour (3h / 24h) L* n/a 73.3 / 69.4 n/a  a* n/a -0.05 / 0.56 n/a  Noodles (Fresh White Salted)  Colour (3h / 24h) L* n/a 74.4 / 71.7 n/a  a* n/a 1.45 / 1.81 n/a  b* n/a 24.2 / 23.3 n/a  Cooked Noodle Max. Cutting Stress g/mm²   | Mixing Tolerance Index (MTI), BU      | 18                  | 21           | 17                             |  |
| Extensibility (length), cm 23.4 19.9 21.9  Area, cm² 187 215 171  Alveograph  P (height x 1.1), mm 102 111 98  L (length), mm 176 161 169  P/L 0.58 0.69 0.58  W, 10.4 J 550 570 536  le, % 64.3 66.0 67.9  Baking (No Time Dough)  Absorption, % 65 n/a 67  Mixing Time, min 6.7 n/a 6.6  Specific Volume, cm³/g 7.9 n/a 7.7  Total Bread Score (out of 10) 9.2 n/a 9.5  Baking (Sponge & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm³/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Noodles (Fresh Yellow Alkaline)  Colour (3h / 24h) L* n/a 73.3 / 69.4 n/a  B* n/a 24.9 / 24.4 n/a  Cooked Noodle Max. Cutting Stress g/mm²  Cooked Noodles (Fresh White Salted)  Colour (3h / 24h) L* n/a 74.4 / 71.7 n/a  B* n/a 1.45 / 1.81 n/a  B* n/a 24.2 / 23.3 n/a  Cooked Noodle Max. Cutting Stress g/mm²  |                                       |                     |              |                                |  |
| Area, cm² 187 215 171  Alveograph  P (height x 11), mm 102 111 98  L (length), mm 176 161 169  P/L 0.58 0.69 0.58  W, 10⁴J 550 570 536  le, % 64.3 66.0 67.9  Baking (No Time Dough)  Absorption, % 65 n/a 6.7  Mixing Time, min 6.7 n/a 6.6  Specific Volume, cm³/g 7.9 n/a 7.7  Total Bread Score (out of 10) 9.2 n/a 9.5  Baking (Sponge & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm³/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Noodles (Fresh Yellow Alkaline)  Colour (3h / 24h) L* n/a 73.3 / 69.4 n/a  a* n/a -0.05 / 0.56 n/a  Cooked Noodle Max. Cutting Stress g/mm²  Cook Time - 3.5 min n/a 36.4 n/a  a* n/a 74.4 / 71.7 n/a  a* n/a 74.4 / 71.7 n/a  a* n/a 74.4 / 71.7 n/a  a* n/a 1.45 / 1.81 n/a  b* n/a 24.2 / 23.3 n/a  Cooked Noodle Max. Cutting Stress g/mm²   | Maximum Resistance (Rmax), BU         | 626                 | 879          | 612                            |  |
| Alveograph  P (height x 11), mm  102  111  98  L (length), mm  176  161  169  P/L  0.58  0.69  0.58  W, 10 <sup>4</sup> J  550  570  536  le, %  64.3  66.0  67.9  Baking (No Time Dough)  Absorption, %  65  n/a  6.6  Specific Volume, cm³/g  7.9  n/a  7.7  Total Bread Score (out of 10)  9.2  n/a  6.6  Mixing Time, min  6.5  n/a  66  Mixing Time, min  6.5  n/a  66  Mixing Time, min  6.5  n/a  67  Total Bread Score (out of 10)  9.2  n/a  7.7  Total Bread Score (out of 10)  9.5  Baking (Sponge & Dough)  Absorption, %  64  n/a  66  Mixing Time, min  6.5  n/a  8.1  Specific Volume, cm³/g  7.2  n/a  7.7  Total Bread Score (out of 10)  9.5  n/a  9.6  Noodles (Fresh Yellow Alkaline)  Colour (3h / 24h) L*  n/a  n/a  1/a  1/a  1/a  1/a  1/a  1/a  | Extensibility (length), cm            | 23.4                | 19.9         | 21.9                           |  |
| P (height x 11), mm  L (length), mm  176  161  169  P/L  0.58  0.69  0.58  W, 10 ° J  550  570  536  le, %  64.3  66.0  67.9  Baking (No Time Dough)  Absorption, %  65  n/a  67  Mixing Time, min  6.7  n/a  6.6  Specific Volume, cm³/g  7.9  n/a  3.5  Baking (Sponge & Dough)  Absorption, %  64  n/a  66  Mixing Time, min  6.5  n/a  8.1  Specific Volume, cm³/g  7.2  n/a  7.7  Total Bread Score (out of 10)  9.2  n/a  8.1  Specific Volume, cm³/g  7.2  n/a  7.7  Total Bread Score (out of 10)  9.5  n/a  8.1  Specific Volume, cm³/g  7.2  n/a  7.7  Total Bread Score (out of 10)  9.5  n/a  8.1  Specific Volume, cm³/g  7.2  n/a  7.7  Total Bread Score (out of 10)  9.5  n/a  7.7  Total Bread Score (out of 10)  9.5  n/a  3.3 / 69.4  n/a  a*  n/a  -0.05 / 0.56  n/a  b*  n/a  36.4  n/a  Noodles (Fresh White Salted)  Colour (3h / 24h) L*  n/a  a*  n/a  7.4 / 71.7  n/a  a*  n/a  1.45 / 1.81  n/a  b*  n/a  1.45 / 1.81  n/a  Cooked Noodle Max. Cutting Stress g/mm²   | Area, cm <sup>2</sup>                 | 187                 | 215          | 171                            |  |
| L (length), mm   |                                       |                     |              |                                |  |
| P/L 0.58 0.69 0.58  W, 10-4 J 550 570 536  le, % 64.3 66.0 67.9  Baking (No Time Dough)  Absorption, % 65 n/a 67  Mixing Time, min 6.7 n/a 6.6  Specific Volume, cm³/g 7.9 n/a 7.7  Total Bread Score (out of 10) 9.2 n/a 9.5  Baking (Sponge & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm³/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Noodles (Fresh Yellow Alkaline)  Colour (3h / 24h) L* n/a 73.3 / 69.4 n/a  a* n/a -0.05 / 0.56 n/a  Noodles (Fresh White Salted)  Colour (3h / 24h) L* n/a 74.4 / 71.7 n/a  a* n/a 1.45 / 1.81 n/a  b* n/a 24.2 / 23.3 n/a  Cooked Noodle Max. Cutting Stress g/mm²  | P (height x 1.1), mm                  | 102                 | 111          | 98                             |  |
| W, 10*4 J 550 570 536 le, % 64.3 66.0 67.9  Baking (No Time Dough)  Absorption, % 65 n/a 67  Mixing Time, min 6.7 n/a 6.6  Specific Volume, cm³/g 7.9 n/a 7.7  Total Bread Score (out of 10) 9.2 n/a 9.5  Baking (Sponge & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm³/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Noodles (Fresh Yellow Alkaline)  Colour (3h / 24h) L* n/a 73.3 / 69.4 n/a  a* n/a -0.05 / 0.56 n/a  Cooked Noodle Max. Cutting Stress g/mm²  Cooked Noodles (Fresh White Salted)  Colour (3h / 24h) L* n/a 74.4 / 71.7 n/a  a* n/a 1.45 / 1.81 n/a  b* n/a 24.2 / 23.3 n/a  Cooked Noodle Max. Cutting Stress g/mm²  Cooked Noodle Max. Cutting Stress g/mm²  | L (length), mm                        | 176                 | 161          | 169                            |  |
| Ie, %  | P/L                                   | 0.58                | 0.69         | 0.58                           |  |
| Baking (No Time Dough)  Absorption, % 65 n/a 67  Mixing Time, min 6.7 n/a 6.6  Specific Volume, cm³/g 7.9 n/a 7.7  Total Bread Score (out of 10) 9.2 n/a 9.5  Baking (Sponge & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm³/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Noodles (Fresh Yellow Alkaline)  Colour (3h / 24h) L* n/a 73.3 / 69.4 n/a  b* n/a 24.9 / 24.4 n/a  Cooked Noodle Max. Cutting Stress g/mm²  Colour (3h / 24h) L* n/a 74.4 / 71.7 n/a  a* n/a 74.4 / 71.7 n/a  a* n/a 145 / 1.81 n/a  b* n/a 24.2 / 23.3 n/a  Cooked Noodle Max. Cutting Stress g/mm²  | W, 10 <sup>-4</sup> J                 | 550                 | 570          | 536                            |  |
| Absorption, % 65 n/a 67  Mixing Time, min 6.7 n/a 6.6  Specific Volume, cm³/g 7.9 n/a 7.7  Total Bread Score (out of 10) 9.2 n/a 9.5  Baking (Sponge & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm³/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Noodles (Fresh Yellow Alkaline)  Colour (3h / 24h) L* n/a 73.3 / 69.4 n/a 9.6  D* n/a 24.9 / 24.4 n/a  Cooked Noodle Max. Cutting Stress g/mm²  Cook Time - 3.5 min n/a 36.4 n/a  Noodles (Fresh White Salted)  Colour (3h / 24h) L* n/a 74.4 / 71.7 n/a a* n/a 1.45 / 1.81 n/a b* n/a 24.2 / 23.3 n/a  Cooked Noodle Max. Cutting Stress g/mm²   | le, %                                 | 64.3                | 66.0         | 67.9                           |  |
| Mixing Time, min 6.7 n/a 6.6  Specific Volume, cm³/g 7.9 n/a 7.7  Total Bread Score (out of 10) 9.2 n/a 9.5  Baking (Sponge & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm³/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Noodles (Fresh Yellow Alkaline)  Colour (3h / 24h) L* n/a 73.3 / 69.4 n/a  a* n/a -0.05 / 0.56 n/a  b* n/a 24.9 / 24.4 n/a  Cooked Noodle Max. Cutting Stress g/mm²  Cook Time - 3.5 min n/a 36.4 n/a  Noodles (Fresh White Salted)  Cooked Noodle Max. Cutting Stress g/mm²  | Baking (No Time Dough)                |                     |              |                                |  |
| Specific Volume, cm³/g       7.9       n/a       7.7         Total Bread Score (out of 10)       9.2       n/a       9.5         Baking (Sponge & Dough)       8.1       66         Mixing Time, min       6.5       n/a       8.1         Specific Volume, cm³/g       7.2       n/a       7.7         Total Bread Score (out of 10)       9.5       n/a       9.6         Noodles (Fresh Yellow Alkaline)       8.1       8.1       8.1         Colour (3h / 24h)       1.4  | Absorption, %                         | 65                  | n/a          | 67                             |  |
| Total Bread Score (out of 10)  Baking (Sponge & Dough)  Absorption, %  64  Mixing Time, min  6.5  7.2  Total Bread Score (out of 10)  9.5  Noodles (Fresh Yellow Alkaline)  Colour (3h / 24h) L*  n/a  Noodles (Fresh White Salted)  Colour (3h / 24h) L*  n/a  Noodles (Fresh White Salted)  Colour (3h / 24h) L*  n/a  Cooked Noodle Max. Cutting Stress g/mm²  Colour (3h / 24h) L*  n/a  74.4 / 71.7  n/a  a*  n/a  1.45 / 1.81  n/a  Cooked Noodle Max. Cutting Stress g/mm²  Cooked Noodle Max. Cutting Stress g/mm²   | Mixing Time, min                      | 6.7                 | n/a          | 6.6                            |  |
| Baking (Sponge & Dough)  Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm³/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Noodles (Fresh Yellow Alkaline)  Colour (3h / 24h) L* n/a 73.3 / 69.4 n/a  a* n/a -0.05 / 0.56 n/a  b* n/a 24.9 / 24.4 n/a  Cooked Noodle Max. Cutting Stress g/mm²  Cook Time - 3.5 min n/a 36.4 n/a  Noodles (Fresh White Salted)  Colour (3h / 24h) L* n/a 74.4 / 71.7 n/a  a* n/a 1.45 / 1.81 n/a  b* n/a 24.2 / 23.3 n/a  Cooked Noodle Max. Cutting Stress g/mm²  | Specific Volume, cm³/g                | 7.9                 | n/a          | 7.7                            |  |
| Absorption, % 64 n/a 66  Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm³/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Noodles (Fresh Yellow Alkaline)  Colour (3h / 24h) L* n/a 73.3 / 69.4 n/a  a* n/a -0.05 / 0.56 n/a  b* n/a 24.9 / 24.4 n/a  Cooked Noodle Max. Cutting Stress g/mm²  Cook Time - 3.5 min n/a 36.4 n/a  Noodles (Fresh White Salted)  Colour (3h / 24h) L* n/a 74.4 / 71.7 n/a  a* n/a 1.45 / 1.81 n/a  b* n/a 24.2 / 23.3 n/a  Cooked Noodle Max. Cutting Stress g/mm²   | Total Bread Score (out of 10)         | 9.2                 | n/a          | 9.5                            |  |
| Mixing Time, min 6.5 n/a 8.1  Specific Volume, cm³/g 7.2 n/a 7.7  Total Bread Score (out of 10) 9.5 n/a 9.6  Noodles (Fresh Yellow Alkaline)  Colour (3h / 24h) L* n/a 73.3 / 69.4 n/a  a* n/a -0.05 / 0.56 n/a  b* n/a 24.9 / 24.4 n/a  Cooked Noodle Max. Cutting Stress g/mm²  Cook Time - 3.5 min n/a 36.4 n/a  Noodles (Fresh White Salted)  Colour (3h / 24h) L* n/a 74.4 / 71.7 n/a  a* n/a 1.45 / 1.81 n/a  b* n/a 24.2 / 23.3 n/a  Cooked Noodle Max. Cutting Stress g/mm²  | Baking (Sponge & Dough)               |                     |              |                                |  |
| Specific Volume, cm³/g         7.2         n/a         7.7           Total Bread Score (out of 10)         9.5         n/a         9.6           Noodles (Fresh Yellow Alkaline)   | Absorption, %                         | 64                  | n/a          | 66                             |  |
| Total Bread Score (out of 10)  9.5  Noodles (Fresh Yellow Alkaline)  Colour (3h / 24h) L*  n/a  a*  n/a  -0.05 / 0.56  n/a  b*  n/a  24.9 / 24.4  n/a  Cooked Noodle Max. Cutting Stress g/mm²  Cook Time - 3.5 min  n/a  Noodles (Fresh White Salted)  Colour (3h / 24h) L*  n/a  n/a  74.4 / 71.7  n/a  a*  n/a  1.45 / 1.81  n/a  Cooked Noodle Max. Cutting Stress g/mm²   | Mixing Time, min                      | 6.5                 | n/a          | 8.1                            |  |
| Noodles (Fresh Yellow Alkaline)         Colour (3h / 24h) L*       n/a       73.3 / 69.4       n/a         a*       n/a       -0.05 / 0.56       n/a         b*       n/a       24.9 / 24.4       n/a         Cooked Noodle Max. Cutting Stress g/mm²         Colour (3h / 24h) L*       n/a       36.4       n/a         Noodles (Fresh White Salted)         Colour (3h / 24h) L*       n/a       74.4 / 71.7       n/a         a*       n/a       1.45 / 1.81       n/a         b*       n/a       24.2 / 23.3       n/a         Cooked Noodle Max. Cutting Stress g/mm²  | Specific Volume, cm³/g                | 7.2                 | n/a          | 7.7                            |  |
| Colour (3h / 24h) L*   | Total Bread Score (out of 10)         | 9.5                 | n/a          | 9.6                            |  |
| a*       n/a       -0.05 / 0.56       n/a         b*       n/a       24.9 / 24.4       n/a         Cooked Noodle Max. Cutting Stress g/mm²       Cook Time - 3.5 min       n/a       36.4       n/a         Noodles (Fresh White Salted)       Colour (3h / 24h) L*       n/a       74.4 / 71.7       n/a         a*       n/a       1.45 / 1.81       n/a         b*       n/a       24.2 / 23.3       n/a         Cooked Noodle Max. Cutting Stress g/mm²  | Noodles (Fresh Yellow Alkaline)       |                     |              |                                |  |
| b*         n/a         24.9 / 24.4         n/a           Cooked Noodle Max. Cutting Stress g/mm²         Cook Time - 3.5 min         n/a         36.4         n/a           Noodles (Fresh White Salted)           Colour (3h / 24h) L*         n/a         74.4 / 71.7         n/a           a*         n/a         1.45 / 1.81         n/a           b*         n/a         24.2 / 23.3         n/a           Cooked Noodle Max. Cutting Stress g/mm²  | Colour (3h / 24h) L*                  | n/a                 | 73.3 / 69.4  | n/a                            |  |
| Cooked Noodle Max. Cutting Stress g/mm²  Cook Time - 3.5 min   | a*                                    | n/a                 | -0.05 / 0.56 | n/a                            |  |
| Cook Time - 3.5 min         n/a         36.4         n/a           Noodles (Fresh White Salted)         Colour (3h / 24h) L*         n/a         74.4 / 71.7         n/a           a*         n/a         1.45 / 1.81         n/a           b*         n/a         24.2 / 23.3         n/a           Cooked Noodle Max. Cutting Stress g/mm²   | b*                                    | n/a                 | 24.9 / 24.4  | n/a                            |  |
| Noodles (Fresh White Salted)  Colour (3h / 24h) L* n/a 74.4 / 71.7 n/a  a* n/a 1.45 / 1.81 n/a  b* n/a 24.2 / 23.3 n/a  Cooked Noodle Max. Cutting Stress g/mm²  | Cooked Noodle Max. Cutting Stress g/r | mm²                 |              |                                |  |
| Colour (3h / 24h)         L*         n/a         74.4 / 71.7         n/a           a*         n/a         1.45 / 1.81         n/a           b*         n/a         24.2 / 23.3         n/a   Cooked Noodle Max. Cutting Stress g/mm²   | Cook Time - 3.5 min                   | n/a                 | 36.4         | n/a                            |  |
| a*         n/a         1.45 / 1.81         n/a           b*         n/a         24.2 / 23.3         n/a           Cooked Noodle Max. Cutting Stress g/mm²  | Noodles (Fresh White Salted)          |                     |              |                                |  |
| b* n/a 24.2 / 23.3 n/a  Cooked Noodle Max. Cutting Stress g/mm²  | Colour (3h / 24h) L*                  | n/a                 | 74.4 / 71.7  | n/a                            |  |
| Cooked Noodle Max. Cutting Stress g/mm²  | a*                                    | n/a                 | 1.45 / 1.81  | n/a                            |  |
|  | b*                                    | n/a                 | 24.2 / 23.3  | n/a                            |  |
| Cook Time - 3.5 min         n/a         26.7         n/a   | Cooked Noodle Max. Cutting Stress g/r | mm²                 |              |                                |  |
|  | Cook Time - 3.5 min                   | n/a                 | 26.7         | n/a                            |  |

<sup>&</sup>lt;sup>b</sup> Refer to crop region map (Figure 2)