**[Supplementary Material](http://www.elsevier.com/journals/food-chemistry/0308-8146/guide-for-authors" \l "87000)s**

**Combined analysis of near-infrared spectra, colour, and physicochemical information of brown rice to develop accurate calibration models for determining amylose content**

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Table S1. Summary of number of samples collected per variety and year of production.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample  set | Year of production |  | Ordinary amylose  variety | | | | | | | |  | Low amylose variety | |  | Total within year of production |
|  | *Daichinohoshi* | *Fukkurinko* | *Hoshimaru* | *Hoshinoyume* | *Kitakurin* | *Kirara-397* | *Nanatsuboshi* | *Sorayuki* |  | *Oborozuki* | *Yumepirika* |  |
| Cal | 2009 |  | - | - | - | 1 | - | - | - | - |  | - | 34 |  | 35 |
| 2010 |  | 7 | 4 | 1 | 18 | - | 20 | 25 | - |  | 19 | 42 |  | 136 |
| 2011 |  | 1 | 10 | - | 6 | - | 18 | 25 | - |  | 8 | 42 |  | 110 |
| 2012 |  | - | 3 | - | - | - | - | 5 | - |  | - | 34 |  | 42 |
| 2013 |  | 9 | 13 | - | 7 | 6 | 18 | 27 | - |  | 5 | 14 |  | 99 |
| 2014 |  | 6 | 7 | - | 5 | 3 | 29 | 28 | - |  | 3 | 22 |  | 103 |
| 2015 |  | 6 | 10 | - | 7 | 7 | 8 | 28 | 12 |  | 11 | 23 |  | 112 |
| Cal / Val | 2016 |  | 4 | 13 | 6 | 1 | 4 | 6 | 29 | 3 |  | 3 | 32 |  | 101 |
| Val | 2017 |  | 2 | 20 | 5 | - | 1 | 5 | 24 | 3 |  | 2 | 32 |  | 94 |
| Total within variety | |  | 35 | 80 | 12 | 45 | 21 | 104 | 191 | 18 |  | 51 | 275 |  | 832 |

Cal, calibration; Val, validation

Table S2. Summary of physicochemical properties of brown rice per variety and year of production.

| Year of production | Property | |  | | Ordinary amylose  variety | | | | | | | | | | | | | | | |  | | Low amylose variety | | | |  | | Average within year of production | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | *Daichinohoshi* | | *Fukkurinko* | | *Hoshimaru* | | *Hoshinoyume* | | *Kitakurin* | | *Kirara-397* | | *Nanatsuboshi* | | *Sorayuki* | |  | | *Oborozuki* | | *Yumepirika* | |  | | Mean | | SEL | |
| 2009 | PCpred, % |  | | - | | - | | - | | 7.6 | | - | | - | | - | | - | |  | | - | | 7.8 | |  | | 7.7 | | - | |
| MK, % |  | | - | | - | | - | | 70.3 | | - | | - | | - | | - | |  | | - | | 65.9 | |  | | 68.1 | | 0.64 | |
| IK, % |  | | - | | - | | - | | 28.0 | | - | | - | | - | | - | |  | | - | | 29.1 | |  | | 28.6 | | 0.65 | |
| L, mm |  | | - | | - | | - | | 5.2 | | - | | - | | - | | - | |  | | - | | 5.2 | |  | | 5.2 | | 0.04 | |
| W, mm |  | | - | | - | | - | | 2.8 | | - | | - | | - | | - | |  | | - | | 2.9 | |  | | 2.9 | | 0.001 | |
| 2010 | PCpred, % |  | | 9.6 | | 8.4 | | 8.5 | | 7.7 | | - | | 8.3 | | 7.6 | | - | |  | | 8.3 | | 7.7 | |  | | 8.3 | | - | |
| MK, % |  | | 52.2 | | 55.2 | | 72.5 | | 66.4 | | - | | 62.4 | | 62.2 | | - | |  | | 56.8 | | 63.9 | |  | | 61.5 | | 0.76 | |
| IK, % |  | | 35.8 | | 33.0 | | 24.5 | | 26.0 | | - | | 27.8 | | 28.5 | | - | |  | | 34.1 | | 29.6 | |  | | 29.9 | | 1.00 | |
| L, mm |  | | 5.3 | | 5.2 | | 5.4 | | 5.2 | | - | | 5.2 | | 5.0 | | - | |  | | 5.2 | | 5.2 | |  | | 5.2 | | 0.02 | |
| W, mm |  | | 3.1 | | 3.0 | | 3.1 | | 2.9 | | - | | 3.0 | | 3.0 | | - | |  | | 2.9 | | 3.0 | |  | | 3.0 | | 0.01 | |
| 2011 | PCpred, % |  | | 8.1 | | 7.7 | | - | | 8.0 | | - | | 8.3 | | 7.6 | | - | |  | | 8.8 | | 7.8 | |  | | 8.1 | | - | |
| MK, % |  | | 63.9 | | 69.4 | | - | | 69.4 | | - | | 70.5 | | 68.1 | | - | |  | | 59.1 | | 66.2 | |  | | 66.7 | | 0.71 | |
| IK, % |  | | 31.5 | | 25.5 | | - | | 26.9 | | - | | 24.6 | | 25.2 | | - | |  | | 31.2 | | 26.2 | |  | | 27.3 | | 0.77 | |
| L, mm |  | | 5.3 | | 5.3 | | - | | 5.3 | | - | | 5.1 | | 4.9 | | - | |  | | 5.2 | | 5.2 | |  | | 5.2 | | 0.03 | |
| W, mm |  | | 3.1 | | 3.1 | | - | | 3.0 | | - | | 3.1 | | 3.0 | | - | |  | | 3.0 | | 3.1 | |  | | 3.0 | | 0.01 | |
| 2012 | PCpred, % |  | | - | | 6.7 | | - | | - | | - | | - | | 7.4 | | - | |  | | - | | 7.4 | |  | | 7.2 | | - | |
| MK, % |  | | - | | 77.5 | | - | | - | | - | | - | | 78.3 | | - | |  | | - | | 74.1 | |  | | 76.6 | | 0.73 | |
| IK, % |  | | - | | 20.6 | | - | | - | | - | | - | | 19.7 | | - | |  | | - | | 23.6 | |  | | 21.3 | | 0.80 | |
| L, mm |  | | - | | 5.3 | | - | | - | | - | | - | | 5.1 | | - | |  | | - | | 5.2 | |  | | 5.2 | | 0.01 | |
| W, mm |  | | - | | 3.1 | | - | | - | | - | | - | | 3.0 | | - | |  | | - | | 3.0 | |  | | 3.0 | | 0.002 | |
| 2013 | PCpred, % |  | | 9.1 | | 7.7 | | - | | 8.2 | | 7.8 | | 8.4 | | 7.6 | | - | |  | | 8.1 | | 8.1 | |  | | 8.1 | | - | |
| MK, % |  | | 48.7 | | 62.4 | | - | | 65.9 | | 65.0 | | 61.2 | | 58.8 | | - | |  | | 51.5 | | 59.9 | |  | | 59.2 | | 0.77 | |
| IK, % |  | | 31.2 | | 25.5 | | - | | 26.6 | | 23.7 | | 26.1 | | 27.0 | | - | |  | | 31.6 | | 28.9 | |  | | 27.6 | | 0.98 | |
| L, mm |  | | 5.2 | | 5.2 | | - | | 5.2 | | 4.9 | | 5.1 | | 5.0 | | - | |  | | 5.1 | | 5.2 | |  | | 5.1 | | 0.02 | |
| W, mm |  | | 3.0 | | 3.0 | | - | | 3.0 | | 3.1 | | 3.0 | | 3.0 | | - | |  | | 3.0 | | 3.0 | |  | | 3.0 | | 0.01 | |
| 2014 | PCpred, % |  | | 7.6 | | 6.9 | | - | | 7.5 | | 7.6 | | 8.2 | | 7.4 | | - | |  | | 7.9 | | 7.5 | |  | | 7.6 | | - | |
| MK, % |  | | 49.7 | | 50.7 | | - | | 58.3 | | 54.2 | | 54.9 | | 54.9 | | - | |  | | 53.3 | | 52.8 | |  | | 53.6 | | 0.80 | |
| IK, % |  | | 33.3 | | 30.0 | | - | | 28.4 | | 31.5 | | 31.1 | | 31.1 | | - | |  | | 30.7 | | 31.9 | |  | | 31.0 | | 0.96 | |
| L, mm |  | | 5.2 | | 5.1 | | - | | 5.1 | | 5.1 | | 5.1 | | 5.1 | | - | |  | | 5.2 | | 5.1 | |  | | 5. | | 0.01 | |
| W, mm |  | | 3.1 | | 3.0 | | - | | 3.0 | | 3.1 | | 3.0 | | 3.0 | | - | |  | | 3.0 | | 3.0 | |  | | 3.0 | | 0.01 | |
| 2015 | PCpred, % |  | | 8.2 | | 7.1 | | - | | 7.4 | | 7.6 | | 8.1 | | 7.5 | | 7.5 | |  | | 8.7 | | 7.6 | |  | | 7.8 | | - | |
| MK, % |  | | 48.5 | | 68.4 | | - | | 64.7 | | 61.6 | | 57.2 | | 64.8 | | 73.7 | |  | | 53.7 | | 56.4 | |  | | 61.0 | | 0.75 | |
| IK, % |  | | 30.8 | | 25.2 | | - | | 26.1 | | 25.6 | | 28.1 | | 25.4 | | 22.2 | |  | | 32.1 | | 29.4 | |  | | 27.2 | | 0.97 | |
| L, mm |  | | 5.2 | | 5.2 | | - | | 5.1 | | 5.1 | | 5.1 | | 4.9 | | 5.2 | |  | | 5.1 | | 5.1 | |  | | 5.1 | | 0.01 | |
| W, mm |  | | 3.1 | | 3.1 | | - | | 3.0 | | 3.1 | | 3.0 | | 3.0 | | 3.0 | |  | | 3.0 | | 3.0 | |  | | 3.0 | | 0.01 | |
| 2016 | PCpred, % |  | | 8.7 | | 7.8 | | 8.6 | | 6.6 | | 7.6 | | 8.1 | | 7.9 | | 8.1 | |  | | 8.5 | | 7.8 | |  | | 8.0 | | - | |
| MK, % |  | | 60.3 | | 60.6 | | 54.2 | | 77.5 | | 64.0 | | 62.8 | | 62.7 | | 64.9 | |  | | 58.1 | | 61.5 | |  | | 62.7 | | 0.65 | |
| IK, % |  | | 29.5 | | 30.2 | | 32.8 | | 18.5 | | 28.5 | | 26.5 | | 28.5 | | 28.7 | |  | | 30.4 | | 28.9 | |  | | 28.2 | | 1.05 | |
| L, mm |  | | 5.3 | | 5.2 | | 5.3 | | 5.2 | | 5.1 | | 5.1 | | 5.0 | | 5.3 | |  | | 5.1 | | 5.1 | |  | | 5.2 | | 0.01 | |
| W, mm |  | | 3.1 | | 3.0 | | 3.0 | | 3.0 | | 3.1 | | 3.0 | | 3.0 | | 3.0 | |  | | 2.9 | | 3.0 | |  | | 3.0 | | 0.01 | |
| 2017  2017 | PCpred, % |  | | 8.5 | | 6.8 | | 8.0 | | - | | 8.0 | | 7.4 | | 7.1 | | 7.5 | |  | | 7.3 | | 7.1 | |  | | 7.5 | | - | |
| MK, % |  | | 41.9 | | 52.0 | | 41.8 | | - | | 54.0 | | 57.8 | | 54.8 | | 71.2 | |  | | 62.4 | | 62.1 | |  | | 55.3 | | 0.76 | |
| IK, % |  | | 34.3 | | 37.1 | | 40.7 | | - | | 34.3 | | 30.9 | | 33.6 | | 23.5 | |  | | 31.6 | | 26.7 | |  | | 32.5 | | 1.11 | |
| L, mm |  | | 5.3 | | 5.2 | | 5.3 | | - | | 5.1 | | 5.2 | | 5.0 | | 5.4 | |  | | 5.2 | | 5.2 | |  | | 5.2 | | 0.004 | |
| W, mm |  | | 3.1 | | 3.0 | | 3.0 | | - | | 3.0 | | 3.0 | | 3.0 | | 3.0 | |  | | 3.0 | | 3.0 | |  | | 3.0 | | 0.01 | |
| Average within variety | PCpred, % |  | | 8.6 | | 7.4 | | 8.4 | | 7.6 | | 7.7 | | 8.1 | | 7.5 | | 7.7 | |  | | 8.2 | | 7.7 | |  | | 7.8 | | 0.17 a | |
| MK, % |  | | 52.2 | | 62.0 | | 56.2 | | 67.5 | | 59.7 | | 61.0 | | 63.0 | | 69.9 | |  | | 56.4 | | 62.5 | |  | | 61.8 | | 0.73 | |
| IK, % |  | | 32.3 | | 28.4 | | 32.7 | | 25.8 | | 28.7 | | 27.9 | | 27.4 | | 24.8 | |  | | 31.7 | | 28.3 | |  | | 28.5 | | 0.95 | |
| L, mm |  | | 5.3 | | 5.2 | | 5.3 | | 5.2 | | 5.1 | | 5.1 | | 5.0 | | 5.3 | |  | | 5.1 | | 5.2 | |  | | 5.2 | | 0.01 | |
| W, mm |  | | 3.1 | | 3.0 | | 3.0 | | 3.0 | | 3.1 | | 3.0 | | 3.0 | | 3.0 | |  | | 3.0 | | 3.0 | |  | | 3.0 | | 0.01 | |

PCpred, predicted protein content; MK, percentage of mature kernel; IK, percentage of immature kernel; L, length of the kernel; W, width of the kernel; SEL, average standard error of the laboratory; [a], based on the standard error of prediction (SEP)

Table S3. Summary of colour information of brown rice per variety and year of production.

| Year of production | Colour value | Ordinary amylose  variety | | | | | | | | Low amylose variety | | | Average within year of production | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *Daishinohoshi* | *Fukkurinko* | *Hoshimaru* | *Hoshinoyume* | *Kitakurin* | *Kirara-397* | *Nanatsuboshi* | *Sorayuki* | *Oborozuki* | *Yumepirika* | Mean | | SEL |
| 2009 | R1, - | - | - | - | 494.1 | - | - | - | - | - | 517.7 | 505.9 | | 1.61 |
| G1, - | - | - | - | 368.1 | - | - | - | - | - | 393.7 | 380.9 | | 1.53 |
| B1, - | - | - | - | 269.7 | - | - | - | - | - | 291.3 | 280.5 | | 1.77 |
| R2, - | - | - | - | 484.5 | - | - | - | - | - | 498.8 | 491.6 | | 1.81 |
| G2, - | - | - | - | 361.4 | - | - | - | - | - | 380.4 | 370.9 | | 1.89 |
| B2, - | - | - | - | 266.2 | - | - | - | - | - | 282.8 | 274.5 | | 1.81 |
| R3, - | - | - | - | 1,650.0 | - | - | - | - | - | 1,613.3 | 1,631.6 | | 3.81 |
| G3, - | - | - | - | 1,381.0 | - | - | - | - | - | 1,338.9 | 1,359.9 | | 4.74 |
| B3, - | - | - | - | 1,053.6 | - | - | - | - | - | 1,006.1 | 1,029.9 | | 4.73 |
| 2010 | R1, - | 587.2 | 561.6 | 583.1 | 528.0 | - | 553.7 | 555.4 | - | 570.4 | 575.9 | 564.4 | | 3.06 |
| G1, - | 446.5 | 422.7 | 443.7 | 402.4 | - | 426.5 | 424.6 | - | 442.8 | 449.0 | 432.3 | | 2.40 |
| B1, - | 337.0 | 312.0 | 341.6 | 299.4 | - | 319.0 | 313.6 | - | 333.0 | 341.7 | 324.7 | | 1.97 |
| R2, - | 531.8 | 558.4 | 526.3 | 509.6 | - | 523.7 | 530.4 | - | 554.4 | 552.9 | 535.9 | | 3.60 |
| G2, - | 406.8 | 423.8 | 402.1 | 391.6 | - | 406.6 | 409.0 | - | 435.0 | 434.8 | 413.7 | | 2.87 |
| B2, - | 308.8 | 315.6 | 310.1 | 293.4 | - | 306.0 | 304.3 | - | 331.0 | 334.4 | 313.0 | | 2.11 |
| R3, - | 1,419.4 | 1,446.0 | 1,578.1 | 1,537.5 | - | 1,485.6 | 1,497.6 | - | 1,405.5 | 1500.9 | 1,483.8 | | 9.32 |
| G3, - | 1,106.6 | 1,150.3 | 1,286.4 | 1,286.0 | - | 1,216.1 | 1,241.4 | - | 1,075.7 | 1,216.8 | 1,197.4 | | 9.66 |
| B3, - | 811.5 | 850.2 | 997.0 | 990.0 | - | 916.0 | 943.8 | - | 768.4 | 921.7 | 899.8 | | 9.48 |
| 2011  2011 | R1, - | 615.1 | 583.6 | - | 560.7 | - | 591.8 | 575.2 | - | 630.9 | 580.7 | 591.1 | | 2.79 |
| G1, - | 469.6 | 441.6 | - | 428.0 | - | 459.5 | 443.3 | - | 488.0 | 450.2 | 454.3 | | 2.39 |
| B1, - | 362.8 | 334.6 | - | 323.7 | - | 354.3 | 336.2 | - | 376.4 | 348.0 | 348.0 | | 2.08 |
| R2, - | 516.8 | 538.9 | - | 506.2 | - | 523.8 | 521.1 | - | 574.7 | 544.1 | 532.2 | | 2.61 |
| G2, - | 395.9 | 409.1 | - | 387.0 | - | 407.9 | 402.7 | - | 446.5 | 424.5 | 410.5 | | 2.41 |
| B2, - | 303.0 | 310.0 | - | 292.1 | - | 314.2 | 305.0 | - | 344.9 | 329.7 | 314.1 | | 2.10 |
| R3, - | 1,521.3 | 1,562.2 | - | 1,557.9 | - | 1,559.7 | 1,588.6 | - | 1,412.5 | 1,582.5 | 1,540.6 | | 7.99 |
| G3, - | 1,228.4 | 1,279.1 | - | 1,284.0 | - | 1,287.4 | 1,319.7 | - | 1,062.8 | 1,294.6 | 1,250.9 | | 8.63 |
| B3, - | 934.7 | 978.9 | - | 977.8 | - | 990.6 | 1,010.8 | - | 754.9 | 989.9 | 948.2 | | 8.32 |
| 2012 | R1, - | - | 581.4 | - | - | - | - | 572.4 | - | - | 568.3 | 574.0 | | 3.29 |
| G1, - | - | 438.0 | - | - | - | - | 429.9 | - | - | 431.5 | 433.1 | | 2.64 |
| B1, - | - | 333.1 | - | - | - | - | 323.0 | - | - | 326.4 | 327.5 | | 2.38 |
| R2, - | - | 533.9 | - | - | - | - | 510.8 | - | - | 524.8 | 523.2 | | 3.36 |
| G2, - | - | 405.4 | - | - | - | - | 384.2 | - | - | 402.1 | 397.2 | | 2.75 |
| B2, - | - | 309.5 | - | - | - | - | 288.8 | - | - | 305.9 | 301.4 | | 2.43 |
| R3, - | - | 1,664.3 | - | - | - | - | 1,669.3 | - | - | 1,658.4 | 1,664.0 | | 7.23 |
| G3, - | - | 1,421.5 | - | - | - | - | 1,433.6 | - | - | 1,394.9 | 1,416.7 | | 8.65 |
| B3, - | - | 1,143.3 | - | - | - | - | 1,141.9 | - | - | 1,080.8 | 1,122.0 | | 8.72 |
| 2013  2013 | R1, - | 631.5 | 591.2 | - | 577.3 | 610.6 | 602.3 | 583.3 | - | 612.7 | 601.9 | 601.3 | | 3.60 |
| G1, - | 486.5 | 449.0 | - | 436.8 | 464.9 | 468.7 | 447.5 | - | 475.4 | 466.9 | 462.0 | | 3.01 |
| B1, - | 362.4 | 340.3 | - | 329.7 | 353.2 | 349.6 | 324.0 | - | 359.4 | 353.2 | 346.5 | | 2.31 |
| R2, - | 554.8 | 543.7 | - | 517.5 | 548.1 | 537.4 | 526.5 | - | 558.6 | 548.0 | 541.8 | | 3.84 |
| G2, - | 433.2 | 418.0 | - | 395.8 | 422.1 | 423.9 | 409.2 | - | 439.7 | 430.8 | 421.6 | | 3.10 |
| B2, - | 324.5 | 319.3 | - | 300.2 | 323.3 | 317.5 | 297.6 | - | 335.2 | 328.1 | 318.2 | | 2.36 |
| R3, - | 1,364.9 | 1,551.5 | - | 1,553.7 | 1,581.3 | 1,463.0 | 1,484.9 | - | 1,428.7 | 1,492.2 | 1,490.0 | | 10.78 |
| G3, - | 1,047.0 | 1,258.1 | - | 1,273.4 | 1,324.0 | 1,196.0 | 1,237.1 | - | 1,080.6 | 1,208.5 | 1,203.1 | | 10.38 |
| B3, - | 752.4 | 956.3 | - | 972.9 | 1,039.8 | 901.1 | 940.0 | - | 761.5 | 913.9 | 904.7 | | 10.00 |
| 2014 | R1, - | 588.1 | 594.5 | - | 569.7 | 620.6 | 621.3 | 590.6 | - | 565.5 | 610.7 | 595.1 | | 3.42 |
| G1, - | 445.8 | 457.8 | - | 433.9 | 471.6 | 480.1 | 453.5 | - | 430.8 | 476.5 | 456.2 | | 2.95 |
| B1, - | 323.8 | 336.5 | - | 322.2 | 356.6 | 359.5 | 327.1 | - | 313.9 | 354.2 | 336.7 | | 2.11 |
| R2, - | 503.7 | 556.4 | - | 514.5 | 560.1 | 549.0 | 527.8 | - | 505.7 | 549.4 | 533.3 | | 3.38 |
| G2, - | 386.9 | 434.3 | - | 395.8 | 430.8 | 430.4 | 409.8 | - | 390.3 | 433.9 | 414.0 | | 2.94 |
| B2, - | 281.7 | 322.9 | - | 296.0 | 329.2 | 325.4 | 297.0 | - | 286.1 | 324.8 | 307.9 | | 2.24 |
| R3, - | 1,483.2 | 1,509.8 | - | 1,563.8 | 1,543.9 | 1,489.5 | 1,498.1 | - | 1,530.6 | 1,487.4 | 1,513.3 | | 9.55 |
| G3, - | 1,196.6 | 1,228.6 | - | 1,293.9 | 1,253.7 | 1,202.5 | 1,220.4 | - | 1,247.0 | 1,203.8 | 1,230.8 | | 9.52 |
| B3, - | 875.4 | 909.0 | - | 983.3 | 948.4 | 892.6 | 892.7 | - | 925.2 | 890.1 | 914.6 | | 10.15 |
| 2015 | R1, - | 595.5 | 536.1 | - | 596.9 | 583.6 | 592.6 | 568.0 | 539.5 | 585.2 | 613.1 | 578.9 | | 2.91 |
| G1, - | 455.8 | 410.0 | - | 456.2 | 441.4 | 453.2 | 430.0 | 410.5 | 452.4 | 477.5 | 443.0 | | 2.68 |
| B1, - | 335.6 | 294.6 | - | 345.9 | 327.2 | 333.6 | 317.9 | 306.4 | 338.2 | 361.8 | 329.0 | | 2.23 |
| R2, - | 495.8 | 490.2 | - | 534.3 | 522.9 | 519.9 | 502.8 | 463.8 | 528.2 | 549.3 | 511.9 | | 2.92 |
| G2, - | 383.0 | 379.5 | - | 412.6 | 400.1 | 401.7 | 382.6 | 355.6 | 413.1 | 432.7 | 395.7 | | 2.50 |
| B2, - | 281.2 | 273.9 | - | 314.6 | 298.6 | 296.7 | 282.5 | 265.8 | 310.7 | 329.7 | 294.9 | | 2.04 |
| R3, - | 1,478.5 | 1,617.6 | - | 1,575.9 | 1,603.9 | 1,525.7 | 1,615.6 | 1,666.2 | 1,536.6 | 1,542.6 | 1,573.6 | | 8.04 |
| G3, - | 1,184.6 | 1,398.6 | - | 1,277.1 | 1,332.1 | 1,251.1 | 1,336.4 | 1,442.3 | 1,210.5 | 1,240.9 | 1,297.1 | | 9.07 |
| B3, - | 861.1 | 1,076.6 | - | 958.0 | 1,012.0 | 927.9 | 1,007.5 | 1,141.0 | 862.1 | 915.6 | 973.5 | | 9.04 |
| 2016  2016 | R1, - | 578.6 | 574.8 | 582.1 | 554.7 | 585.0 | 592.5 | 564.8 | 532.4 | 582.1 | 594.3 | 574.1 | | 2.94 |
| G1, - | 437.5 | 441.3 | 443.6 | 423.3 | 441.9 | 459.4 | 432.4 | 403.1 | 448.9 | 464.1 | 439.6 | | 2.51 |
| B1, - | 327.0 | 321.4 | 323.0 | 327.0 | 330.1 | 340.7 | 318.3 | 298.5 | 332.7 | 350.6 | 326.9 | | 2.21 |
| R2, - | 498.6 | 547.4 | 516.2 | 501.2 | 541.3 | 538.6 | 514.4 | 479.6 | 546.8 | 549.4 | 523.3 | | 3.02 |
| G2, - | 381.2 | 426.3 | 397.9 | 383.9 | 413.2 | 422.6 | 398.4 | 366.9 | 427.6 | 434.5 | 405.2 | | 2.69 |
| B2, - | 283.5 | 313.0 | 289.7 | 296.9 | 310.3 | 314.5 | 294.3 | 271.2 | 319.0 | 330.6 | 302.3 | | 1.90 |
| R3, - | 1,555.1 | 1,512.1 | 1,466.4 | 1,655.6 | 1,550.0 | 1,504.9 | 1,557.2 | 1,593.9 | 1,488.9 | 1,527.5 | 1,541.2 | | 10.23 |
| G3, - | 1,258.8 | 1,253.1 | 1,180.9 | 1,412.4 | 1,280.4 | 1,230.7 | 1,300.7 | 1,357.3 | 1,157.9 | 1,250.5 | 1,268.3 | | 10.61 |
| B3, - | 946.1 | 942.8 | 865.3 | 1,140.1 | 987.1 | 923.8 | 991.8 | 1,069.6 | 835.0 | 948.2 | 965.0 | | 10.75 |
| 2017 | R1, - | 605.3 | 568.7 | 588.5 | - | 618.9 | 582.9 | 567.6 | 535.5 | 570.2 | 571.7 | 578.8 | | 4.21 |
| G1, - | 448.4 | 429.0 | 439.6 | - | 458.6 | 449.3 | 430.7 | 402.3 | 434.9 | 439.1 | 436.9 | | 4.47 |
| B1, - | 333.0 | 304.3 | 309.6 | - | 337.5 | 321.7 | 306.0 | 305.0 | 321.7 | 323.0 | 318.0 | | 2.87 |
| R2, - | 505.8 | 512.3 | 509.5 | - | 552.3 | 501.7 | 492.9 | 465.3 | 505.4 | 500.3 | 505.0 | | 3.30 |
| G2, - | 377.9 | 391.5 | 386.0 | - | 417.6 | 390.6 | 378.8 | 352.9 | 391.6 | 389.6 | 386.3 | | 2.87 |
| B2, - | 281.1 | 280.2 | 273.2 | - | 307.6 | 280.3 | 270.3 | 269.6 | 293.5 | 288.9 | 282.8 | | 2.88 |
| R3, - | 1,508.1 | 1,540.4 | 1,417.3 | - | 1,506.6 | 1,531.7 | 1,556.4 | 1,674.5 | 1,593.6 | 1,592.6 | 1,546.8 | | 11.12 |
| G3, - | 1,127.7 | 1,246.8 | 1,083.2 | - | 1,194.8 | 1,267.6 | 1,294.9 | 1,431.3 | 1,298.7 | 1,334.1 | 1,253.2 | | 12.24 |
| B3, - | 787.6 | 890.8 | 728.4 | - | 872.7 | 930.7 | 958.5 | 1,150.0 | 965.2 | 1,011.3 | 921.7 | | 12.32 |
| Average within variety  Average within variety | R1, - | 600.2 | 574.0 | 584.6 | 554.5 | 603.7 | 591.0 | 572.2 | 535.8 | 588.1 | 581.6 | 576.2 | | 3.14 |
| G1, - | 455.7 | 436.2 | 442.3 | 421.3 | 455.7 | 456.7 | 436.5 | 405.3 | 453.3 | 449.8 | 439.4 | | 2.80 |
| B1, - | 340.2 | 322.1 | 324.7 | 316.8 | 340.9 | 339.8 | 320.8 | 303.3 | 339.3 | 338.9 | 327.6 | | 2.23 |
| R2, - | 515.3 | 535.1 | 517.3 | 509.7 | 544.9 | 527.7 | 515.8 | 469.6 | 539.1 | 535.2 | 521.5 | | 3.12 |
| G2, - | 395.0 | 411.0 | 395.3 | 389.7 | 416.7 | 411.9 | 396.8 | 358.4 | 420.6 | 418.1 | 401.5 | | 2.69 |
| B2, - | 294.8 | 305.6 | 291.0 | 294.2 | 313.8 | 307.8 | 292.5 | 268.9 | 317.2 | 317.2 | 300.6 | | 2.20 |
| R3, - | 1,475.8 | 1,550.5 | 1,487.3 | 1,584.9 | 1,557.2 | 1,508.6 | 1,558.5 | 1,644.9 | 1,485.2 | 1,555.3 | 1,547.3 | | 8.94 |
| G3, - | 1,164.2 | 1,279.5 | 1,183.5 | 1,315.4 | 1,277.0 | 1,235.9 | 1,298.0 | 1,410.3 | 1,161.9 | 1,275.9 | 1,267.7 | | 9.53 |
| B3, - | 852.7 | 968.5 | 863.6 | 1,010.8 | 972.0 | 926.1 | 985.9 | 1,120.2 | 838.9 | 964.2 | 964.4 | | 9.28 |

R1G1B1, reflectance detected from the top surface of the kernel in Red, Green and Blue (RGB) colours; R2G2B2, reflectance detected from the bottom surface of the kernel in RGB colours; R3G3B3, transmittance detected through the kernel in RGB colours; [-], unitless; SEL, average standard error of the laboratory

(B)

(A)

Fig. S1 Histogram of reference amylose content of samples used in calibration (upper bars) and validation (lower bars) sets used for the development of the model validated either with the 2017 production year (A); or with the 2016–2017 production year samples (B)

Fig. S2 Raw NIR transmittance spectra of brown rice. 990 nm: strongest absorption band assigned to the second overtone stretching (O-H bond) of the bound -OH alcohol group. 918 nm: second absorption band assigned to the third overtone of symmetric stretching (C-H bond) of the methylene combination -CH2 group

(B)

(A)

(D)

(C)

Fig. S3 Regression coefficients for PLS = 9 in “Low amylose varieties” (A) and “Ordinary amylose varieties” (B) for model validated by 2017 and for PLS = 10 in “Low amylose varieties” (C) and “Ordinary amylose varieties” (D) for model validated by 2016-2017