Table S1 *Means for kernel hardness, weight, moisture and diameter of modern wheat.*

Polish and European cultivars of hexaploid wheat cultivated in Poland							
Name	**Country of origin**	**Pina allele**	**Pinb allele**	**Hardness (mean ± SD)**	**Weight [mg] (mean ± SD)**	**Moisture [%] (mean ± SD)**	**Diameter [mm] (mean ± SD)**
Aconel	France	*Pina-D1a*	*Pinb-D1a*	11.38 (± 15.5)	35.75 (± 8.39)	11.22 (± 0.44)	2.88 (± 0.34)
Adonis	Poland	*Pina-D1a*	*Pinb-D1b*	39.62 (± 14.51)	46 (± 11.18)	10.96 (± 0.37)	3.16 (± 0.4)
Akteur	Germany	*Pina-D1a*	*Pinb-D1b*	54.2 (± 15.74)	34.71 (± 8.71)	10.93 (± 0.44)	2.81 (± 0.32)
Alcazar	France	*Pina-D1a*	*Pinb-D1b*	44.57 (± 17.05)	41.1 (± 9.51)	10.98 (± 0.3)	3.08 (± 0.37)
Anthus	Germany	*Pina-D1a*	*Pinb-D1b*	62.66 (± 16.07)	35.27 (± 8.53)	11.2 (± 0.31)	2.76 (± 0.31)
Arabella	Poland	*Pina-D1a*	*Pinb-D1c*	53.01 (± 13.32)	42.6 (± 6.53)	11.05 (± 0.31)	3.12 (± 0.29)
Arbola	Poland	*Pina-D1a*	*Pinb-D1a*	13.57 (± 16.95)	31.85 (± 8.54)	10.81 (± 0.38)	2.68 (± 0.3)
Arkadia	Poland	*Pina-D1a*	*Pinb-D1d*	70.93 (± 14.99)	45.17 (± 10.31)	10.91 (± 0.3)	3.12 (± 0.31)
Askalon	Germany	*Pina-D1a*	*Pinb-D1b*	57.96 (± 17.91)	50.35 (± 8.77)	10.77 (± 0.3)	3.15 (± 0.3)
Astron	Germany	*Pina-D1a*	*Pinb-D1b*	46.29 (± 13.89)	43.47 (± 9.1)	10.5 (± 0.39)	3.04 (± 0.34)
Azzerti	Belgium	*Pina-D1a*	*Pinb-D1a*	33.68 (± 13.35)	38.94 (± 9.57)	11.14 (± 0.32)	2.85 (± 0.36)
Banderola	Poland	*Pina-D1a*	*Pinb-D1b*	64.77 (± 16.12)	49.16 (± 8.84)	10.67 (± 0.35)	3.17 (± 0.33)
Belenus	France	*Pina-D1a*	*Pinb-D1a*	13.62 (± 17.33)	30.26 (± 8.79)	11.4 (± 0.29)	2.63 (± 0.34)
Biscay	Germany	*Pina-D1a*	*Pinb-D1b*	45.88 (± 16.84)	48.91 (± 13.64)	10.58 (± 0.46)	3.08 (± 0.46)
Bombona	Poland	*Pina-D1a*	*Pinb-D1c*	69.93 (± 17.76)	39.77 (± 8.07)	9.89 (± 0.58)	3.01 (± 0.33)
Boomer	France	*Pina-D1a*	*Pinb-D1d*	39.6 (± 15.66)	38.78 (± 9.95)	11.0 (± 0.35)	2.97 (± 0.37)
Brawura	Poland	*Pina-D1a*	*Pinb-D1c*	75.67 (± 13.32)	39.31 (± 10.53)	9.11 (± 0.51)	2.98 (± 0.34)
Brilliant	Sweden	*Pina-D1a*	*Pinb-D1b*	56.92 (± 18.63)	40.18 (± 10.74)	11.14 (± 0.36)	2.89 (± 0.37)

Buteo	Germany	*Pina-D1a*	*Pinb-D1c*	51.43 (± 15.51)	43.09 (± 9.81)	11.05 (± 0.34)	2.92 (± 0.38)
Cubus	Germany	*Pina-D1a*	*Pinb-D1b*	49.13 (± 18.17)	43 (± 10.32)	10.91 (± 0.34)	3.07 (± 0.39)
Dorota	France	*Pina-D1a*	*Pinb-D1b*	46.45 (± 18.19)	36.46 (± 10.1)	11.06 (± 0.34)	2.87 (± 0.38)
Esket	Germany	*Pina-D1a*	*Pinb-D1b*	68.65 (± 16.03)	37.77 (± 6.54)	10.85 (± 0.25)	2.87 (± 0.26)
Fidelius	Austria	*Pina-D1a*	*Pinb-D1b*	59.45 (± 17.46)	38.03 (± 7.22)	10.74 (± 0.31)	2.89 (± 0.27)
Figura	Poland	*Pina-D1a*	*Pinb-D1c*	50.27 (± 19.25)	44.66 (± 10.28)	10.67 (± 0.38)	3.03 (± 0.4)
Finezja	Poland	*Pina-D1a*	*Pinb-D1b*	34.81 (± 13.96)	43.45 (± 8.42)	10.81 (± 0.44)	3.07 (± 0.35)
Flair	Germany	*Pina-D1a*	*Pinb-D1b*	71.75 (± 17.16)	39.4 (± 10.8)	11.35 (± 0.31)	2.87 (± 0.39)
Jane	Germany	*Pina-D1a*	*Pinb-D1a*	27.87 (± 14.02)	38.13 (± 9.02)	9.84 (± 0.38)	2.76 (± 0.27)
Julius	Germany	*Pina-D1a*	*Pinb-D1b*	55.8 (± 13.35)	36.19 (± 7.82)	11.06 (± 0.35)	2.89 (± 0.32)
Kampana	Poland	*Pina-D1a*	*Pinb-D1d*	40.28 (± 14.72)	36.67 (± 8.88)	11.22 (± 0.3)	2.85 (± 0.33)
Kontesa	Poland	*Pina-D1a*	*Pinb-D1c*	73.62 (± 13.42)	42.98 (± 8.17)	9.41 (± 0.36)	3.12 (± 0.31)
Kris	France	*Pina-D1a*	*Pinb-D1d*	75.81 (± 16.75)	29.81 (± 7.82)	11.1 (± 0.29)	2.63 (± 0.3)
KWS Ozon	Germany	*Pina-D1a*	*Pinb-D1d*	56.29 (± 15.75)	41.45 (± 9.25)	11.82 (± 0.3)	3.03 (± 0.35)
KWS Torridor	Germany	*Pina-D1a*	*Pinb-D1c*	57.63 (± 14.08)	41.39 (± 7.84)	9.61 (± 0.61)	3.02 (± 0.37)
Legenda	Poland	*Pina-D1a*	*Pinb-D1b*	68.15 (± 15.48)	40.58 (± 10.11)	11.37 (± 0.39)	2.98 (± 0.34)
Muszelka	Poland	*Pina-D1a*	*Pinb-D1b*	54.33 (± 15.18)	44.85 (± 9.38)	8.74 (± 0.56)	2.9 (± 0.34)
Milvus	Germany	*Pina-D1a*	*Pinb-D1d*	73.55 (± 16.66)	37.23 (± 10.68)	11.45 (± 0.33)	2.83 (± 0.37)
Muza	Poland	*Pina-D1a*	*Pinb-D1d*	39.85 (± 15.2)	43.32 (± 8.6)	10.98 (± 0.43)	3.07 (± 0.3)
Nado	Poland	*Pina-D1a*	*Pinb-D1b*	45.69 (± 13.63)	47.94 (± 10.54)	11.27 (± 0.37)	3.14 (± 0.4)
Nadobna	Poland	*Pina-D1a*	*Pinb-D1b*	46.43 (± 16.22)	34.43 (± 7.71)	11.49 (± 0.3)	2.81 (± 0.32)

Osmin	Poland	*Pina-D1a*	*Pinb-D1b*	68.75 (± 14.7)	39.64 (± 8.94)	11.67 (± 0.25)	2.92 (± 0.33)
Ostka Smolicka	Poland	*Pina-D1a*	*Pinb-D1b*	70.54 (± 14.95)	40.46 (± 11.57)	9.29 (± 0.64)	3.04 (± 0.39)
Ostroga	Poland	*Pina-D1a*	*Pinb-D1c*	70.45 (± 16.39)	42.98 (± 13.47)	11.38 (± 0.33)	2.99 (± 0.55)
Parabola	Poland	*Pina-D1a*	*Pinb-D1d*	79.53 (± 18.21)	42.6 (± 10.15)	11.38 (± 0.28)	2.97 (± 0.34)
Piko	Germany	*Pina-D1a*	*Pinb-D1c*	76.57 (± 16.27)	29.98 (± 7.46)	11.5 (± 0.29)	2.69 (± 0.29)
Pokusa	Poland	*Pina-D1a*	*Pinb-D1b*	71.24 (± 13.71)	48.77 (± 8.61)	9.68 (± 0.4)	3.19 (± 0.29)
Rapsodia	France	*Pina-D1a*	*Pinb-D1a*	12.82 (± 13.46)	38.45 (± 8.99)	11.81 (± 0.27)	2.85 (± 0.36)
Sailor	Germany	*Pina-D1a*	*Pinb-D1d*	73.26 (± 16.15)	54.58 (± 10.29)	10.59 (± 0.32)	3.42 (± 0.38)
Skagen	Germany	*Pina-D1a*	*Pinb-D1b*	76.1 (± 13.52)	38.36 (± 9.08)	11.5 (± 0.3)	2.86 (± 0.35)
Skamleje	Germany	*Pina-D1a*	*Pinb-D1d*	54.81 (± 17.22)	31.75 (± 7.53)	11.62 (± 0.33)	2.68 (± 0.29)
Slade	Germany	*Pina-D1a*	*Pinb-D1a*	12.14 (± 16.41)	35.56 (± 9.88)	11.7 (± 0.32)	2.83 (± 0.34)
Smuga	Poland	*Pina-D1a*	*Pinb-D1b*	39.65 (± 12.16)	45.82 (± 8.85)	11.35 (± 0.37)	3.18 (± 0.34)
SW Maxi	Sweden	*Pina-D1a*	*Pinb-D1b*	52.94 (± 15.59)	33.6 (± 9.55)	11.6 (± 0.31)	2.71 (± 0.33)
Toacja	Poland	*Pina-D1a*	*Pinb-D1c*	41.83 (± 14.04)	42.58 (± 8.76)	11.16 (± 0.37)	3.01 (± 0.35)
Toras	Germany	*Pina-D1a*	*Pinb-D1b*	48.57 (± 14.52)	40.3 (± 9.32)	11.32 (± 0.35)	2.94 (± 0.36)
Trappe	Germany	*Pina-D1a*	*Pinb-D1c*	71.28 (± 18.16)	38.29 (± 6.85)	9.75 (± 0.58)	2.91 (± 0.29)
Trend	Germany	*Pina-D1a*	*Pinb-D1d*	81.52 (± 15.76)	40.12 (± 9.77)	11.46 (± 0.3)	2.94 (± 0.4)
Turkis	Germany	*Pina-D1a*	*Pinb-D1b*	45.33 (± 14.52)	36.16 (± 7.61)	11.66 (± 0.31)	2.86 (± 0.29)
Tybalt	Holandia	*Pina-D1a*	*Pinb-D1a*	56.84 (± 16.2)	40.94 (± 10.5)	10.61 (± 0.34)	2.85 (± 0.36)
Viscount	Great Britain	*Pina-D1a*	*Pinb-D1a*	6.19 (± 15.33)	40.21 (± 9.92)	11.86 (± 0.31)	2.9 (± 0.38)
Waldorf	Germany	*Pina-D1a*	*Pinb-D1a*	26.82 (± 13.91)	41.15 (± 10.91)	11.58 (± 0.38)	2.96 (± 0.42)

Wydma	Poland	*Pina-D1a*	*Pinb-D1b*	74.3 (± 13.61)	36.21 (± 8.27)	11.6 (± 0.32)	2.85 (± 0.29)
Zawisza	Poland	*Pina-D1a*	*Pinb-D1b*	70.82 (± 14.52)	38.01 (± 7.91)	11.5 (± 0.28)	2.93 (± 0.3)
Polish breeding lines							
Name	**Country of origin**	**Pina allele**	**Pinb allele**	**Hardness (mean ± SD)**	**Weight [mg] (mean ± SD)**	**Moisture [%] (mean ± SD)**	**Diameter [mm] (mean ± SD)**
D 1	Poland	*Pina-D1a*	*Pinb-D1b*	54.89 (± 17.56)	49.68 (± 11.16)	10.75 (± 0.31)	3.07 (± 0.41)
D 2	Poland	*Pina-D1a*	*Pinb-D1b*	75.19 (± 21.74)	29.82 (± 9.13)	11. 24 (± 0.36)	2.6 (± 0.33)
D 3	Poland	*Pina-D1a*	*Pinb-D1a*	40.3 (± 25.75)	35.28 (± 10.13)	11.28 (± 0.37)	2.74 (± 0.38)
D 4	Poland	*Pina-D1a*	*Pinb-D1a*	42.39 (± 24.53)	36.35 (± 10.04)	11.35 (± 0.3)	2.85 (± 0.42)
D 5	Poland	*Pina-D1a*	*Pinb-D1a*	32.66 (± 17.78)	37.81 (± 11.46)	11.43 (± 0.33)	2.81 (± 0.43)
D 6	Poland	*Pina-D1a*	*Pinb-D1b*	67.82 (± 17.16)	35.07 (± 11)	11.3 (± 0.29)	2.76 (± 0.41)
D 7	Poland	*Pina-D1a*	*Pinb-D1b*	57.68 (± 13.47)	49.11 (± 8.32)	8.99 (± 0.5)	3.14 (± 0.29)
D 8	Poland	*Pina-D1a*	*Pinb-D1b*	72.37 (± 14.58)	43.37 (± 9.18)	8.82 (± 0.7)	3.01 (± 0.32)
DO 1	Poland	*Pina-D1a*	*Pinb-D1b*	66.8 (± 18.78)	39.16 (± 11.64)	9.29 (± 0.78)	2.91 (± 0.43)
DO 2	Poland	*Pina-D1a*	*Pinb-D1b*	80.09 (± 17.14)	36.9 (± 10.52)	9.11 (± 0.78)	2.78 (± 0.32)
DO 3	Poland	*Pina-D1a*	*Pinb-D1b*	69.99 (± 16.46)	40.66 (± 9.13)	9.45 (± 0.49)	2.98 (± 0.32)
DO 4	Poland	*Pina-D1a*	*Pinb-D1b*	67.56 (± 19.02)	39.8 (± 9.69)	8.36 (± 1.01)	2.94 (± 0.35)
DO 5	Poland	*Pina-D1a*	*Pinb-D1b*	60.53 (± 13.1)	52.35 (± 10.42)	8.65 (± 0.77)	3.17 (± 0.32)
DO 6	Poland	*Pina-D1a*	*Pinb-D1b*	53.38 (± 20.56)	37.35 (± 10.28)	10.58 (± 0.28)	2.79 (± 0.36)
SMH 1	Poland	*Pina-D1a*	*Pinb-D1b*	57.22 (± 15.07)	43.74 (± 7.31)	9.05 (± 0.5)	2.93 (± 0.27)
SMH 2	Poland	*Pina-D1a*	*Pinb-D1d*	60.11 (± 16.24)	29.94 (± 8.28)	11.2 (± 0.27)	2.66 (± 0.26)
SMH 3	Poland	*Pina-D1a*	*Pinb-D1b*	65.69 (± 13.44)	41.85 (± 8.66)	11.07 (± 0.36)	2.97 (± 0.33)

SMH 4	Poland	*Pina-D1a*	*Pinb-D1d*	66.27 (± 17.41)	46.85 (± 9.09)	10.74 (± 0.33)	3.03 (± 0.35)
SMH 5	Poland	*Pina-D1a*	*Pinb-D1b*	66.31 (± 15.84)	43.39 (± 8.81)	11.61 (± 0.29)	2.99 (± 0.3)
SMH 6	Poland	*Pina-D1a*	*Pinb-D1b*	54.23 (± 17.29)	39.65 (± 8.83)	11.55 (± 0.29)	2.98 (± 0.34)
SMH 7	Poland	*Pina-D1a*	*Pinb-D1a*	23.12 (± 14.94)	39.75 (± 9.57)	11.8 (± 0.38)	2.88 (± 0.32)
POZ 1	Poland	*Pina-D1a*	*Pinb-D1d*	43.82 (± 14.26)	40.09 (± 9.4)	10.84 (± 0.3)	2.93 (± 0.37)
POZ 2	Poland	*Pina-D1a*	*Pinb-D1d*	43.43 (± 14.39)	42.04 (± 10.13)	10.81 (± 0.33)	3 (± 0.39)
POZ 3	Poland	*Pina-D1a*	*Pinb-D1b*	48.9 (± 14.75)	43.83 (± 11.16)	10.73 (± 0.42)	3.01 (± 0.37)
ST 1	Poland	*Pina-D1a*	*Pinb-D1b*	62.22 (± 14.77)	40.47 (± 6.22)	8.94 (± 0.38)	2.93 (± 0.23)
ST 1	Poland	*Pina-D1a*	*Pinb-D1b*	54.56 (± 13.77)	48.03 (± 9.64)	9.28 (± 0.5)	3.04 (± 0.35)
ST 1	Poland	*Pina-D1a*	*Pinb-D1b*	43.89 (± 14.91)	50.17 (± 8.04)	9.23 (± 0.54)	3.17 (± 0.34)
ST 1	Poland	*Pina-D1a*	*Pinb-D1b*	66.33 (± 17.31)	45.28 (± 10.2)	9.41 (± 0.5)	3.03 (± 0.36)
STH 1	Poland	*Pina-D1a*	*Pinb-D1b*	79.25 (± 15.35)	33.11 (± 8.58)	12.05 (± 0.33)	2.68 (± 0.31)
STH 2	Poland	*Pina-D1a*	*Pinb-D1b*	64.87 (± 15.27)	41.95 (± 10.15)	9.39 (± 0.63)	2.9 (± 0.37)
STH 3	Poland	*Pina-D1a*	*Pinb-D1c*	55.91 (± 27.09)	37.84 (± 10.15)	11.84 (± 0.37)	2.85 (± 0.4)
STH 4	Poland	*Pina-D1a*	*Pinb-D1d*	61.9 (± 14.62)	42.41 (± 11.12)	9.28 (± 0.57)	2.84 (± 0.36)
STH 5	Poland	*Pina-D1a*	*Pinb-D1b*	76.32 (± 19.08)	39.14 (± 7.59)	9.45 (± 0.58)	2.9 (± 0.3)
STH 6	Poland	*Pina-D1a*	*Pinb-D1c*	65.44 (± 13.95)	43.45 (± 9.72)	9.29 (± 0.59)	2.8 (± 0.32)
STH 7	Poland	*Pina-D1a*	*Pinb-D1b*	62.74 (± 16.53)	41.22 (± 7.66)	9.87 (± 0.34)	2.98 (± 0.25)
STH 8	Poland	*Pina-D1a*	*Pinb-D1b*	72.59 (± 15.79)	47.48 (± 8.1)	9.61 (± 0.4)	3.17 (± 0.29)
STH 9	Poland	*Pina-D1a*	*Pinb-D1b*	47.33 (± 16.76)	48.17 (± 7.65)	9.5 (± 0.53)	3.11 (± 0.29)
STH 10	Poland	*Pina-D1a*	*Pinb-D1a*	31.37 (± 12.13)	45.58 (± 10.12)	9.57 (± 0.43)	2.86 (± 0.34)

STH 11	Poland	*Pina-D1a*	*Pinb-D1b*	72.29 (± 13.14)	44.43 (± 8.1)	9.57 (± 0.53)	2.93 (± 0.29)
STH 12	Poland	*Pina-D1a*	*Pinb-D1a*	27.74 (± 13.32)	47.88 (± 8.54)	9.9 (± 0.36)	2.98 (± 0.31)
STH 13	Poland	*Pina-D1a*	*Pinb-D1b*	49.92 (± 16.02)	51.25 (± 10.14)	9.57 (± 0.44)	3.17 (± 0.32
STH 14	Poland	*Pina-D1a*	*Pinb-D1c*	56.45 (± 14.74)	52.13 (± 10.49)	9.37 (± 0.38)	3.17 (± 0.37)
STH 15	Poland	*Pina-D1a*	*Pinb-D1b*	71.76 (± 15.59)	42.4 (± 9.71)	9.54 (± 0.49)	2.97 (± 0.32)
STH 16	Poland	*Pina-D1a*	*Pinb-D1b*	75.18 (± 18.64)	39.34 (± 10.58)	11.5 (± 0.34)	2.87 (± 0.39)
STH 17	Poland	*Pina-D1a*	*Pinb-D1b*	56.25 (± 15.94)	46.48 (± 10.13)	9.28 (± 0.53)	3.05 (± 0.32)
STH 18	Poland	*Pina-D1a*	*Pinb-D1b*	72.33 (± 16.84)	42.35 (± 9.87)	9.47 (± 0.5)	3.02 (± 0.33)
STR 1	Poland	*Pina-D1a*	*Pinb-D1d*	57 (± 13.94)	47.19 (± 8.49)	9.33 (± 0.49)	3.14 (± 0.33)
STR 2	Poland	*Pina-D1a*	*Pinb-D1b*	43.69 (± 16.04)	54.71 (± 9.09)	9.4 (± 0.41)	3.23 (± 0.31)
STR 3	Poland	*Pina-D1a*	*Pinb-D1b*	39.89 (± 15.64)	46.91 (± 9.08)	9.59 (± 0.41)	3.15 (± 0.32)
STR 4	Poland	*Pina-D1a*	*Pinb-D1b*	45.85 (± 14.71)	48.42 (± 9.25)	9.66 (± 0.33)	3.12 (± 0.31)
STR 5	Poland	*Pina-D1a*	*Pinb-D1d*	49.25 (± 15.53)	45.18 (± 8.97)	8.96 (± 0.88)	2.94 (± 0.33)

Table S2 *Means for kernel hardness, weight, moisture and diameter of polish landraces.*

Accession number from KCRZG	Introduction numbers from KCRZG	Pina allele	Pinb allele	Hardness (mean ± SD)	Weight [mg] (mean ± SD)	Moisture [%] (mean ± SD)	Diameter [mm] (mean ± SD)
716	I29912	*Pina-D1a*	*Pinb-D1a*	30.02 (± 15.05)	39.48 (± 10.20)	7.87 (± 0.91)	2.90 (± 0.34)
2376	I31707	*Pina-D1a*	*Pinb-D1b*	55.80 (± 14.43)	48.64 (± 9.87)	8.47 (± 0.83)	3.11 (± 0.36)
2617	I31920	*Pina-D1a*	*Pinb-D1a*	31.22 (± 13.91)	44.02 (± 11.26)	8.63 (± 0.87)	2.96 (± 0.36)
2618	I31921	*Pina-D1a*	*Pinb-D1a*	26.85 (± 15.95)	42.97 (± 11.04)	8.31 (± 0.98)	3.04 (± 0.34)
2619	I31922	*Pina-D1a*	*Pinb-D1b*	59.05 (± 15.08)	46.19 (± 10.55)	8.73 (± 0.68)	3.00 (± 0.34)
2620	I31923	*Pina-D1a*	*Pinb-D1a*	23.88 (± 15.45)	47.89 (± 12.02)	7.90 (± 0.91)	3.03 (± 0.35)
2621	I31924	*Pina-D1a*	*Pinb-D1a*	28.38 (± 21.44)	42.27 (± 8.51)	8.63 (± 0.81)	3.03 (± 0.34)
2622	I31925	*Pina-D1a*	*Pinb-D1b*	48.32 (± 14.34)	49.72 (± 11.02)	8.61 (± 0.79)	3.14 (± 0.35)
2623	I31926	*Pina-D1a*	*Pinb-D1a*	21.97 (± 14.76)	46.07 (± 12.15)	8.76 (± 0.79)	2.96 (± 0.41)
2624	I31927	*Pina-D1a*	*Pinb-D1b*	51.32 (± 14.30)	48.92 (± 9.53)	8.44 (± 0.73)	3.07 (± 0.31)
2625	I31928	*Pina-D1a*	*Pinb-D1a*	23.39 (± 15.63)	46.53 (± 8.77)	8.48 (± 0.69)	2.99 (± 0.27)
2626	I31929	*Pina-D1a*	*Pinb-D1a*	26.92 (± 15.91)	40.28 (± 11.18)	8.58 (± 0.59)	2.93 (± 0.34)
2627	I31930	*Pina-D1a*	*Pinb-D1b*	17.64 (± 18.59)	41.08 (± 9.62)	8.69 (± 0.64)	2.89 (± 0.30)
2628	I31931	*Pina-D1a*	*Pinb-D1b*	30.08 (± 24.40)	42.10 (± 9.19)	8.41 (± 0.69)	2.96 (± 0.30)
2629	I31932	*Pina-D1a*	*Pinb-D1a*	21.22 (± 13.42)	46.65 (± 9.34)	8.79 (± 0.59)	3.05 (± 0.30)
2630	I31933	*Pina-D1a*	*Pinb-D1b*	49.24 (± 14.26)	42.62 (± 8.72)	8.29 (± 0.61)	2.98 (± 0.29)
2631	I31934	*Pina-D1a*	*Pinb-D1a*	16.60 (± 13.37)	52.68 (± 11.13)	8.47 (± 0.73)	3.13 (± 0.33)
2878	I32174	*Pina-D1a*	*Pinb-D1a*	22.87 (± 13.67)	47.32 (± 11.05)	8.88 (± 0.57)	3.15 (± 0.30)
3078	I32366	*Pina-D1a*	*Pinb-D1a*	11.61 (± 13.59)	45.88 (± 8.64)	8.48 (± 0.56)	2.99 (± 0.24)
3117	I32405	*Pina-D1a*	*Pinb-D1b*	49.33 (± 14.22)	43.46 (± 8.22)	8.48 (± 0.70)	2.97 (± 0.25)
3229	I32517	*Pina-D1a*	*Pinb-D1b*	60.96 (± 14.37)	49.39 (± 10.89)	8.89 (± 0.56)	3.10 (± 0.34)
3230	I32518	*Pina-D1a*	*Pinb-D1a*	19.65 (± 12.87)	48.06 (± 9.62)	8.81 (± 0.53)	3.09 (± 0.31)
3231	I32519	*Pina-D1a*	*Pinb-D1b*	55.13 (± 14.97)	45.72 (± 11.34)	8.25 (± 0.93)	3.02 (± 0.32)
3232	I32520	*Pina-D1a*	*Pinb-D1a*	23.44 (± 14.27)	49.79 (± 12.18)	8.36 (± 0.90)	3.02 (± 0.35)
3234	I32522	*Pina-D1a*	*Pinb-D1b*	56.62 (± 17.23)	38.83 (± 9.32)	8.09 (± 0.92)	2.90 (± 0.30)
3235	I32523	*Pina-D1a*	*Pinb-D1b*	51.64 (± 17.89)	45.51 (± 10.15)	8.27 (± 0.80)	2.99 (± 0.32)

3236	I32524	*Pina-D1a*	*Pinb-D1a*	26.22 (± 14.76)	46.30 (± 9.50)	8.19 (± 0.82)	3.08 (± 0.33)
3237	I32525	*Pina-D1a*	*Pinb-D1a*	22.97 (± 14.43)	48.67 (± 12.43)	8.42 (± 0.92)	3.04 (± 0.36)
3238	I32526	*Pina-D1a*	*Pinb-D1a*	9.53 (± 16.13)	49.46 (± 9.62)	8.79 (± 0.60)	3.04 (± 0.28)
3239	I32527	*Pina-D1a*	*Pinb-D1a*	23.72 (± 15.17)	37.90 (± 9.46)	9.04 (± 0.56)	2.79 (± 0.30)
3240	I32528	*Pina-D1a*	*Pinb-D1a*	15.12 (± 14.74)	43.09 (± 8.83)	8.86 (± 0.54)	2.93 (± 0.25)
3241	I32529	*Pina-D1a*	*Pinb-D1a*	20.89 (± 14.71)	45.61 (± 10.98)	9.21 (± 0.71)	3.01 (± 0.31)
3242	I32530	*Pina-D1a*	*Pinb-D1a*	29.53 (± 13.53)	42.88 (± 10.17)	9.08 (± 0.53)	2.99 (± 0.32)
3243	I32531	*Pina-D1a*	*Pinb-D1a*	21.81 (± 11.70)	49.71 (± 8.85)	8.99 (± 0.55)	3.17 (± 0.29)
3247	I32535	*Pina-D1a*	*Pinb-D1a*	29.59 (± 13.51)	45.24 (± 9.11)	8.94 (± 0.53)	3.03 (± 0.27)
3248	I32536	*Pina-D1a*	*Pinb-D1a*	28.86 (± 22.65)	39.59 (± 10.20)	9.12 (± 0.60)	2.90 (± 0.33)
3249	I32537	*Pina-D1a*	*Pinb-D1b*	38.68 (± 18.59)	44.57 (± 10.27)	8.91 (± 0.54)	2.96 (± 0.33)
3250	I32538	*Pina-D1a*	*Pinb-D1b*	63.32) (± 15.35)	45.29 (± 10.90)	9.11 (± 0.54)	2.99 (± 0.33)
3251	I32539	*Pina-D1a*	*Pinb-D1a*	29.71 (± 18.52)	44.63 (± 8.82)	8.88 (± 0.54)	2.99 (± 0.28)
3252	I32540	*Pina-D1a*	*Pinb-D1b*	55.61 (± 22.10)	36.00 (± 9.22)	9.02 (± 0.52)	2.80 (± 0.29)
3253	I32541	*Pina-D1a*	*Pinb-D1a*	22.33 (± 15.84)	41.73 (± 8.12)	9.07 (± 0.47)	2.90 (± 0.27)
3254	I32542	*Pina-D1a*	*Pinb-D1a*	17.92 (± 15.80)	38.43 (± 11.22)	8.67 (± 0.82)	2.82 (± 0.34)
3255	I32543	*Pina-D1a*	*Pinb-D1b*	54.49 (± 19.48)	36.53 (± 9.04)	9.16 (± 0.70)	2.82 (± 0.28)
3318	I32606	*Pina-D1a*	*Pinb-D1a*	22.74 (± 15.34)	49.54 (± 11.73)	8.91 (± 0.82)	3.06 (± 0.36)
4680	I33966	*Pina-D1a*	*Pinb-D1a*	8.74 (± 17.61)	47.86 (± 12.79)	8.78 (± 0.70)	3.03 (± 0.44)
4694	I33980	*Pina-D1a*	*Pinb-D1b*	54.65 (± 15.18)	48.73 (± 11.32)	9.16 (± 0.54)	3.08 (± 0.36)
4696	I33982	*Pina-D1a*	*Pinb-D1a*	19.51 (± 13.86)	52.34 (± 10.78)	9.29 (± 0.50)	3.17 (± 0.33)
4698	I33984	*Pina-D1a*	*Pinb-D1a*	24.24 (± 14.28)	47.32 (± 12.99)	9.00 (± 0.73)	2.95 (± 0.37)
4700	I33986	*Pina-D1a*	*Pinb-D1b*	49.43 (± 17.22)	43.26 (± 13.76)	8.62 (± 0.74)	2.98 (± 0.42)
5423	I34709	*Pina-D1a*	*Pinb-D1a*	25.71 (± 12.93)	45.23 (± 10.31)	9.18 (± 0.70)	3.00 (± 0.34)
5424	I34710	*Pina-D1a*	*Pinb-D1a*	27.89 (± 20.09)	38.08 (± 8.31)	8.31 (± 0.90)	2.89 (± 0.28)
5425	I34711	*Pina-D1a*	*Pinb-D1a*	28.20 (± 13.69)	43.59 (± 10.68)	8.68 (± 0.78)	2.99 (± 0.36)
5426	I34712	*Pina-D1a*	*Pinb-D1a*	9.85 (± 14.66)	50.02 (± 9.03)	8.55 (± 0.76)	3.17 (± 0.28)
5428	I34714	*Pina-D1a*	*Pinb-D1a*	18.75 (± 12.72)	47.49 (± 10.14)	9.23 (± 0.59)	3.09 (± 0.34)
5429	I34715	*Pina-D1a*	*Pinb-D1a*	18.37 (± 13.47)	49.06 (± 9.91)	9.10 (± 0.54)	3.19 (± 0.34)

5430	I34716	*Pina-D1a*	*Pinb-D1a*	27.52 (± 14.30)	45.30 (± 10.59)	8.98 (± 0.71)	3.01 (± 0.38)
5431	I34717	*Pina-D1a*	*Pinb-D1a*	21.60 (± 14.50)	49.66 (± 12.17)	8.97 (± 0.62)	3.08 (± 0.36)
5432	I34718	*Pina-D1a*	*Pinb-D1a*	30.38 (± 14.53)	43.87 (± 10.43)	9.00 (± 0.63)	3.03 (± 0.35)
5433	I34719	*Pina-D1a*	*Pinb-D1a*	27.68 (± 13.90)	45.65 (± 9.54)	9.11 (± 0.65)	3.09 (± 0.33)
5434	I34720	*Pina-D1a*	*Pinb-D1a*	27.97 (± 12.96)	44.45 (± 9.10)	8.80 (± 0.71)	2.97 (± 0.31)
5435	I34721	*Pina-D1a*	*Pinb-D1a*	17.10 (± 14.37)	46.22 (± 11.31)	9.08 (± 0.50)	3.07 (± 0.34)
5933	I35218	*Pina-D1a*	*Pinb-D1a*	25.02 (± 14.95)	42.86 (± 10.72)	9.11 (± 0.66)	2.96 (± 0.33)
5934	I35219	*Pina-D1a*	*Pinb-D1a*	32.89 (± 15.82)	49.23 (± 9.87)	8.82 (± 0.92)	3.13 (± 0.36)
5935	I35220	*Pina-D1a*	*Pinb-D1a*	27.27 (± 15.89)	51.86 (± 10.97)	8.60 (± 0.87)	3.12 (± 0.34)
5936	I35221	*Pina-D1a*	*Pinb-D1a*	20.78 (± 13.04)	47.53 (± 9.61)	8.67 (± 0.80)	3.08 (± 0.33)
5937	I35222	*Pina-D1a*	*Pinb-D1a*	10.84 (± 15.53)	43.52 (± 12.25)	9.23 (± 0.66)	2.82 (± 0.42)
5938	I35223	*Pina-D1a*	*Pinb-D1a*	14.88 (± 16.47)	46.85 (± 12.35)	8.46 (± 0.70)	3.01 (± 0.35)
5939	I35224	*Pina-D1a*	*Pinb-D1a*	36.81 (± 25.50)	43.93 (± 12.35)	8.71 (± 0.78)	2.93 (± 0.36)
5940	I35225	*Pina-D1a*	*Pinb-D1a*	25.67 (± 13.97)	44.12 (± 10.08)	8.42 (± 0.77)	3.03 (± 0.31)
5941	I35226	*Pina-D1a*	*Pinb-D1a*	20.56 (± 13.21)	49.60 (± 12.18)	8.82 (± 0.63)	3.05 (± 0.34)
5942	I35227	*Pina-D1a*	*Pinb-D1a*	28.33 (± 15.64)	44.96 (± 9.80)	8.85 (± 0.57)	2.96 (± 0.33)
5943	I35228	*Pina-D1a*	*Pinb-D1a*	23.78 (± 13.33)	48.19 (± 9.96)	9.05 (± 0.63)	3.06 (± 0.33)
5944	I35229	*Pina-D1a*	*Pinb-D1a*	29.05 (± 12.44)	48.60 (± 9.43)	8.92 (± 0.54)	3.09 (± 0.32)
5946	I35231	*Pina-D1a*	*Pinb-D1a*	24.10 (± 13.70)	48.35 (± 10.02)	8.97 (± 0.59)	3.11 (± 0.35)
5948	I35233	*Pina-D1a*	*Pinb-D1a*	30.01 (± 14.26)	42.17 (± 9.88)	8.89 (± 0.65)	2.98 (± 0.34)
6013	I35298	*Pina-D1a*	*Pinb-D1b*	33.32 (± 21.68)	46.26 (± 10.99)	8.86 (± 0.63)	3.03 (± 0.37)
6723	I36007	*Pina-D1a*	*Pinb-D1c*	65.80 (± 14.80)	40.48 (± 8.68)	9.12 (± 0.62)	2.92 (± 0.28)
20110	I36225	*Pina-D1a*	*Pinb-D1b*	50.95 (± 14.80)	47.43 (± 11.03)	8.96 (± 0.61)	3.19 (± 0.32)
21069	I37184	*Pina-D1a*	*Pinb-D1g*	60.79 (±18.06)	38.03 (± 7.75)	8.55 (± 0.77)	2.88 (± 0.24)
21070	I37185	*Pina-D1a*	*Pinb-D1b*	48.14 (±17.75)	32.10 (± 7.99)	8.20 (± 0.65)	2.72 (± 0.28)

Table S3 *Means for protein, starch and wet gluten contents of polish landraces.*

Accession number from KCRZG	Introduction numbers from KCRZG	Protein [% dw] (SD)	Starch [% dw] (SD)	Wet gluten [%] (SD)
716	I29912	14.45 (± 0.05)	66.7 (± 0.10)	31.55 (± 0.05)
2376	I31707	14.95 (± 0.05)	65.9 (± 0.10)	33.25 (± 0.15)
2617	I31920	15.2 (± 0.00)	65.8 (± 0.00)	34.5 (± 0.30)
2618	I31921	18.8 (± 0.00)	61.75 (± 0.25)	47 (± 0.40)
2619	I31922	14.9 (± 0.10)	67.05 (± 0.05)	33.1 (± 0.20)
2620	I31923	17 (± 0.00)	64.15 (± 0.15)	38.6 (± 0.00)
2621	I31924	20.85 (± 0.05)	57.65 (± 0.05)	49.8 (± 0.10)
2622	I31925	17.8 (± 0.00)	63.35 (± 0.25)	39.75 (± 0.65)
2623	I31926	14.9 (± 0.00)	65.95 (± 0.05)	33.5 (± 0.00)
2624	I31927	17.9 (± 0.00)	63.65 (± 0.15)	40.4 (± 0.00)
2625	I31928	17.7 (± 0.00)	63.45 (± 0.05)	44.6 (± 0.50)
2626	I31929	18.6 (± 0.00)	62.65 (± 0.15)	47.4 (± 0.20)
2627	I31930	18.55 (± 0.05)	63.45 (± 0.05)	46.45 (± 0.05)
2628	I31931	17.35 (± 0.05)	64.2 (± 0.10)	40.8 (± 0.90)
2629	I31932	17.95 (± 0.05)	63.05 (± 0.05)	43.95 (± 0.15)
2630	I31933	19.6 (± 0.00)	61.95 (± 0.15)	47.6 (± 0.40)
2631	I31934	17.8 (± 0.00)	62.45 (± 0.15)	39.45 (± 0.05)
2878	I32174	17.4 (± 0.00)	64.4 (± 0.10)	44.25 (± 0.15)
3078	I32366	17.55 (± 0.05)	64.3 (± 0.00)	38.6 (± 0.20)
3117	I32405	17.55 (± 0.05)	63.8 (± 0.10)	45.4 (± 0.30)
3229	I32517	13.15 (± 0.05)	67.7 (± 0.10)	28.4 (± 0.10)
3230	I32518	18.2 (± 0.00)	62.7 (± 0.10)	44.1 (± 0.10)
3231	I32519	15.1 (± 0.00)	66.25 (± 0.05)	33.7 (± 0.10)
3232	I32520	15.1 (± 0.00)	65.15 (± 0.15)	34.15 (± 0.25)
3234	I32522	18.8 (± 0.00)	62.85 (± 0.15)	48.1 (± 0.30)
3235	I32523	16.3 (± 0.00)	65 (± 0.20)	36.1 (± 0.10)

3236	I32524	19.95 (± 0.05)	57.35 (± 0.05)	48.15 (± 0.35)
3237	I32525	17.25 (± 0.05)	63.65 (± 0.05)	38.75 (± 0.15)
3238	I32526	18.7 (± 0.00)	64.25 (± 0.05)	41.55 (± 0.25)
3239	I32527	18.4 (± 0.00)	62.65 (± 0.05)	47.2 (± 0.00)
3240	I32528	18.1 (± 0.00)	63.1 (± 0.00)	42.95 (± 0.85)
3241	I32529	17.9 (± 0.00)	63.5 (± 0.20)	39.75 (± 0.05)
3242	I32530	16.85 (± 0.05)	64.5 (± 0.10)	41.05 (± 0.45)
3243	I32531	19.15 (± 0.05)	61.2 (± 0.10)	48 (± 0.20)
3247	I32535	19.4 (± 0.00)	62.45 (± 0.25)	47.9 (± 0.60)
3248	I32536	17.1 (± 0.00)	63.25 (± 0.05)	38.2 (± 0.10)
3249	I32537	19.9 (± 0.00)	58.7 (± 0.10)	48.05 (± 0.05)
3250	I32538	15 (± 0.00)	66.6 (± 0.10)	34.3 (± 0.10)
3251	I32539	19.45 (± 0.05)	62.3 (± 0.10)	48.45 (± 0.55)
3252	I32540	19.4 (± 0.00)	61.95 (± 0.05)	48.3 (± 0.20)
3253	I32541	15.5 (± 0.00)	65.5 (± 0.10)	34.45 (± 0.65)
3254	I32542	20.5 (± 0.00)	59.35 (± 0.05)	49.2 (± 0.30)
3255	I32543	14.4 (± 0.00)	66.9 (± 0.10)	31.65 (± 0.45)
3318	I32606	17.75 (± 0.05)	63.1 (± 0.00)	39.65 (± 0.05)
4680	I33966	19 (± 0.00)	62.5 (± 0.00)	44.55 (± 0.25)
4694	I33980	16.6 (± 0.00)	65.1 (± 0.10)	37.3 (± 0.50)
4696	I33982	16.85 (± 0.05)	64.05 (± 0.05)	37.85 (± 0.05)
4698	I33984	16.05 (± 0.05)	65.15 (± 0.05)	36.8 (± 0.10)
4700	I33986	22.3 (± 0.00)	57.45 (± 0.05)	50.85 (± 0.05)
5423	I34709	17 (± 0.00)	64.65 (± 0.05)	38.75 (± 0.05)
5424	I34710	16 (± 0.00)	65.45 (± 0.05)	36.05 (± 1.15)
5425	I34711	17.35 (± 0.05)	63.85 (± 0.35)	40.8 (± 0.60)
5426	I34712	20.1 (± 0.00)	60.5 (± 0.00)	46.35 (± 0.95)
5428	I34714	17.1 (± 0.00)	63.95 (± 0.05)	39.25 (± 0.25)
5429	I34715	17.3 (± 0.00)	63.2 (± 0.00)	38.15 (± 0.05)

5430	I34716	17.4 (± 0.10)	63.75 (± 0.15)	43.7 (± 0.50)
5431	I34717	17.85 (± 0.05)	63.95 (± 0.25)	42.9 (± 0.30)
5432	I34718	18.1 (± 0.00)	63.6 (± 0.10)	46.75 (± 0.15)
5433	I34719	15.2 (± 0.00)	65.3 (± 0.10)	36.15 (± 0.55)
5434	I34720	15.8 (± 0.10)	65.25 (± 0.05)	36.45 (± 0.05)
5435	I34721	21.2 (± 0.00)	57.45 (± 0.15)	47.65 (± 0.45)
5933	I35218	17.4 (± 0.00)	64.65 (± 0.15)	39.65 (± 0.05)
5934	I35219	14.95 (± 0.05)	65.45 (± 0.05)	34.4 (± 0.10)
5935	I35220	15.85 (± 0.05)	65 (± 0.10)	36.3 (± 0.10)
5936	I35221	17.9 (± 0.00)	63.6 (± 0.20)	43.5 (± 1.10)
5937	I35222	13.1 (± 0.00)	66.85 (± 0.05)	28.05 (± 0.55)
5938	I35223	19.15 (± 0.05)	60.85 (± 0.15)	47.2 (± 0.10)
5939	I35224	18.3 (± 0.00)	63 (± 0.00)	41.9 (± 0.10)
5940	I35225	21 (± 0.00)	58.9 (± 0.00)	50.9 (± 0.10)
5941	I35226	17.8 (± 0.00)	62.55 (± 0.05)	42.6 (± 1.20)
5942	I35227	17.8 (± 0.00)	63.25 (± 0.05)	41.3 (± 0.10)
5943	I35228	17.1 (± 0.00)	63.7 (± 0.10)	39.4 (± 0.20)
5944	I35229	17.95 (± 0.05)	63.45 (± 0.15)	46.15 (± 0.05)
5946	I35231	17.45 (± 0.05)	64.4 (± 0.00)	38.75 (± 0.35)
5948	I35233	16.9 (± 0.00)	64.9 (± 0.10)	40.1 (± 1.50)
6013	I35298	18.9 (± 0.00)	61.95 (± 0.05)	47.65 (± 0.05)
6723	I36007	15.45 (± 0.05)	66.2 (± 0.00)	38.3 (± 0.30)
20110	I36225	16.15 (± 0.05)	65.7 (± 0.10)	36.25 (± 0.05)
21069	I37184	18.6 (± 0.00)	62.3 (± 0.10)	42.25 (± 0.05)
21070	I37185	23.15 (± 0.05)	55.85 (± 0.05)	53.15 (± 0.05)

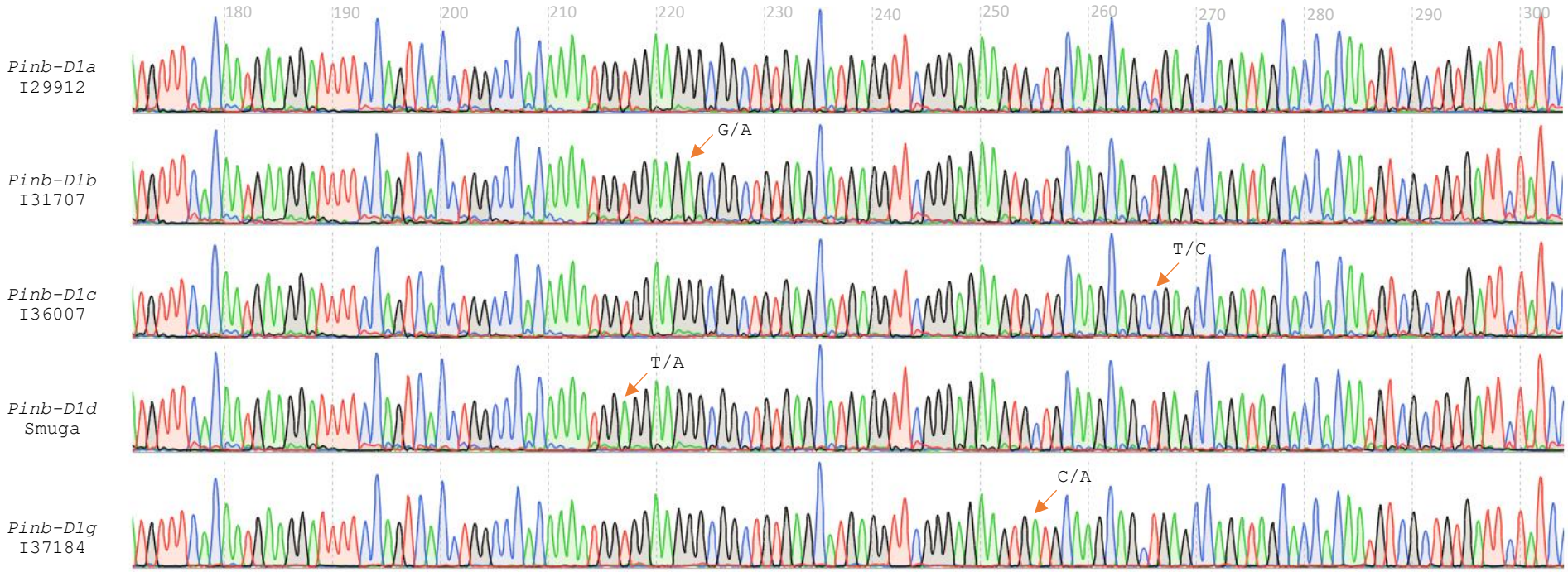

Figure S1. Chromatogram fragments of five alleles found in tested wheat genotypes. The alleles designation and the genotype accession numbers are on the left. Black line – guanine [G]; green line – adenine [A]; red line – thymine [T]; blue line – cytosine [C]. SNPs are indicated by orange arrows.