# SUPPLEMENTARY MATERIALS

**Table S1.** Phenolic acids (PA) composition of wheat grain [$\mu g\ g^{-1}$], mean values for interaction location x cropping systems.

| Location (L) | Cropping systems (CS) | FER | SIN | p-COU | CAF | VAN | SYR | p-HB | PCA | SA | TPAs |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dukla | ORG | 602.44[d] ±70.30 | 43.81[b] ±4.57 | 10.71[c] ±2.01 | 2.63[e] ±1.03 | 11.06[d] ±1.57 | 10.93[d] ±3.41 | 7.38[e] ±0.79 | 1.74[c] ±0.36 | 0.30[b] ±0.06 | 691.01[d] ±78.79 |
| Dukla | INT | 606.01[d] ±66.62 | 37.92[a] ±2.66 | 10.35[bc] ±2.29 | 1.46[ab] ±0.78 | 10.24[c] ±1.30 | 9.01[c] ±1.93 | 6.75[d] ±1.04 | 1.62[c] ±0.36 | 0.26[ab] ±0.03 | 683.61[d] ±68.79 |
| Dukla | CON | 578.92[c] ±53.58 | 37.25[a] ±4.09 | 10.26[bc] ±1.24 | 1.43[a] ±0.52 | 9.42[b] ±1.56 | 7.38[a] ±0.77 | 5.15[c] ±1.70 | 1.40[b] ±0.46 | 0.29[b] ±0.05 | 651.50[bc] ±53.16 |
| Nowy Lubliniec | ORG | 585.44[c] ±37.68 | 40.30[a] ±3.59 | 9.33[c] ±1.27 | 2.17[d] ±0.58 | 9.75[b] ±1.43 | 8.89[c] ±2.22 | 4.63[b] ±1.74 | 1.33[ab] ±0.71 | 0.26[b] ±0.05 | 662.09[c] ±42.05 |
| Nowy Lubliniec | INT | 570.37[b] ±35.35 | 39.33[a] ±3.60 | 9.30[bc] ±1.14 | 1.91[c] ±0.46 | 9.76[b] ±0.64 | 8.94[c] ±1.95 | 4.44[ab] ±1.25 | 1.32[ab] ±0.55 | 0.24[a] ±0.05 | 645.62[b] ±38.39 |
| Nowy Lubliniec | CON | 561.55[a] ±36.71 | 37.54[a] ±3.15 | 7.92[bc] ±1.48 | 1.62[b] ±0.37 | 8.66[a] ±1.11 | 8.22[b] ±2.38 | 4.20[a] ±1.17 | 1.20[a] ±0.60 | 0.27[b] ±0.05 | 631.18[a] ±40.35 |
| L x CS | | *** | ns | ns | *** | *** | *** | *** | ns | ns | ** |

Values are expressed as mean ±SD. Means in a column followed by different letters show significant differences (p < 0.05) according to the Tukey test. Significance at: *** $p < 0.001$; ** $p < 0.01$; ns – not significant

FER – ferulic acid, SIN – sinapic acid, p-COU – p-coumaric acid, CAF – caffeic acid, VAN – vanillic acid, SYR – syringic acid, p-HB – p-hydroxybenzoic acid, PCA, protocatechuic acid, SA – salicylic acid, TPAs – total content of phenolic acids

**Table S2.** Phenolic acids (PA) composition of wheat grain [$\mu g\ g^{-1}$], mean values for interaction location x years

| Location (L) | Years (Y) | FER | SIN | p-COU | CAF | VAN | SYR | p-HB | PCA | SA | TPAs |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Dukla | 2015/2016 | 588.89[c] ±60.29 | 38.84[a-c] ±4.01 | 9.89[bc] ±1.76 | 1.81[bc] ±0.92 | 9.85[b] 1.46 | 8.71[bc] 2.45 | 6.07[c] 1.31 | 1.44[b] ±0.27 | 0.27[ab] ±0.04 | 665.76[c] ±64.13 |
| Dukla | 2016/2017 | 610.26[e] ±72.18 | 41.79[c] ±4.38 | 11.45[d] ±1.64 | 2.07[d] ±0.50 | 11.30[b] 1.53 | 9.95[d] ±2.75 | 7.07[d] ±1.59 | 1.90[c] ±0.47 | 0.29[b] ±0.06 | 696.07[d] ±75.58 |
| Dukla | 2017/2018 | 588.22[cd] ±59.44 | 38.36[ab] ±5.45 | 10.00[c] ±1.88 | 1.64[a] ±0.99 | 9.57[b] ±1.31 | 8.66[b] ±2.81 | 6.14[c] ±1.59 | 1.43[b] ±0.29 | 0.29[ab] ±0.05 | 664.30[c] ±64.77 |
| Nowy Lubliniec | 2015/2016 | 561.89[a] ±37.57 | 37.49[a] ±2.37 | 8.21[a] ±1.39 | 1.67[ab] 0.48 | 8.79[a] ±1.21 | 8.14[a] ±2.06 | 3.87[a] ±1.58 | 1.10[a] ±0.52 | 0.25[a] ±0.05 | 631.40[a] ±39.32 |
| Nowy Lubliniec | 2016/2017 | 581.81[b] ±36.94 | 40.90[bc] ±3.48 | 9.49[bc] ±1.50 | 2.14[d] 0.52 | 9.79[c] ±1.14 | 9.00[c] ±2.26 | 4.79[b] ±1.19 | 1.42[b] ±0.69 | 0.27[ab] ±0.05 | 659.60[c] ±41.65 |
| Nowy Lubliniec | 2017/2018 | 573.66[c] ±36.58 | 38.78[c] ±3.99 | 8.85[ab] ±1.20 | 1.89[c] 0.49 | 9.59[b] ±1.09 | 8.91[bc] ±2.22 | 4.61[b] ±1.29 | 1.33[b] ±0.61 | 0.26[ab] ±0.05 | 647.88[b] ±40.88 |
| L x Y | | *** | ns | ns | *** | ns | *** | *** | *** | ns | *** |

Values are expressed as mean ±SD. Means in a column followed by different letters show significant differences (p < 0.05) according to the Tukey test. Significance at: *** $p < 0.001$; ns – not significant

FER – ferulic acid, SIN – sinapic acid, p-COU – p-coumaric acid, CAF – caffeic acid, VAN – vanillic acid, SYR – syringic acid, p-HB – p-hydroxybenzoic acid, PCA, protocatechuic acid, SA – salicylic acid, TPAs – total content of phenolic acids

**Table S3.** Phenolic acids (PA) composition of wheat grain [µg g$^{-1}$], mean values for interaction cropping systems x years.

| Cropping systems (CS) | Years (Y) | FER | SIN | p-COU | CAF | VAN | SYR | p-HB | PCA | SA | TPAs |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ORG | 2015/2016 | 584.12$^{bc}$ ±54.57 | 40.11$^{b-d}$ ±4.29 | 8.89$^{a}$ ±1.62 | 2.18$^{d}$ ±0.86 | 9.63$^{b}$ ±1.63 | 9.22$^{de}$ ±2.81 | 5.35$^{de}$ ±2.15 | 1.22$^{b}$ ±0.44 | 0.26$^{ab}$ ±0.04 | 660.98$^{b}$ ±61.98 |
| | 2016/2017 | 606.37$^{d}$ ±61.75 | 44.20$^{d}$ ±4.19 | 11.01$^{c}$ ±1.66 | 2.76$^{e}$ ±0.80 | 11.25$^{d}$ ±1.63 | 10.56$^{g}$ ±3.25 | 6.63$^{g}$ ±1.95 | 1.89$^{d}$ ±0.64 | 0.31$^{b}$ ±0.06 | 694.97$^{d}$ ±68.42 |
| | 2017/2018 | 591.34$^{c}$ ±54.75 | 41.86$^{cd}$ ±4.14 | 10.16$^{a-c}$ ±1.55 | 2.26$^{d}$ ±0.85 | 10.33$^{c}$ ±1.28 | 9.95$^{f}$ ±3.08 | 6.05$^{f}$ ±1.58 | 1.49$^{c}$ ±0.53 | 0.27$^{ab}$ ±0.06 | 673.71$^{c}$ ±62.00 |
| INT | 2015/2016 | 578.30$^{b}$ ±57.58 | 37.36$^{ab}$ ±1.77 | 9.50$^{ab}$ ±1.95 | 1.62$^{ab}$ ±0.64 | 9.63$^{b}$ ±1.10 | 8.57$^{bc}$ ±1.84 | 5.15$^{bc}$ ±1.63 | 1.34$^{b}$ ±0.43 | 0.23$^{a}$ ±0.04 | 651.70$^{b}$ ±59.92 |
| | 2016/2017 | 601.62$^{d}$ ±61.96 | 40.20$^{b-d}$ ±3.09 | 10.64$^{bc}$ ±1.68 | 1.88$^{c}$ ±0.64 | 10.68$^{c}$ ±1.04 | 9.51$^{ef}$ ±2.04 | 6.02$^{ef}$ ±1.74 | 1.64$^{c}$ ±0.58 | 0.27$^{ab}$ ±0.04 | 682.46$^{c}$ ±63.97 |
| | 2017/2018 | 584.65$^{bc}$ ±48.58 | 38.32$^{a-c}$ ±3.92 | 9.34$^{ab}$ ±1.82 | 1.57$^{ab}$ ±0.74 | 9.68$^{b}$ ±0.62 | 8.84$^{cd}$ ±1.89 | 5.61$^{cd}$ ±1.53 | 1.44$^{bc}$ ±0.41 | 0.25$^{a}$ ±0.04 | 659.67$^{b}$ ±50.35 |
| CON | 2015/2016 | 563.75$^{a}$ ±43.16 | 37.01$^{ab}$ ±2.70 | 8.76$^{a}$ ±1.81 | 1.43$^{a}$ ±0.43 | 8.70$^{a}$ ±1.41 | 7.48$^{a}$ ±1.78 | 4.40$^{a}$ ±1.62 | 1.25$^{a}$ ±0.49 | 0.28$^{ab}$ ±0.05 | 633.06$^{a}$ ±42.87 |
| | 2016/2017 | 580.11$^{b}$ ±52.37 | 39.63$^{a-c}$ ±2.89 | 9.75$^{a-c}$ ±2.06 | 1.68$^{bc}$ ±0.45 | 9.70$^{b}$ ±1.55 | 8.35$^{b}$ ±1.72 | 5.14$^{b}$ ±1.50 | 1.44$^{b}$ ±0.65 | 0.26$^{ab}$ ±0.06 | 656.07$^{b}$ ±54.43 |
| | 2017/2018 | 566.85$^{a}$ ±44.66 | 35.54$^{a}$ ±4.04 | 8.76$^{a}$ ±1.41 | 1.46$^{a}$ ±0.48 | 8.73$^{a}$ ±1.02 | 7.56$^{a}$ ±1.91 | 4.48$^{a}$ ±1.46 | 1.21$^{a}$ ±0.47 | 0.31$^{b}$ ±0.05 | 634.89$^{a}$ ±45.43 |
| CS x Y | | ** | ns | ns | ** | * | * | * | ns | ns | * |

Values are expressed as mean ±SD. Means in a column followed by different letters show significant differences (p < 0.05) according to the Tukey test. Significance at: ** $p < 0.01$; * $p < 0.05$; ns – not significant

FER – ferulic acid, SIN – sinapic acid, p-COU – p-coumaric acid, CAF – caffeic acid, VAN – vanillic acid, SYR – syringic acid, p-HB – p-hydroxybenzoic acid, PCA, protocatechuic acid, SA – salicylic acid, TPAs – total content of phenolic acids