

Genome-wide association study for morphological, phenological, quality and yield traits in einkorn (*Triticum monococcum* L. subsp. *monococcum*)

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File S1. Analysis of Variance (ANOVA) of the phenotypic data

| Source | d.f. | HDA | PLH | SPS | GPS | SPL | GRL | GRW | GRT | TGW | PRO | CAR | SDS |
|--------------|------|-------------|-------------|------------|----------|----------|----------|-----------|-----------|------------|------------|------------|------------|
| Genotype (G) | 159 | 271.16*** | 778.18*** | 57.02*** | 0.108*** | 3.84*** | 0.962*** | 0.256*** | 0.180*** | 104.26*** | 12.946*** | 12.570*** | 451.66*** |
| Year (Y) | 3 | 13891.80*** | 108839.0*** | 4570.43*** | 3.765*** | 68.42*** | 22.43*** | 11.473*** | 14.499*** | 1904.23*** | 255.209*** | 144.646*** | 4031.02*** |
| GxY | 477 | 16.04*** | 136.56*** | 8.88 | 0.034*** | 0.753 | 0.126 | 0.057 | 0.041 | 14.88** | 2.648 | 1.659*** | 39.50*** |
| Error | 640 | 6.54 | 165.78 | 8.68 | 0.028 | 0.689 | 0.123 | 0.058 | 0.051 | 12.05 | 3.125 | 1.042 | 24.28 |

| Source | d.f. | AWN | GLC | GLH | RAB |
|--------------|------|----------|-----------|----------|-----------|
| Genotype (G) | 159 | 0.768*** | 1.516*** | 0.380*** | 1.178*** |
| Year (Y) | 3 | 3.402*** | 16.150*** | 6.159*** | 15.890*** |
| GxY | 477 | 0.125*** | 0.548*** | 0.183*** | 0.281** |
| Error | 640 | 0.086 | 0.190 | 0.020 | 0.220 |

d.f.: degrees of freedom; ***: $p \leq 0.001$. HDA: heading date; PLH: plant height; SPS: n° spikelets/spike; GPS: n° kernels/spikelet; SPL: spike length; GRL: grain length; GRW: grain width; GRT: grain thickness; TGW: thousand kernels weight; PRO: protein content; CAR: carotenoid content; SDS: sodium dodecyl sulphate sedimentation volume; AWN: awns length; GLC: glume color; GLH: glume hairiness; RAB: rachis brittleness.