**Supplementary Table 6 |** Variance components and proportion of the phenotypic variance contributed by each variance component in the pooled Chang7-2 × RIL (TC)- Mo17 × RIL (TM) population

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | PH | EH | RNPE | KNPR | KT | KW | KL | VW | HGW | GY |
| $$σ\_{a}^{2}$$ | 18.06 | 28.23 | 0.14 | 0.65 | 1.84 | 1.34 | 3.77 | 98.47 | 0.63 | 13.9 |
| $$σ\_{d}^{2}$$ | 42.94 | 33.73 | 0.37 | 3.15 | 2.15 | 9.65 | 12.9 | 138.38 | 4.5 | 40.74 |
| $$σ\_{aa}^{2}$$ | 66.92 | 36.19 | 0.18 | 1.64 | 2.7 | 2.69 | 3.24 | 133.13 | 0.97 | 23.45 |
| $$σ\_{ad}^{2}$$ | 64.2 | 19.8 | 0.15 | 1.5 | 1.9 | 2.6 | 3.83 | 157.59 | 0.87 | 20.19 |
| $$σ\_{dd}^{2}$$ | 37.45 | 13.52 | 0.12 | 1.5 | 1.68 | 3.26 | 4.82 | 127.53 | 0.99 | 23.08 |
| $$σ\_{ε}^{2}$$ | 13.53 | 7.39 | 0.11 | 1.61 | 1.1 | 2.6 | 4.91 | 239.9 | 1.16 | 49.45 |
| $$h\_{a}^{2}$$ | 0.07  | 0.20  | 0.13  | 0.06  | 0.16  | 0.06  | 0.11  | 0.11  | 0.07  | 0.08  |
| $$h\_{d}^{2}$$ | 0.18  | 0.24  | 0.34  | 0.31  | 0.19  | 0.44  | 0.39  | 0.15  | 0.49  | 0.24  |
| $$h\_{aa}^{2}$$ | 0.28  | 0.26  | 0.16  | 0.16  | 0.24  | 0.12  | 0.10  | 0.15  | 0.11  | 0.14  |
| $$h\_{ad}^{2}$$ | 0.26  | 0.14  | 0.14  | 0.15  | 0.17  | 0.12  | 0.11  | 0.18  | 0.10  | 0.12  |
| $$h\_{dd}^{2}$$ | 0.15  | 0.10  | 0.11  | 0.15  | 0.15  | 0.15  | 0.14  | 0.14  | 0.11  | 0.14  |

All genetic variance $σ^{2}$ is calculated by $σ^{2}$ = $σ\_{a}^{2}+σ\_{d}^{2}+σ\_{aa}^{2}+h\_{ad}^{2}+h\_{dd}^{2}+σ\_{ε}^{2}$;

$h\_{a}^{2}$, the genetic proportion of additive effect, calculated by $h\_{a}^{2}=σ\_{a}^{2}/σ^{2}$;

$h\_{d}^{2}$, the genetic proportion of dominance effect, calculated by $h\_{d}^{2}=σ\_{d}^{2}/σ^{2}$;

$h\_{aa}^{2}$, the genetic proportion of additive-by-additive effect, calculated by $h\_{aa}^{2}=σ\_{aa}^{2}/σ^{2}$;

$h\_{ad}^{2}$, the genetic proportion of additive-by-dominance effect, calculated by $h\_{ad}^{2}=σ\_{ad}^{2}/σ^{2}$;

$h\_{dd}^{2}$, the genetic proportion of dominance-by-dominance effect, calculated by $h\_{dd}^{2}=σ\_{dd}^{2}/σ^{2}$.

PH, plant height; EH, ear height; RNPE, row number per ear; KNPR, kernel number per row; KT, kernel thickness; KW, kernel width; KL, kernel length; VW, volume weight; HGW, hundred grain weight; GY, grain yield per plant.