**Sup. Table 2. Estimated variance components1 (line 1) and their standard errors (line 2) for dry matter yield.**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Scenario2 | $$\overbar{G^{\*}}$$ | $$σ\_{g}^{2}$$ | $$\overbar{G^{\*}}σ\_{g}^{2}$$ | $$σ\_{a}^{2}$$ | $$σ\_{p}^{2}$$ | $$σ\_{i\_{1}}^{2}$$ | $$σ\_{i\_{2}}^{2}$$ | $$σ\_{e}^{2}$$ | $$σ\_{P\_{f}}^{2}$$ | $$σ\_{P\_{p}}^{2}$$ | $$h\_{f}^{2}$$ |
| FILTLOW1 | 2.36 | 5.97E-041.22E-04 | 1.41E-032.87E-04 | 1.80E-042.47E-04 | 1.43E-032.92E-04 | 6.77E-092.88E-04 | 4.07E-042.93E-04 | 4.76E-033.21E-04 | 3.26E-032.53E-04 | 8.19E-031.97E-04 | 4.32E-018.28E-02 |
| FILTLOW2 | 2.40 | 5.80E-041.20E-04 | 1.39E-032.88E-04 | 1.92E-042.49E-04 | 1.43E-032.92E-04 | 1.98E-072.88E-04 | 4.06E-042.93E-04 | 4.76E-033.21E-04 | 3.26E-032.53E-04 | 8.19E-031.97E-04 | 4.28E-018.33E-02 |
| FILTLOW3 | 2.58 | 5.68E-041.16E-04 | 1.47E-032.98E-04 | 1.31E-042.55E-04 | 1.43E-032.91E-04 | 1.77E-072.87E-04 | 4.07E-042.93E-04 | 4.76E-033.21E-04 | 3.27E-032.53E-04 | 8.19E-031.98E-04 | 4.49E-018.57E-02 |
| FILTLOW4 | 2.68 | 4.92E-041.07E-04 | 1.32E-032.86E-04 | 2.62E-042.50E-04 | 1.43E-032.92E-04 | 1.61E-072.88E-04 | 4.11E-042.94E-04 | 4.77E-033.21E-04 | 3.25E-032.53E-04 | 8.19E-031.97E-04 | 4.05E-018.31E-02 |
| FILTLOW5 | 2.58 | 4.16E-049.72E-05 | 1.07E-032.50E-04 | 5.01E-042.30E-04 | 1.43E-032.92E-04 | 6.87E-102.88E-04 | 4.13E-042.94E-04 | 4.77E-033.21E-04 | 3.24E-032.52E-04 | 8.18E-031.96E-04 | 3.31E-017.36E-02 |
| FILTLOW6 | 2.41 | 3.56E-048.86E-05 | 8.58E-042.14E-04 | 6.95E-042.10E-04 | 1.44E-032.93E-04 | 7.64E-082.89E-04 | 4.15E-042.94E-04 | 4.76E-033.21E-04 | 3.23E-032.51E-04 | 8.17E-031.95E-04 | 2.66E-016.36E-02 |
| FILTLOW7 | 2.24 | 2.31E-048.09E-05 | 5.18E-041.81E-04 | 1.01E-032.03E-04 | 1.44E-032.94E-04 | 1.22E-072.91E-04 | 4.09E-042.94E-04 | 4.77E-033.22E-04 | 3.21E-032.50E-04 | 8.16E-031.93E-04 | 1.62E-015.52E-02 |
| FILTLOW8 | 1.97 | 2.14E-048.05E-05 | 4.22E-041.59E-04 | 1.10E-031.93E-04 | 1.44E-032.94E-04 | 4.91E-082.91E-04 | 4.09E-042.94E-04 | 4.78E-033.22E-04 | 3.20E-032.49E-04 | 8.15E-031.92E-04 | 1.32E-014.86E-02 |
| FILTLOW9 | 1.69 | 2.09E-048.35E-05 | 3.53E-041.41E-04 | 1.16E-031.87E-04 | 1.44E-032.95E-04 | 2.76E-072.92E-04 | 3.97E-042.95E-04 | 4.79E-033.23E-04 | 3.19E-032.49E-04 | 8.14E-031.91E-04 | 1.11E-014.35E-02 |
| FILTLOW10 | 1.54 | 2.04E-048.86E-05 | 3.14E-041.36E-04 | 1.19E-031.87E-04 | 1.45E-032.95E-04 | 9.40E-082.92E-04 | 3.99E-042.95E-04 | 4.79E-033.23E-04 | 3.18E-032.49E-04 | 8.14E-031.91E-04 | 9.87E-024.22E-02 |
| FILTLOW11 | 1.43 | 2.31E-049.39E-05 | 3.31E-041.35E-04 | 1.17E-031.84E-04 | 1.44E-032.95E-04 | 1.56E-072.92E-04 | 3.95E-042.95E-04 | 4.79E-033.23E-04 | 3.18E-032.49E-04 | 8.14E-031.91E-04 | 1.04E-014.15E-02 |
| FILTHIGH1 | 2.36 | 5.95E-041.21E-04 | 1.40E-032.86E-04 | 1.82E-042.47E-04 | 1.43E-032.92E-04 | 3.95E-082.88E-04 | 4.07E-042.93E-04 | 4.76E-033.21E-04 | 3.26E-032.53E-04 | 8.19E-031.97E-04 | 4.31E-018.26E-02 |
| FILTHIGH2 | 2.36 | 5.94E-041.21E-04 | 1.40E-032.86E-04 | 1.84E-042.47E-04 | 1.43E-032.92E-04 | 7.46E-082.88E-04 | 4.07E-042.93E-04 | 4.76E-033.21E-04 | 3.26E-032.53E-04 | 8.19E-031.97E-04 | 4.30E-018.26E-02 |
| FILTHIGH3 | 2.36 | 5.94E-041.21E-04 | 1.40E-032.86E-04 | 1.85E-042.46E-04 | 1.43E-032.92E-04 | 7.45E-082.88E-04 | 4.07E-042.93E-04 | 4.76E-033.21E-04 | 3.26E-032.53E-04 | 8.19E-031.97E-04 | 4.30E-018.25E-02 |
| FILTHIGH4 | 2.36 | 5.92E-041.21E-04 | 1.40E-032.85E-04 | 1.87E-042.46E-04 | 1.43E-032.92E-04 | 1.74E-072.88E-04 | 4.07E-042.93E-04 | 4.76E-033.21E-04 | 3.26E-032.53E-04 | 8.19E-031.97E-04 | 4.30E-018.24E-02 |
| FILTHIGH5 | 2.36 | 5.92E-041.21E-04 | 1.40E-032.85E-04 | 1.88E-042.46E-04 | 1.43E-032.92E-04 | 1.86E-072.88E-04 | 4.07E-042.93E-04 | 4.76E-033.21E-04 | 3.25E-032.53E-04 | 8.19E-031.97E-04 | 4.29E-018.23E-02 |
| FILTHIGH6 | 2.36 | 5.94E-041.20E-04 | 1.40E-032.83E-04 | 1.85E-042.44E-04 | 1.43E-032.92E-04 | 4.21E-072.88E-04 | 4.06E-042.93E-04 | 4.76E-033.21E-04 | 3.25E-032.53E-04 | 8.18E-031.97E-04 | 4.30E-018.18E-02 |
| FILTHIGH7 | 2.35 | 5.88E-041.20E-04 | 1.38E-032.81E-04 | 2.03E-042.43E-04 | 1.43E-032.92E-04 | 1.96E-072.88E-04 | 4.06E-042.93E-04 | 4.77E-033.21E-04 | 3.25E-032.53E-04 | 8.19E-031.97E-04 | 4.25E-018.13E-02 |
| FILTHIGH8 | 2.32 | 5.67E-041.17E-04 | 1.32E-032.72E-04 | 2.60E-042.38E-04 | 1.43E-032.92E-04 | 2.19E-082.88E-04 | 4.05E-042.93E-04 | 4.77E-033.21E-04 | 3.25E-032.52E-04 | 8.18E-031.97E-04 | 4.05E-017.90E-02 |
| FILTHIGH9 | 2.23 | 5.45E-041.13E-04 | 1.21E-032.51E-04 | 3.57E-042.25E-04 | 1.43E-032.92E-04 | 2.13E-072.88E-04 | 4.04E-042.93E-04 | 4.77E-033.21E-04 | 3.24E-032.52E-04 | 8.17E-031.96E-04 | 3.75E-017.34E-02 |
| FILTHIGH10 | 1.90 | 3.97E-049.61E-05 | 7.53E-041.82E-04 | 7.40E-041.98E-04 | 1.44E-032.93E-04 | 3.10E-072.90E-04 | 4.08E-042.94E-04 | 4.77E-033.22E-04 | 3.17E-032.48E-04 | 8.11E-031.90E-04 | 2.38E-015.62E-02 |
| FILTHIGH11 | 1.51 | 1.59E-045.19E-05 | 2.40E-047.85E-05 | 1.07E-031.83E-04 | 1.45E-032.95E-04 | 1.63E-082.91E-04 | 4.11E-042.95E-04 | 4.78E-033.22E-04 | 2.99E-032.44E-04 | 7.95E-031.85E-04 | 8.03E-022.73E-02 |
| FILTBOTH1 | 1.51 | 1.58E-045.18E-05 | 2.39E-047.84E-05 | 1.07E-031.84E-04 | 1.45E-032.95E-04 | 1.59E-082.92E-04 | 4.11E-042.95E-04 | 4.78E-033.22E-04 | 2.99E-032.44E-04 | 7.95E-031.85E-04 | 7.98E-022.73E-02 |
| FILTBOTH2 | 1.97 | 3.55E-049.16E-05 | 7.00E-041.81E-04 | 7.93E-042.00E-04 | 1.44E-032.94E-04 | 3.61E-072.90E-04 | 4.04E-042.94E-04 | 4.78E-033.22E-04 | 3.17E-032.48E-04 | 8.11E-031.90E-04 | 2.21E-015.59E-02 |
| FILTBOTH3 | 2.51 | 4.87E-041.01E-04 | 1.22E-032.53E-04 | 3.61E-042.25E-04 | 1.43E-032.92E-04 | 3.16E-072.88E-04 | 4.04E-042.93E-04 | 4.77E-033.21E-04 | 3.25E-032.52E-04 | 8.18E-031.97E-04 | 3.75E-017.36E-02 |
| FILTBOTH4 | 2.75 | 3.72E-048.79E-05 | 1.02E-032.41E-04 | 5.24E-042.26E-04 | 1.44E-032.93E-04 | 1.09E-072.90E-04 | 4.06E-042.94E-04 | 4.78E-033.22E-04 | 3.22E-032.51E-04 | 8.17E-031.95E-04 | 3.17E-017.16E-02 |
| FILTBOTH5 | 2.71 | 3.04E-047.90E-05 | 8.23E-042.14E-04 | 7.31E-042.11E-04 | 1.43E-032.93E-04 | 6.81E-082.89E-04 | 4.08E-042.95E-04 | 4.78E-033.22E-04 | 3.23E-032.51E-04 | 8.17E-031.95E-04 | 2.55E-016.38E-02 |
| FILTBOTH6 | 2.57 | 2.60E-046.52E-05 | 6.68E-041.68E-04 | 8.39E-041.88E-04 | 1.44E-032.93E-04 | 9.21E-082.90E-04 | 4.14E-042.94E-04 | 4.77E-033.22E-04 | 3.18E-032.49E-04 | 8.13E-031.92E-04 | 2.10E-015.12E-02 |
| FILTBOTH7 | 2.49 | 1.19E-045.39E-05 | 2.95E-041.34E-04 | 1.19E-031.90E-04 | 1.45E-032.95E-04 | 1.38E-072.92E-04 | 4.06E-042.95E-04 | 4.78E-033.23E-04 | 3.17E-032.48E-04 | 8.12E-031.89E-04 | 9.33E-024.20E-02 |
| FILTBOTH8 | 2.37 | 5.96E-054.02E-05 | 1.41E-049.54E-05 | 1.33E-031.80E-04 | 1.45E-032.95E-04 | 2.43E-082.92E-04 | 4.09E-042.95E-04 | 4.78E-033.23E-04 | 3.16E-032.47E-04 | 8.11E-031.88E-04 | 4.48E-023.02E-02 |
| FILTBOTH9 | 2.09 | 3.79E-053.05E-05 | 7.93E-056.38E-05 | 1.39E-031.72E-04 | 1.44E-032.96E-04 | 1.19E-072.92E-04 | 4.00E-042.95E-04 | 4.80E-033.24E-04 | 3.15E-032.47E-04 | 8.11E-031.88E-04 | 2.52E-022.03E-02 |
| FILTBOTH10 | 1.86 | 2.14E-053.07E-05 | 3.98E-055.70E-05 | 1.43E-031.73E-04 | 1.45E-032.96E-04 | 4.81E-082.93E-04 | 4.03E-042.95E-04 | 4.79E-033.24E-04 | 3.15E-032.47E-04 | 8.11E-031.88E-04 | 1.26E-021.81E-02 |
| FILTBOTH11 | 1.68 | 4.72E-054.05E-05 | 7.91E-056.79E-05 | 1.38E-031.73E-04 | 1.45E-032.96E-04 | 1.05E-072.93E-04 | 3.99E-042.95E-04 | 4.80E-033.24E-04 | 3.15E-032.47E-04 | 8.11E-031.88E-04 | 2.51E-022.16E-02 |
| FILTBOTH12 | 1.36 | 1.60E-048.01E-05 | 2.18E-041.09E-04 | 1.27E-031.78E-04 | 1.44E-032.95E-04 | 2.31E-072.92E-04 | 3.97E-042.95E-04 | 4.79E-033.23E-04 | 3.17E-032.48E-04 | 8.12E-031.90E-04 | 6.87E-023.40E-02 |
| RAN5 | 2.36 | 1.51E-045.26E-05 | 3.56E-041.24E-04 | 1.07E-031.90E-04 | 1.44E-032.95E-04 | 9.68E-082.91E-04 | 4.05E-042.95E-04 | 4.78E-033.23E-04 | 3.11E-032.45E-04 | 8.06E-031.86E-04 | 1.15E-014.02E-02 |
| RAN10 | 2.36 | 2.36E-046.70E-05 | 5.56E-041.58E-04 | 9.11E-041.94E-04 | 1.44E-032.94E-04 | 1.97E-072.90E-04 | 4.08E-042.94E-04 | 4.78E-033.22E-04 | 3.14E-032.46E-04 | 8.09E-031.88E-04 | 1.77E-014.97E-02 |
| RAN20 | 2.36 | 3.34E-048.18E-05 | 7.87E-041.93E-04 | 7.33E-042.01E-04 | 1.43E-032.93E-04 | 2.06E-072.90E-04 | 4.05E-042.94E-04 | 4.78E-033.22E-04 | 3.19E-032.49E-04 | 8.14E-031.92E-04 | 2.46E-015.86E-02 |
| RAN40 | 2.36 | 4.26E-049.41E-05 | 1.00E-032.22E-04 | 5.50E-042.10E-04 | 1.43E-032.93E-04 | 1.82E-072.89E-04 | 4.05E-042.94E-04 | 4.77E-033.22E-04 | 3.23E-032.51E-04 | 8.16E-031.95E-04 | 3.11E-016.56E-02 |
| RAN60 | 2.36 | 4.97E-041.03E-04 | 1.17E-032.43E-04 | 4.01E-042.19E-04 | 1.43E-032.92E-04 | 2.56E-072.88E-04 | 4.06E-042.94E-04 | 4.77E-033.21E-04 | 3.24E-032.52E-04 | 8.18E-031.96E-04 | 3.61E-017.11E-02 |
| RAN80 | 2.36 | 5.34E-041.09E-04 | 1.26E-032.56E-04 | 3.22E-042.26E-04 | 1.43E-032.92E-04 | 2.75E-072.88E-04 | 4.06E-042.93E-04 | 4.77E-033.21E-04 | 3.25E-032.52E-04 | 8.18E-031.97E-04 | 3.87E-017.43E-02 |
| RAN100 | 2.36 | 5.26E-041.12E-04 | 1.24E-032.63E-04 | 3.35E-042.34E-04 | 1.43E-032.92E-04 | 2.04E-072.88E-04 | 4.04E-042.93E-04 | 4.77E-033.21E-04 | 3.24E-032.52E-04 | 8.18E-031.96E-04 | 3.82E-017.68E-02 |
| RAN120 | 2.36 | 5.69E-041.16E-04 | 1.34E-032.74E-04 | 2.42E-042.38E-04 | 1.43E-032.92E-04 | 2.14E-072.88E-04 | 4.07E-042.93E-04 | 4.77E-033.21E-04 | 3.25E-032.53E-04 | 8.19E-031.97E-04 | 4.12E-017.92E-02 |
| RAN140 | 2.36 | 5.74E-041.18E-04 | 1.35E-032.78E-04 | 2.31E-042.41E-04 | 1.43E-032.92E-04 | 1.64E-072.88E-04 | 4.05E-042.93E-04 | 4.77E-033.21E-04 | 3.25E-032.53E-04 | 8.18E-031.97E-04 | 4.16E-018.03E-02 |
| RAN160 | 2.36 | 5.86E-041.20E-04 | 1.38E-032.82E-04 | 2.05E-042.44E-04 | 1.43E-032.92E-04 | 2.11E-072.88E-04 | 4.07E-042.93E-04 | 4.76E-033.21E-04 | 3.25E-032.53E-04 | 8.18E-031.97E-04 | 4.24E-018.15E-02 |
| RAN180 | 2.36 | 5.92E-041.21E-04 | 1.40E-032.85E-04 | 1.91E-042.47E-04 | 1.43E-032.92E-04 | 2.26E-072.88E-04 | 4.06E-042.93E-04 | 4.76E-033.21E-04 | 3.26E-032.53E-04 | 8.19E-031.97E-04 | 4.29E-018.25E-02 |

1$\overbar{G^{\*}}$ = mean diagonal of **G\*** matrix; $σ\_{g}^{2}$ = additive genomic variance; $σ\_{a}^{2}$ = residual genetic variance; $σ\_{p}^{2}$ = random plot variance; $σ\_{i\_{1}}^{2}$ = family × sowing year × location × management variance; $σ\_{i\_{2}}^{2}$ = family × sowing year × location × management × farming year variance; $σ\_{e}^{2}$ = residual environment variance; $σ\_{P\_{f}}^{2}$ = phenotypic variance on individual family level; $σ\_{P\_{p}}^{2}$ = phenotypic variance on plot level; $h\_{f}^{2}$ = family heritability based on multiple plots.

2 FILTLOW = strategy filtering out SNPs having low average depth; FILTHIGH = strategy filtering out SNPs having high average depth; FILTBOTH = strategy filtering out SNPs having both low average and high average depth; RAN = strategy keeping SNPs randomly with different data size.