**Additional file 10** Average predictive ability estimated with different numbers of SNPs fitted into the model

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Trait | 40K4 | 20K | 10K | 5K | 2K | 1K | 500 | 200 | 100 | 50 | 20 | 10 |
| GBLUP |
| CBH (3)1 | 0.127a2,3 | 0.124a | 0.121a | 0.121a | 0.112b | 0.104c | 0.096d | 0.08e | 0.068f | 0.052g | 0.036h | 0.024i |
| CBH (6) | 0.251a | 0.253a | 0.249a | 0.249a | 0.238b | 0.229c | 0.214d | 0.188e | 0.167f | 0.145g | 0.111h | 0.086i |
| Height (3) | 0.186a | 0.182ab | 0.179ab | 0.177bc | 0.171c | 0.157d | 0.146e | 0.128f | 0.115g | 0.103h | 0.084i | 0.066j |
| Height (6) | 0.291a | 0.291a | 0.288a | 0.287a | 0.276b | 0.269b | 0.254c | 0.232d | 0.217e | 0.193g | 0.16h | 0.128i |
| Volume (3) | 0.159a | 0.158a | 0.152b | 0.154ab | 0.143c | 0.132d | 0.118e | 0.099f | 0.084g | 0.072h | 0.053i | 0.038j |
| Volume (6) | 0.296a | 0.297a | 0.296a | 0.291ab | 0.284b | 0.276c | 0.265d | 0.244e | 0.221f | 0.202g | 0.167h | 0.137i |
| Basic density | 0.472a | 0.47a | 0.467a | 0.46b | 0.449c | 0.436d | 0.417e | 0.389f | 0.37g | 0.343h | 0.302i | 0.252j |
| Pulp yield | 0.443a | 0.441a | 0.437b | 0.428c | 0.415d | 0.394e | 0.371f | 0.326g | 0.29h | 0.256i | 0.207j | 0.169k |
| RKHS |
| CBH (3) | 0.129a | 0.129a | 0.13a | 0.126ab | 0.127ab | 0.117b | 0.112c | 0.098d | 0.088e | 0.075f | 0.054g | 0.036h |
| CBH (6) | 0.257ab | 0.261a | 0.256ab | 0.257ab | 0.245bc | 0.24c | 0.23d | 0.209e | 0.186f | 0.161g | 0.12h | 0.088i |
| Height (3) | 0.203a | 0.203a | 0.205a | 0.204a | 0.196ab | 0.186b | 0.171c | 0.155d | 0.138e | 0.12f | 0.092g | 0.071h |
| Height (6) | 0.281ab | 0.284a | 0.284a | 0.276ab | 0.271bc | 0.264c | 0.259d | 0.239e | 0.221f | 0.197g | 0.15h | 0.119i |
| Volume (3) | 0.183a | 0.181a | 0.178ab | 0.179ab | 0.168bc | 0.164c | 0.155d | 0.133e | 0.125f | 0.1g | 0.076h | 0.059i |
| Volume (6) | 0.301a | 0.299ab | 0.298ab | 0.294abc | 0.288bc | 0.286c | 0.271d | 0.254e | 0.229f | 0.208g | 0.168h | 0.129i |
| Basic density | 0.468a | 0.471a | 0.468a | 0.464ab | 0.455bc | 0.449c | 0.436d | 0.409e | 0.384f | 0.352g | 0.298h | 0.239i |
| Pulp yield | 0.414a | 0.413a | 0.407ab | 0.409ab | 0.4b | 0.386c | 0.369d | 0.339e | 0.307f | 0.269g | 0.205h | 0.159i |
| **Average** | **0.278a** | **0.278a** | **0.275ab** | **0.272b** | **0.263c** | **0.253d** | **0.239e** | **0.216f** | **0.197g** | **0.175h** | **0.142i** | **0.113j** |

1 Number in the parentheses represents the age of the traits measurement;

2 The average of predictive ability on each number of SNPs across two methods is calculated by comprising four TS/VS compositions;

3 Alphabetic letters display significant difference between SNP sizes of each trait and method after one-way ANOVA and further paired t-tests, adjusted by Bonferroni correction;

4 SNP numbers: 40K = 40000 SNPs and else.