

# Multi-trait ridge regression BLUP with de novo GWAS improves genomic prediction for haploid induction ability and agronomic traits of haploid inducers in maize

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Supplementary Table1. The number of genotypes derived from different F<sub>1</sub> combinations or materials in phenotypic measurement and used in the training population of genomic prediction

| No. | Plant materials           | Phenotypic measurement |     |     |     | Training population in genomic prediction |     |     |     |             |
|-----|---------------------------|------------------------|-----|-----|-----|-------------------------------------------|-----|-----|-----|-------------|
|     |                           | DTF                    | HIR | PHT | PBL | DTF                                       | HIR | PHT | PBL | Multi-trait |
| 1   | A637-derived/BHI306       | 10                     | 10  | 10  | 26  | 10                                        | 10  | 10  | 26  | 10          |
| 2   | B73-derived/A637-derived  | 6                      | 6   | 6   | 5   | 6                                         | 6   | 6   | 5   | 5           |
| 3   | B73-derived/B84-derived   | 7                      | 6   | 7   | 7   | 7                                         | 6   | 7   | 7   | 6           |
| 4   | B73-derived/BHI306        | 11                     | 10  | 11  | 15  | 10                                        | 10  | 10  | 14  | 10          |
| 5   | B73-derived/MHI           | 29                     | 31  | 31  | 31  | 29                                        | 31  | 31  | 31  | 27          |
| 6   | B73-derived/Mo17-derived  | 16                     | 15  | 16  | 21  | 16                                        | 15  | 16  | 21  | 15          |
| 7   | B73-derived/PHG83-derived | 14                     | 13  | 14  | 33  | 14                                        | 13  | 14  | 33  | 13          |
| 8   | B84-derived/BHI306        | 8                      | 8   | 8   | 11  | 8                                         | 8   | 8   | 11  | 8           |
| 9   | FR19-derived/A637-derived | 12                     | 12  | 12  | 16  | 12                                        | 12  | 12  | 16  | 12          |

|    |                            |    |    |    |    |    |    |    |    |    |
|----|----------------------------|----|----|----|----|----|----|----|----|----|
| 10 | FR19-derived/B73-derived   | 16 | 16 | 16 | 23 | 16 | 16 | 16 | 23 | 16 |
| 11 | FR19-derived/BHI306        | 10 | 10 | 10 | 23 | 10 | 10 | 10 | 23 | 10 |
| 12 | LH82-derived/B73-derived   | 12 | 12 | 12 | 15 | 12 | 12 | 12 | 15 | 12 |
| 13 | LH82-derived/BHI306        | 13 | 13 | 13 | 18 | 13 | 13 | 13 | 18 | 13 |
| 14 | LH82-derived/Mo17-derived  | 10 | 9  | 10 | 16 | 10 | 9  | 10 | 16 | 9  |
| 15 | Mo17-derived/A637-derived  | 9  | 9  | 9  | 15 | 9  | 9  | 9  | 15 | 9  |
| 16 | Mo17-derived/BHI306        | 8  | 8  | 9  | 14 | 8  | 8  | 9  | 14 | 7  |
| 17 | PHG83-derived/A637-derived | 20 | 20 | 20 | 49 | 20 | 20 | 20 | 48 | 20 |
| 18 | PHG83-derived/B84-derived  | 10 | 10 | 10 | 15 | 10 | 10 | 10 | 15 | 10 |
| 19 | PHG83-derived/BHI306       | 11 | 10 | 11 | 28 | 11 | 10 | 11 | 28 | 10 |
| 20 | PHG83-derived/FR19-derived | 14 | 14 | 14 | 27 | 14 | 14 | 14 | 27 | 14 |
| 21 | PHG83-derived/LH82-derived | 5  | 5  | 5  | 9  | 5  | 5  | 5  | 9  | 5  |
| 22 | PHG83-derived/MHI          | 35 | 34 | 34 | 34 | 35 | 34 | 34 | 34 | 34 |
| 23 | PHG83-derived/Mo17-derived | 8  | 8  | 8  | 8  | 8  | 8  | 8  | 8  | 8  |
| 24 | Parents                    | 9  | 9  | 9  | 9  | 0  | 0  | 0  | 0  | 0  |
| 25 | MAGIC DHIs                 | 11 | 11 | 11 | 11 | 0  | 0  | 0  | 0  | 0  |
| 26 | Elite lines                | 8  | 8  | 8  | 8  | 0  | 0  | 0  | 0  | 0  |
| 27 | Others                     | 12 | 14 | 14 | 50 | 0  | 0  | 0  | 0  | 0  |