Table S1. Range and mean of different morphological traits in 169 BILs of maize under artificially inoculated and control environment

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S. No. | Characters | Inoculated environment (E1) | | Control environment (E2) | | DI-103  (E1) | DI-103  (E2) | Teosinte  (E1) | Teosinte  (E2) |
| Range | Mean | Range | Mean | Mean | Mean | Mean | Mean |
|  | DA | 45-67 | 56.85 | 47-68 | 58.88 | 52.5 | 54.5 | 81.5 | 81.5 |
|  | DS | 43-66 | 57.17 | 44-67 | 58.25 | 55.0 | 56.5 | 78.5 | 78.0 |
|  | ASI | -5 – 4 | 2.35 | -4 – 5 | 2.46 | 2.5 | 2.0 | -3.5 | -3.0 |
|  | FLL (cm) | 9.9 - 59.45 | 30.76 | 9.4-60.88 | 33.73 | 29.51 | 30.78 | 26.00 | 23.75 |
|  | FLW (cm) | 1.01- 6.56 | 3.92 | 2.8-7.6 | 4.53 | 4.53 | 4.66 | 3.88 | 3.5 |
|  | PH (cm) | 90.6-248 | 167.39 | 88-229.33 | 164.00 | 97.20 | 97.39 | 241.33 | 242.00 |
|  | E/P | 1.0-4.0 | 2.32 | 1.0-5.5 | 2.13 | 1.16 | 1.16 | 242.33 | 263.50 |
|  | NBE | 3-7.6.0 | 5.62 | 2.6 -7.6 | 5.71 | 4.5 | 4.16 | 6.16 | 5.83 |

Table S2. List of polymorphic markers used in the investigation, their PIC value, product length and number of alleles

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S. No. | Primer Name | No. of allele | Product length (bp) | PIC |
| 1 | *phi056* | 2 | 250-270 | 0.78 |
| 2 | *umc2025* | 3 | 140-180 | 0.79 |
| 3 | *umc1988* | 6 | 120-300 | 0.47 |
| 4 | *bnlg615* | 4 | 250-270 | 0.86 |
| 5 | *umc1245* | 2 | 150-190 | 0.44 |
| 6 | *dupssr12* | 3 | 140-190 | 0.72 |
| 7 | *umc1726* | 4 | 110-250 | 0.86 |
| 8 | *umc1538* | 4 | 150-210 | 0.64 |
| 9 | *umc1500* | 2 | 150-180 | 0.61 |
| 10 | *umc1622* | 2 | 80-90 | 0.62 |
| 11 | *umc1845* | 3 | 150-180 | 0.62 |
| 12 | *umc1024* | 2 | 180-200 | 0.67 |
| 13 | *umc1156* | 3 | 110-130 | 0.68 |
| 14 | *umc1126* | 3 | 150-170 | 0.64 |
| 15 | *bnlg1721* | 4 | 100-220 | 0.59 |
| 16 | *bnlg1662* | 2 | 150-190 | 0.63 |
| 17 | *bnlg1520* | 3 | 180-210 | 0.60 |
| 18 | *umc2118* | 2 | 130-150 | 0.62 |
| 19 | *dupssr5* | 4 | 120-250 | 0.58 |
| 20 | *phi104127* | 2 | 210-240 | 0.60 |
| 21 | *bnlg1144* | 2 | 150-200 | 0.62 |
| 22 | *umc2000* | 3 | 180-290 | 0.69 |
| 23 | *umc1030* | 3 | 100-150 | 0.56 |
| 24 | *bnlg197* | 3 | 80-120 | 0.29 |
| 25 | *umc1294* | 3 | 200-300 | 0.51 |
| 26 | *umc2281* | 3 | 180-200 | 0.61 |
| 27 | *umc1662* | 2 | 100-120 | 0.62 |
| 28 | *umc1869* | 3 | 130-250 | 0.74 |
| 29 | *umc1667* | 3 | 140-170 | 0.63 |
| 30 | *umc1939* | 4 | 170-280 | 0.64 |
| 31 | *umc1720* | 3 | 150-190 | 0.58 |
| 32 | *bnlg1006* | 4 | 190-250 | 0.62 |
| 33 | *phi10918* | 2 | 180-350 | 0.66 |
| 34 | *umc1692* | 2 | 110-200 | 0.60 |
| 35 | *umc1171* | 3 | 150-400 | 0.74 |
| 36 | *umc2164* | 3 | 120-150 | 0.69 |
| 37 | *umc2143* | 2 | 150-170 | 0.65 |
| 38 | *bnlg389* | 2 | 80-100 | 0.65 |
| 39 | *umc2307* | 3 | 150-350 | 0.68 |
| 40 | *phi075* | 3 | 220-250 | 0.58 |
| 41 | *bnlg1600* | 3 | 150-190 | 0.72 |
| 42 | *y1SSR* | 2 | 200-210 | 0.54 |
| 43 | *bnlg1371* | 2 | 90-150 | 0.65 |
| 44 | *umc1215* | 2 | 80-90 | 0.62 |
| 45 | *phi070* | 2 | 90-100 | 0.66 |
| 46 | *umc1127* | 3 | 180-200 | 0.74 |
| 47 | *phi089* | 2 | 90-100 | 0.62 |
| 48 | *umc1546* | 2 | 80-150 | 0.63 |
| 49 | *umc2392* | 5 | 200-600 | 0.61 |
| 50 | *umc1428* | 2 | 80-100 | 0.56 |
| 51 | *umc1393* | 2 | 100-120 | 0.76 |
| 52 | *phi091* | 2 | 110-130 | 0.56 |
| 53 | *phi328175* | 4 | 140-300 | 0.58 |
| 54 | *phi069* | 4 | 200-500 | 0.59 |
| 55 | *umc1154* | 2 | 150-190 | 0.63 |
| 56 | *umc2635* | 2 | 80-90 | 0.60 |
| 57 | *phi420701* | 2 | 300-320 | 0.55 |
| 58 | *umc1304* | 3 | 150-175 | 0.74 |
| 59 | *bnlg669* | 4 | 110-250 | 0.62 |
| 60 | *phi121* | 2 | 90-100 | 0.62 |
| 61 | *bnlg1176* | 3 | 190-260 | 0.58 |
| 62 | *bnlg162* | 2 | 250-290 | 0.65 |
| 63 | *bnlg1065* | 3 | 220-250 | 0.62 |
| 64 | *umc1673* | 2 | 80-100 | 0.76 |
| 65 | *umc1279* | 2 | 90-100 | 0.69 |
| 66 | *phi067* | 2 | 200-210 | 0.67 |
| 67 | *phi016* | 2 | 150-170 | 0.58 |
| 68 | *umc2341* | 2 | 140-170 | 0.67 |
| 69 | *bnlg1375* | 3 | 120-150 | 0.60 |
| 70 | *umc1152* | 2 | 190-200 | 0.64 |
| 71 | *phi054* | 2 | 100-110 | 0.65 |
| 72 | *umc1053* | 3 | 100-150 | 0.67 |
| 73 | *bnlg1074* | 3 | 190-400 | 0.65 |
| 74 | *bnlg1250* | 3 | 100-290 | 0.63 |
| 75 | *phi035* | 2 | 100-150 | 0.68 |
| 76 | *bnlg1677* | 3 | 180-200 | 0.69 |
| Total | *207* |  |  |  |
| Average | *2.70* |  |  | 0.64 |

Table S3. Trait, environment and chromosome wise QTLs identified in BILs of maize

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S. No. | Traits | Environment | No. of QTLs | Chromosome No. | | | | | | | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | DA | E1 | 3 |  |  |  | \* |  |  |  |  | \*\* |  |
| E2 | 4 |  |  |  | \* |  |  | \* |  | \*\* |  |
| 2 | DS | E1 | 4 |  |  | \* | \* |  |  | \* |  | \* |  |
| E2 | 3 |  |  |  | \* |  |  | \* |  | \* |  |
| 3 | ASI | E1 | 2 |  |  |  |  |  | \*\* |  |  |  |  |
| E2 | 2 | \* | \* |  |  |  |  |  |  |  |  |
| 4 | FLL (cm) | E1 | 4 |  |  |  | \* | \* |  | \* |  |  | \* |
| E2 | 4 |  |  | \* |  | \* |  | \*\* |  |  |  |
| 5 | FLW (cm) | E1 | 2 |  |  |  |  | \* | \* |  |  |  |  |
| E2 | 4 |  | \* |  |  | \* |  | \*\* |  |  |  |
| 6 | PH (cm) | E1 | 4 |  |  |  |  |  | \* |  | \*\* | \* |  |
| E2 | 9 |  | \* | \* | \*\* | \* | \* |  |  | \* | \*\* |
| 7 | E/P | E1 | 4 |  | \*\* |  |  | \* |  |  | \* |  |  |
| E2 | 7 | \* | \* | \*\* |  |  |  | \* |  |  | \*\* |
| 8 | NBE | E1 | 6 | \* |  |  | \* |  | \* | \*\* |  |  | \* |
| E2 | 4 |  |  |  |  |  |  | \*\*\* |  | \* |  |
| Total | | E1 | 29 | 1 | 2 | 1 | 4 | 3 | 5 | 4 | 3 | 4 | 2 |
| E2 | 37 | 2 | 4 | 4 | 4 | 3 | 1 | 10 | 0 | 5 | 4 |
| Grand Total | |  | 66 | 3 | 6 | 5 | 8 | 6 | 6 | 14 | 3 | 9 | 6 |

\*Chromosomal position of QTLs, E1= Artificially inoculated environment, E2=Control environment, DA- Days to 50 % anthesis, DS-Days to 50 % silking, ASI- Anthesis- silking interval, FLL-Flag leaf length, FLW-Flag leaf width, PH-Plant height, E/P-Ears per plant, NBE-Node bearing first ear

Table S4. List of Co-localized QTLs for different traits identified using 169 BILs of maize

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S. No. | Markers | Bin | Traits | | | | | | | |
| DA | DS | ASI | FLL | FLW | PH | E/P | NBE |
| 1 | *umc1622* | 2.00 |  |  | \* |  | \* |  | \* |  |
| 2 | *bnlg1662* | 2.08 |  |  |  | \* |  |  | \* |  |
| 3 | *dupssr5* | 3.00 |  |  |  |  |  | \* |  | \* |
| 4 | *umc1939* | 4.09 |  |  |  |  |  | \* |  | \* |
| 5 | *umc1720* | 4.10 | \* | \* |  |  |  |  |  |  |
| 6 | *umc2143* | 5.08 |  |  |  |  | \* |  | \* |  |
| 7 | *bnlg389* | 5.09 |  |  |  | \* |  | \* |  |  |
| 8 | *phi075* | 6.00 |  |  | \* |  |  | \* |  | \* |
| 9 | *umc1215* | 6.03 |  |  | \* |  | \* |  |  |  |
| 10 | *umc1428* | 7.01 |  |  |  | \* |  |  |  | \* |
| 11 | *umc1393* | 7.02 |  |  |  |  | \* |  | \* |  |
| 12 | *phi328175* | 7.04 | \* | \* |  | \* | \* |  |  |  |
| 13 | *umc1279* | 9.00 | \* |  |  |  |  | \* |  |  |
| 14 | *umc2341* | 9.05 | \* | \* |  |  |  |  |  | \* |
| 15 | *phi054* | 10.03 |  |  |  | \* |  | \* |  |  |
| 16 | *umc1053* | 10.04 |  |  |  |  |  | \* | \* |  |

Table S5. Pearson Correlation Matrix among different traits under E1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | DA | DS | ASI | FLL | FLW | PH | E/P | NBE |
| DA | 1 | 0.839\*\* | -0.250\*\* | 0.16\* | 0.63\* | -0.023 | 0.432\*\* | 0.094 |
| DS | 0.839\*\* | 1 | -0.016 | 0.02 | -0.05 | -0.09 | 0.324\*\* | -0.121 |
| ASI | -0.250\*\* | -0.016 | 1 | 0.18\* | 0.116 | 0.079 | 0.44\*\* | -0.018 |
| FLL | 0.16\* | 0.02 | 0.18\* | 1 | 0.622\*\* | 0.142\* | 0.39\*\* | 0.012 |
| FLW | 0.63\* | -0.053 | 0.116 | 0.622\*\* | 1 | 0.115 | -0.002 | 0.216\*\* |
| PH | -0.023 | -0.09 | 0.079 | 0.142\* | 0.115 | 1 | 0.188\* | 0.403\*\* |
| E/P | 0.432\*\* | 0.324\*\* | 0.44\*\* | 0.39\*\* | -0.002 | 0.188\* | 1 | 0.054 |
| NBE | -0.094 | -0.121 | -0.018 | -0.012 | 0.216\*\* | 0.403\*\* | 0.054 | 1 |

Table S6. Pearson Correlation Matrix among different traits under E2

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | DA | DS | ASI | FLL | FLW | PH | E/P | NBE |
| DA | 1 | 0.835\*\* | -0.155\* | 0.001 | 0.37\* | -0.08 | 0.427\*\* | -0.018 |
| DS | 0.835\*\* | 1 | -0.395\*\* | 0.023 | -0.061 | -0.172\* | 0.328\*\* | -0.004 |
| ASI | -0.155\* | -0.395\*\* | 1 | -0.005 | 0.156\* | 0.202\*\* | 0.07 | 0.017 |
| FLL | 0.001 | 0.023 | 0.005 | 1 | 0.655\*\* | 0.151\* | 0.084 | 0.167\* |
| FLW | 0.37\* | -0.061 | 0.156\* | 0.655\*\* | 1 | 0.307\*\* | -0.065 | 0.205\*\* |
| PH | -0.08 | -0.172\* | 0.202\*\* | 0.151\* | 0.307\*\* | 1 | 0.212\*\* | 0.254\*\* |
| E/P | 0.427\*\* | 0.328\*\* | 0.07 | 0.084 | -0.065 | 0.212\*\* | 1 | 0.012 |
| NBE | -0.018 | -0.004 | 0.017 | 0.167\* | 0.205\*\* | 0.254\*\* | 0.012 | 1 |

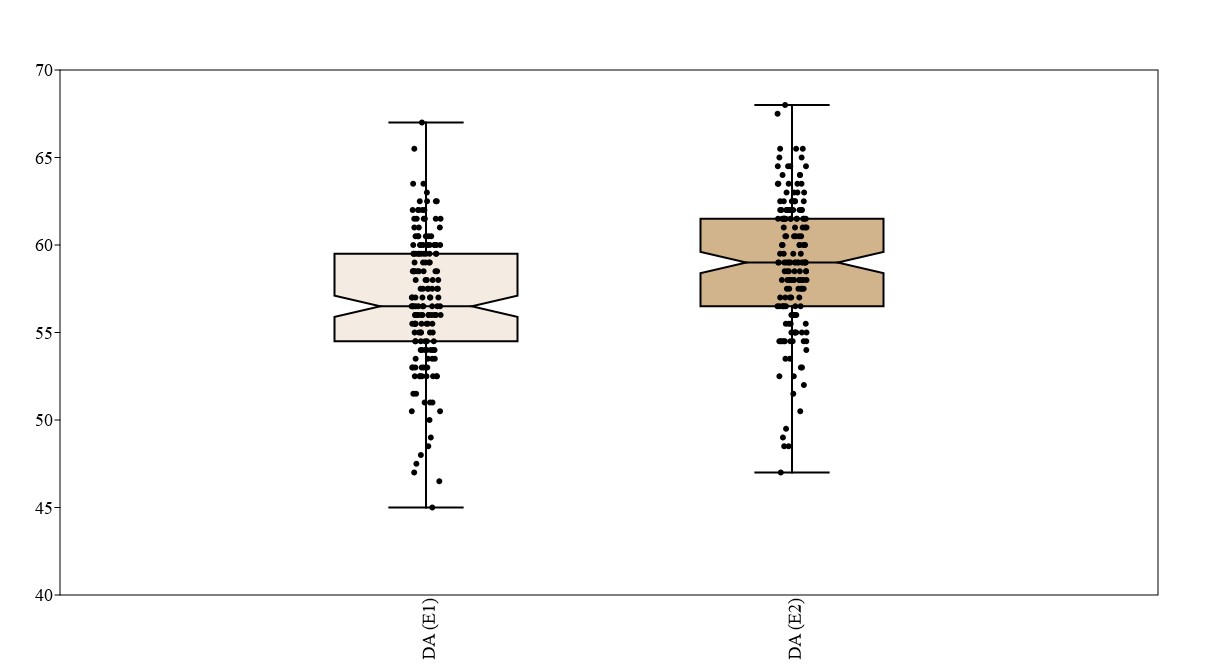


Figure S1.Diversity for days to anthesis in 169 BILs of maize under E1 and E2

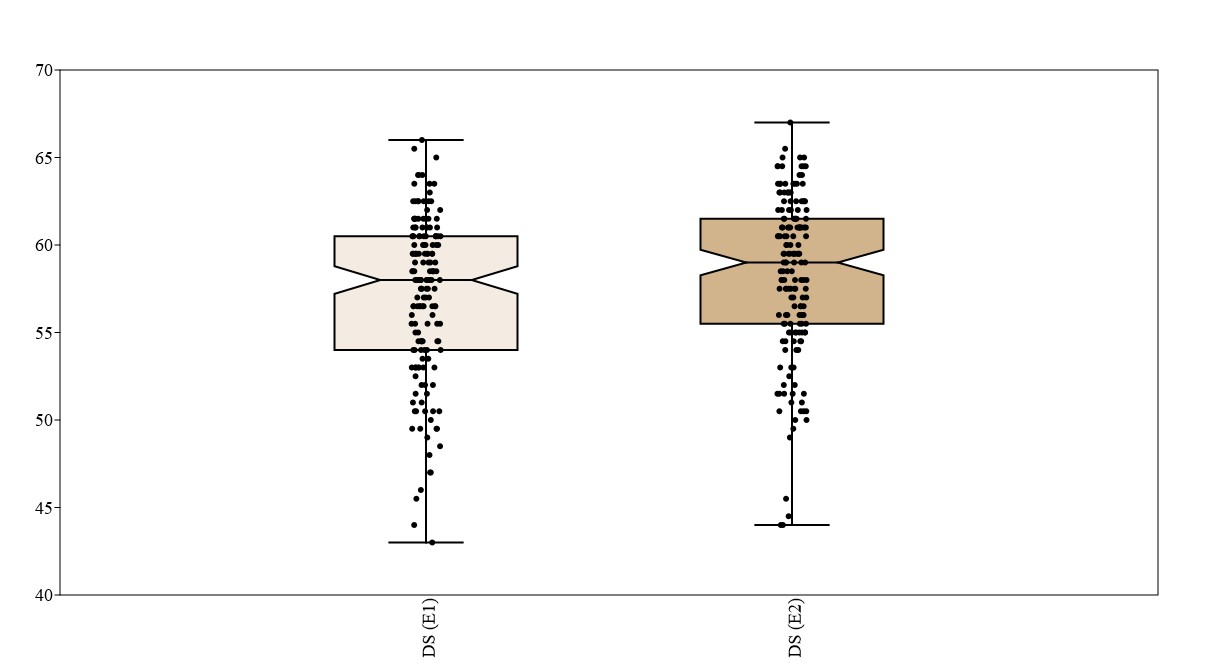


Figure S2.Diversity for days to silking in 169 BILs of maize under E1 and E2

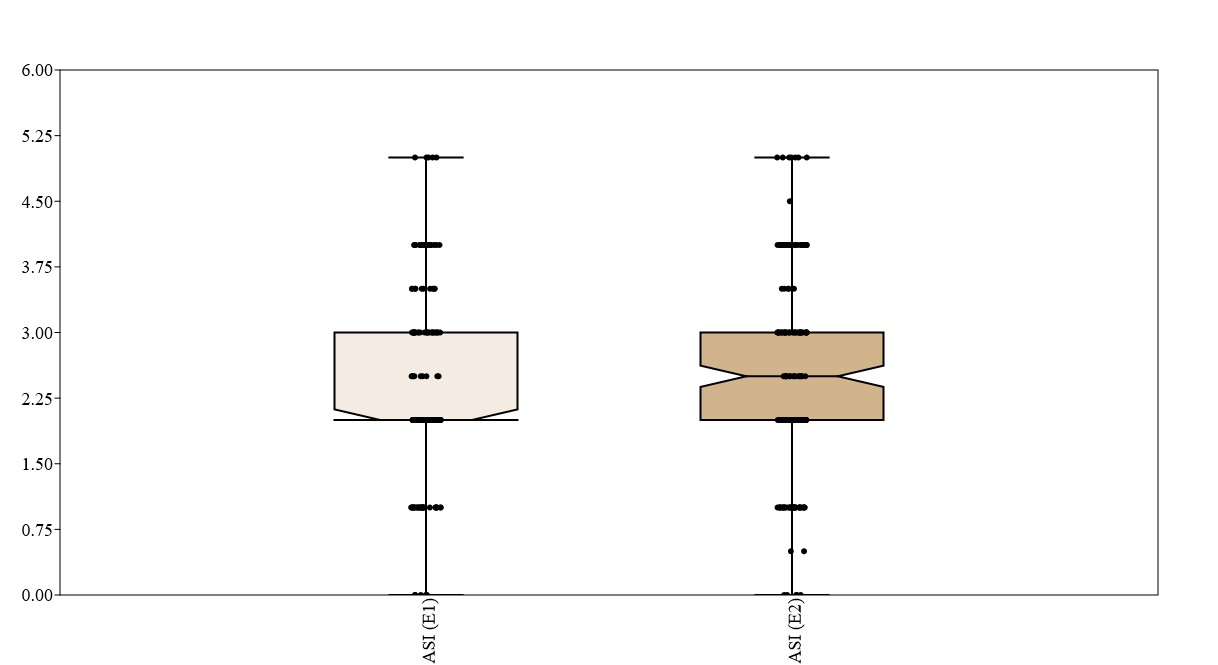


Figure S3.Diversity for anthesis-silking interval in 169 BILs of maize under E1 and E2

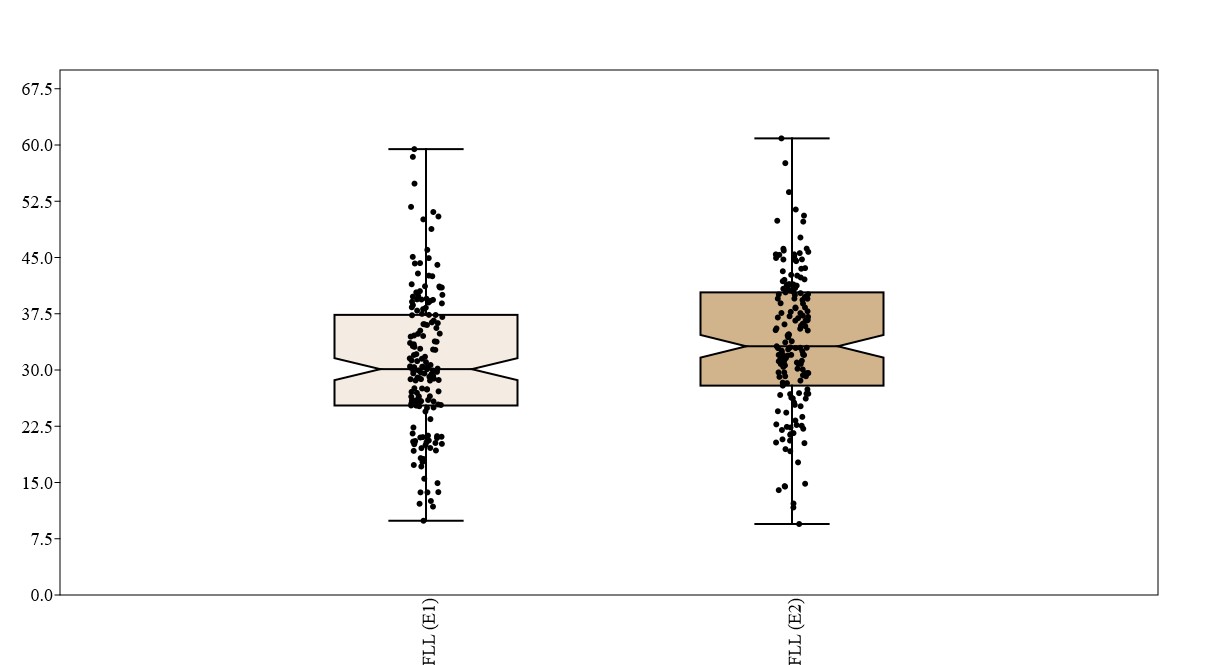


Figure S4.Diversity for flag leaf length in 169 BILs of maize under E1 and E2



Figure S5.Diversity for flag leaf length in 169 BILs of maize under E1 and E2

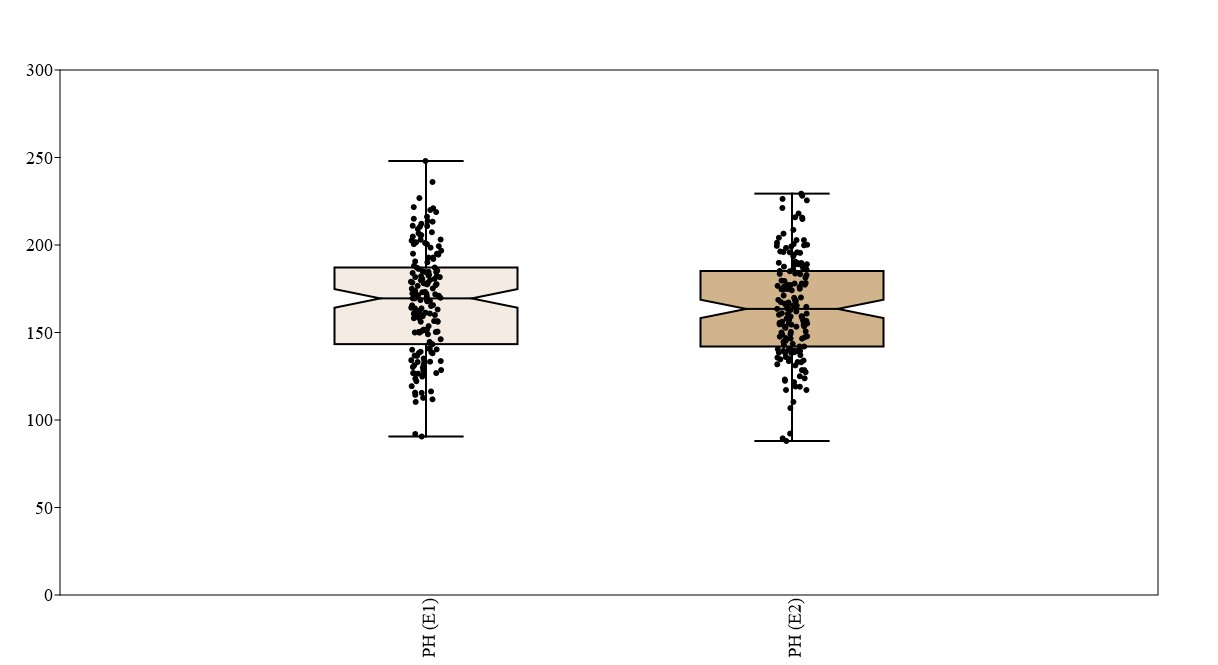


Figure S6.Diversity for plant height in 169 BILs of maize under E1 and E2

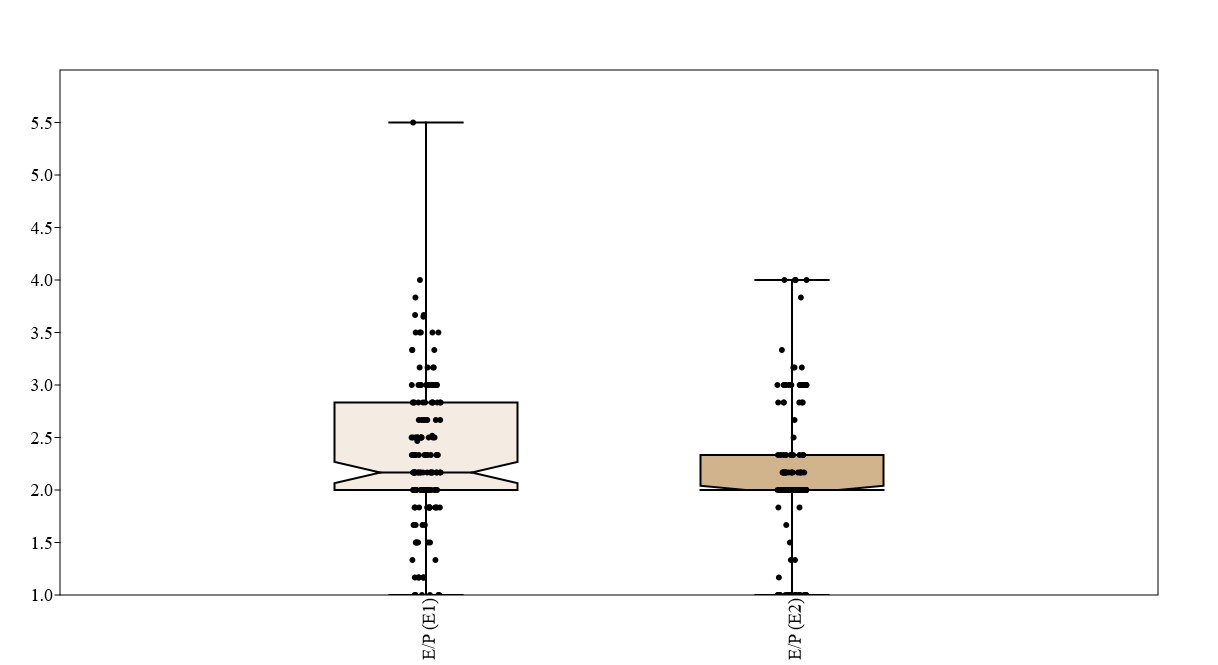


Figure S7.Diversity for ears per palnt in 169 BILs of maize under E1 and E2

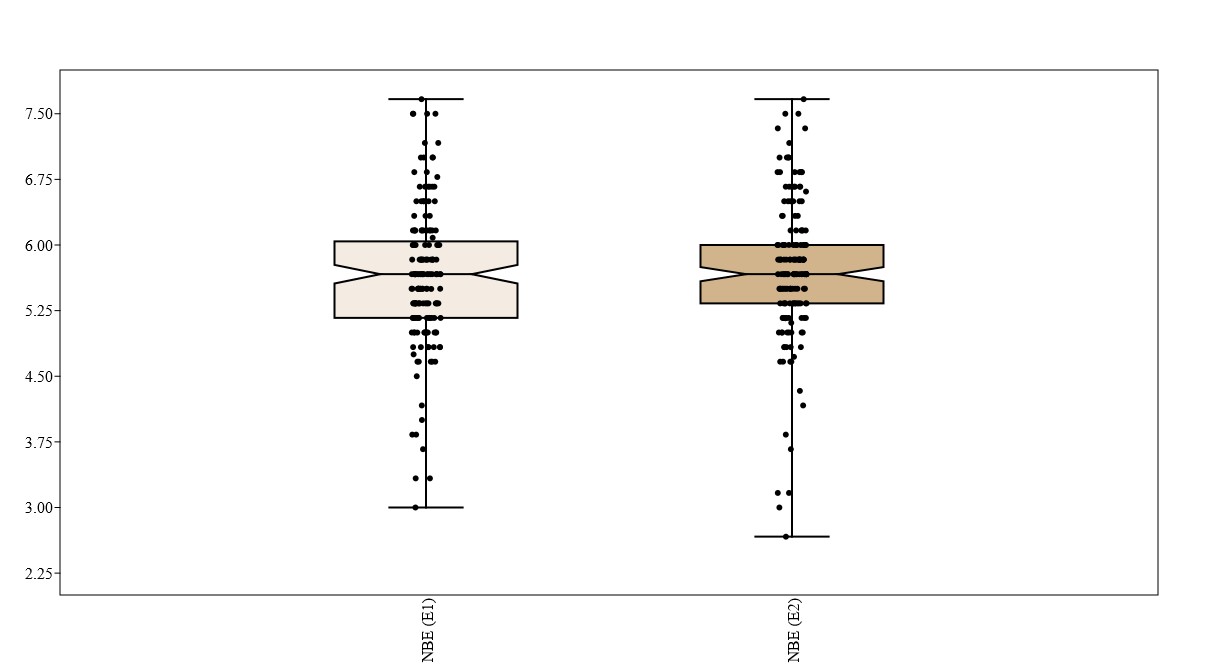


Figure S8.Diversity for node bearing first ear in 169 BILs of maize under E1 and E2