**Table S2:**

**The descriptive statistics and analysis of seed vigor traits in parents and IL - 2 population.**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Trait** | **Parents** | |  | **IL - 2 population** | | | | | |
| **Lumai 14** | **Jing 411** |  | **Mean** | **Variation** | **SD** | **Skewness** | **Kurtosis** | **CV(%)** |
| GE0h | 0.77 | 0.73 \*\* |  | 0.80 a | 0.44-0.99 | 0.12 | -0.98 | 0.69 | 0.15 |
| GE24h | 0.53 | 0.63 \* |  | 0.55 b | 0.27-0.85 | 0.14 | -0.05 | -0.87 | 0.26 |
| GE36h | 0.38 | 0.51 |  | 0.38 bc | 0.04-0.83 | 0.16 | 0.26 | -0.13 | 0.41 |
| GE48h | 0.25 | 0.39 |  | 0.20 c | 0.02-0.74 | 0.15 | 0.94 | 0.42 | 0.79 |
| GE60h | 0.16 | 0.37 \* |  | 0.09 d | 0.02-0.41 | 0.11 | 1.49 | 1.16 | 1.14 |
| GE72h | 0.04 | 0.35 \* \* |  | 0.04 d | 0.02-0.21 | 0.04 | 3.17 | 10.04 | 1.15 |
| GR0h | 0.97 | 0.97 |  | 0.96 a | 0.84-1.00 | 0.03 | -0.90 | 0.20 | 0.04 |
| GR24h | 0.81 | 0.95 |  | 0.85 a | 0.56-0.99 | 0.09 | -0.79 | -0.03 | 0.11 |
| GR36h | 0.79 | 0.89 \* |  | 0.74 ab | 0.32-0.95 | 0.12 | -0.42 | 0.11 | 0.16 |
| GR48h | 0.63 | 0.77 |  | 0.55 b | 0.17-0.95 | 0.17 | 0.17 | -0.81 | 0.32 |
| GR60h | 0.49 | 0.72 \* |  | 0.30 c | 0.02-0.85 | 0.20 | 0.77 | -0.19 | 0.67 |
| GR72h | 0.29 | 0.68 \*\* |  | 0.13 c | 0.02-0.56 | 0.14 | 1.58 | 1.68 | 1.02 |
| GI0h | 15.06 | 14.92 |  | 15.08 a | 11.7-16.58 | 1.02 | -0.98 | 0.51 | 0.07 |
| GI24h | 11.89 | 14.06 |  | 12.29 b | 7.49-15.77 | 1.80 | -0.54 | -0.51 | 0.15 |
| GI36h | 10.79 | 12.64 \* |  | 10.10 b | 4.03-15.00 | 2.19 | -0.07 | -0.47 | 0.22 |
| GI48h | 8.18 | 10.49 \* |  | 6.90 c | 1.82-14.59 | 2.75 | 0.43 | -0.55 | 0.40 |
| GI60h | 6.03 | 9.78 \* |  | 3.39 d | 0.24-10.99 | 2.66 | 0.97 | -0.03 | 0.78 |
| GI72h | 2.84 | 9.26 \*\* |  | 1.44 d | 0.14-7.01 | 1.64 | 1.92 | 2.98 | 1.14 |
| GP0h | 30.22 | 29.79 |  | 30.60 a | 25.26-33.18 | 1.80 | -1.20 | 1.08 | 0.06 |
| GP24h | 27.69 | 28.24 |  | 26.94 b | 21.8-31.66 | 2.16 | -0.04 | -0.53 | 0.08 |
| GP36h | 25.34 | 26.48 |  | 24.86 b | 19.21-30.61 | 2.35 | 0.32 | -0.17 | 0.09 |
| GP48h | 24.32 | 25.41 |  | 22.56 bc | 17.96-29.48 | 2.40 | 0.31 | 0.04 | 0.11 |
| GP60h | 22.21 | 25.09 \* |  | 20.23 c | 15.02-30.33 | 3.00 | 0.73 | 0.29 | 0.15 |
| GP72h | 18.46 | 24.43 \*\* |  | 20.09 c | 14.29-33.33 | 4.01 | 1.95 | 4.39 | 0.20 |
| SL0h | 11.11 | 10.35 \*\* |  | 11.68 a | 8.75-15.49 | 1.47 | 0.44 | -0.46 | 0.13 |
| SL24h | 10.51 | 9.79 \* |  | 10.98 a | 7.98-14.72 | 1.36 | 0.50 | -0.07 | 0.12 |
| SL36h | 9.89 | 9.63 |  | 10.04 a | 7.56-13.22 | 1.28 | 0.42 | -0.37 | 0.13 |
| SL48h | 9.19 | 9.41 |  | 8.22 b | 3.58-12.63 | 1.62 | -0.27 | 0.84 | 0.20 |
| SL60h | 8.50 | 9.13 |  | 5.69 c | 0.46-11.63 | 2.16 | 0.21 | -0.50 | 0.38 |
| SL72h | 7.53 | 8.72 \* |  | 4.36 c | 0.31-9.31 | 2.16 | 0.21 | -0.47 | 0.49 |
| RL0h | 9.87 | 7.35 \*\* |  | 8.79 a | 3.89-12.75 | 1.54 | -0.19 | 0.10 | 0.17 |
| RL24h | 9.71 | 7.01 \*\* |  | 8.45 a | 3.93-12.01 | 1.51 | -0.37 | -0.01 | 0.18 |
| RL36h | 9.29 | 6.67 \*\* |  | 7.98 ab | 3.81-11.17 | 1.40 | -0.23 | -0.05 | 0.17 |
| RL48h | 8.73 | 6.44 \*\* |  | 6.81 b | 2.70-9.67 | 1.42 | -0.31 | -0.10 | 0.21 |
| RL60h | 8.72 | 6.01 \* |  | 4.98 c | 0.32-8.91 | 1.77 | 0.12 | -0.54 | 0.36 |
| RL72h | 7.15 | 5.61 \*\* |  | 3.99 c | 0.23-8.46 | 1.90 | -0.01 | -0.50 | 0.48 |
| SFW0h | 71.76 | 74.89 |  | 78.56 a | 59.39-107.75 | 9.26 | 0.12 | 0.36 | 0.10 |
| SFW24h | 66.99 | 69.44 |  | 73.24 ab | 53.19-101.24 | 9.22 | 0.13 | 0.40 | 0.13 |
| SFW36h | 61.56 | 65.99 |  | 66.19 b | 47.36-95.78 | 8.63 | 0.13 | 0.58 | 0.57 |
| SFW48h | 58.41 | 65.67 \*\* |  | 54.81 c | 28.38-78.53 | 9.43 | 0.17 | -0.26 | 0.11 |
| SFW60h | 54.19 | 63.52 \*\* |  | 40.62 d | 14.08-76.54 | 11.95 | 0.29 | 0.28 | -0.24 |
| SFW72h | 44.96 | 60.19 \*\* |  | 33.66 d | 13.00-57.89 | 10.41 | 0.31 | 0.43 | -0.29 |
| RFW0h | 54.36 | 49.61 |  | 55.18 a | 28.73-77.13 | 9.30 | -0.28 | -0.06 | 0.17 |
| RFW24h | 51.64 | 47.92 |  | 53.29 a | 26.62-76.26 | 10.05 | -0.26 | 0.00 | 0.19 |
| RFW36h | 49.00 | 44.39 |  | 50.34 a | 21.28-74.92 | 9.63 | -0.11 | 0.22 | 0.19 |
| RFW48h | 48.04 | 43.79 \* |  | 43.54 b | 18.88-65.38 | 9.85 | -0.14 | -0.69 | 0.23 |
| RFW60h | 45.44 | 42.67 |  | 32.61 c | 9.20-60.20 | 11.01 | 0.13 | -0.42 | 0.34 |
| RFW72h | 36.64 | 39.78 |  | 27.12 c | 7.90-49.70 | 9.32 | 0.26 | -0.31 | 0.34 |
| VI0h | 167.33 | 154.35 \* |  | 176.04 a | 108.98-238.9 | 25.92 | 0.32 | -0.02 | 0.15 |
| VI24h | 124.92 | 137.66 |  | 134.79 b | 73.56-200.03 | 26.15 | 0.20 | -0.19 | 0.19 |
| VI36h | 106.58 | 121.84 |  | 100.77 c | 41.41-172.73 | 26.82 | 0.41 | -0.01 | 0.27 |
| VI48h | 75.66 | 98.68 |  | 59.16 d | 7.11-155.15 | 30.78 | 0.87 | 0.49 | 0.52 |
| VI60h | 51.79 | 89.38 \* |  | 27.16 e | 0.21-134.42 | 27.40 | 1.56 | 2.32 | 1.01 |
| VI72h | 21.59 | 80.98 \*\* |  | 13.04 e | 0.12-64.33 | 15.28 | 1.57 | 1.74 | 1.17 |
| SVI0h | 10.74 | 10.00 |  | 11.14 a | 7.58-15.28 | 1.48 | 0.51 | 0.02 | 0.13 |
| SVI24h | 8.55 | 9.27 |  | 9.30 a | 5.52-13.34 | 1.56 | 0.27 | 0.12 | 0.17 |
| SVI36h | 7.83 | 8.61 |  | 7.42 ab | 3.36-11.45 | 1.54 | 0.18 | -0.05 | 0.21 |
| SVI48h | 5.77 | 7.28 |  | 4.66 b | 0.61-10.08 | 2.02 | 0.48 | -0.15 | 0.43 |
| SVI60h | 4.22 | 6.58 \* |  | 2.26 bc | 0.16-8.55 | 1.91 | 1.20 | 0.91 | 0.85 |
| SVI72h | 2.23 | 5.95 \*\* |  | 1.15 c | 0.01-5.02 | 1.21 | 1.33 | 0.92 | 1.06 |

**Note:** GE, GR, GI, GP, SL, RL, SFW, RFW, VI, SVI = Germinating Energy, Germination Rate, Germination Index, Germination pace, Seedling Length, Root Length, Seedling Fresh Weight, Root Fresh Weight, Vigor Index, and Simple Vigor Index, respectively. 0 h, 24 h, 36 h, 48 h, 60 h, and 72 h represent aging time respectively. Seedling and Root length is measured in centimeters, Seedling and Root weight is measured in milligram. \* and \*\* represent the significance level at *p* < 0.05 and *p* < 0.01, respectively. Different lowercase letters in the same column showed significant difference (*p* < 0.05).