**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).