**Table S1:**

**The descriptive statistics and analysis of seed vigor traits in parents and IL-1** **population.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Trait** | **Parents** |  | **IL - 1 population** |
| **Lumai 14** | **shaanhan8675** |  | **Mean** | **Variation** | **SD** | **Skewness** | **Kurtosis** | **CV (%)** |
| GE0h | 0.84  | 0.73  |  | 0.82 a  | 0.49-0.97 | 0.10  | -0.77  | 0.35  | 0.12  |
| GE24h | 0.63  | 0.65  |  | 0.64 ab  | 0.26-0.92 | 0.16  | -0.52  | -0.48  | 0.26  |
| GE36h | 0.51  | 0.55  |  | 0.53 b  | 0.10-0.89 | 0.20  | -0.44  | -0.78  | 0.37  |
| GE48h | 0.43  | 0.51  |  | 0.41 b  | 0.02-0.83 | 0.22  | -0.33  | -0.97  | 0.54  |
| GE60h | 0.29  | 0.43 \* |  | 0.22 c  | 0.02-0.72 | 0.20  | 0.66  | -0.71  | 0.91  |
| GE72h | 0.10  | 0.33 \* |  | 0.14 c  | 0.02-0.61 | 0.16  | 1.31  | 0.46  | 1.20  |
| GR0h | 0.97  | 0.91  |  | 0.96 a  | 0.88-0.99 | 0.02  | -1.10  | 1.06  | 0.02  |
| GR24h | 0.91  | 0.85 \* |  | 0.91 a  | 0.67-0.99 | 0.07  | -1.39  | 1.75  | 0.08  |
| GR36h | 0.87  | 0.79  |  | 0.85 ab  | 0.52-0.99 | 0.11  | -1.07  | 0.34  | 0.13  |
| GR48h | 0.79  | 0.71  |  | 0.76 b  | 0.28-0.97 | 0.17  | -0.98  | 0.18  | 0.22  |
| GR60h | 0.57  | 0.67  |  | 0.55 c  | 0.03-0.95 | 0.25  | -0.44  | -1.07  | 0.45  |
| GR72h | 0.45  | 0.57  |  | 0.34 c  | 0.02-0.91 | 0.27  | 0.35  | -1.21  | 0.79  |
| GI0h | 15.51  | 14.14 \*\* |  | 15.27 a  | 12.78-16.39 | 0.75  | -0.95  | 0.91  | 0.05  |
| GI24h | 13.41  | 12.96  |  | 13.62 a  | 8.40-15.95 | 1.72  | -1.00  | 0.54  | 0.13  |
| GI36h | 12.39  | 11.56  |  | 12.17 ab  | 4.34-16.02 | 2.42  | -0.87  | 0.00  | 0.20  |
| GI48h | 10.81  | 10.64  |  | 10.54 b  | 1.57-15.47 | 3.15  | -0.85  | -0.11  | 0.30  |
| GI60h | 7.55  | 9.67  |  | 7.21 c  | 0.89-14.62 | 3.74  | -0.13  | -1.20  | 0.52  |
| GI72h | 5.46  | 8.12  |  | 4.21 c  | 0.15-13.45 | 3.71  | 0.64  | -0.81  | 0.88  |
| GP0h | 31.20  | 30.22  |  | 30.98 a  | 26.00-33.26 | 1.43  | -0.97  | 0.88  | 0.05  |
| GP24h | 27.96  | 28.86  |  | 28.42 a  | 22.32-32.36 | 2.32  | -0.60  | -0.31  | 0.08  |
| GP36h | 26.99  | 27.37  |  | 26.86 b  | 20.23-31.67 | 2.56  | -0.51  | -0.35  | 0.10  |
| GP48h | 25.55  | 27.85  |  | 25.43 b  | 18.42-31.37 | 2.94  | -0.41  | -0.46  | 0.12  |
| GP60h | 23.87  | 26.64  |  | 22.85 c  | 16.40-30.13 | 3.22  | 0.15  | -0.58  | 0.14  |
| GP72h | 22.44  | 26.51 \*\* |  | 21.42 c  | 15.48-29.17 | 3.16  | 0.45  | -0.53  | 0.15  |
| SL0h | 11.31  | 11.77  |  | 11.04 a  | 9.04-14.43 | 0.92  | 0.66  | 1.45  | 0.08  |
| SL24h | 10.62  | 11.53  |  | 10.55 a  | 8.63-14.43 | 0.92  | 0.65  | 1.79  | 0.09  |
| SL36h | 10.38  | 11.10  |  | 9.91 ab  | 7.98-13.26 | 0.88  | 0.57  | 1.68  | 0.09  |
| SL48h | 9.70  | 10.33  |  | 9.12 ab  | 5.37-12.68 | 1.21  | -0.32  | 0.84  | 0.13  |
| SL60h | 9.10  | 9.58  |  | 7.54 b  | 2.27-10.99 | 1.88  | -0.82  | 0.21  | 0.25  |
| SL72h | 8.28  | 7.69  |  | 6.02 b  | 0.29-10.49 | 2.45  | -0.64  | -0.38  | 0.41  |
| RL0h | 10.75  | 9.00 \*\* |  | 10.08 a  | 7.32-12.63 | 1.08  | -0.02  | -0.24  | 0.11  |
| RL24h | 10.22  | 8.80 \* |  | 9.74 a  | 6.92-12.68 | 1.02  | 0.05  | 0.40  | 0.10  |
| RL36h | 9.40  | 8.38 \* |  | 9.28 a  | 6.22-12.07 | 1.01  | 0.16  | 0.27  | 0.11  |
| RL48h | 9.28  | 8.28 \* |  | 8.73 ab  | 5.11-11.85 | 1.24  | -0.43  | 0.68  | 0.14  |
| RL60h | 8.83  | 7.61 \* |  | 7.59 b  | 2.83-11.29 | 1.81  | -0.80  | 0.15  | 0.24  |
| RL72h | 8.20  | 6.78  |  | 6.30 c  | 0.37-9.70 | 2.32  | -0.95  | 0.27  | 0.37  |
| SFW0h | 75.24  | 70.32  |  | 76.13 a  | 60.88-103.87 | 7.65  | 0.67  | 0.87  | 0.10  |
| SFW24h | 67.50  | 70.69  |  | 70.68 a  | 53.44-91.04 | 7.14  | 0.60  | 0.36  | 0.10  |
| SFW36h | 65.03  | 67.79  |  | 65.53 ab  | 50.52-86.14 | 6.46  | 0.55  | 1.20  | 0.10  |
| SFW48h | 58.19  | 62.14  |  | 60.29 b  | 44.21-82.26 | 7.46  | 0.43  | 0.32  | 0.12  |
| SFW60h | 57.40  | 56.21  |  | 50.22 c  | 19.54-78.85 | 10.53  | -0.47  | 0.23  | 0.21  |
| SFW72h | 50.92  | 47.48  |  | 42.02 d  | 14.63-74.04 | 11.84  | -0.16  | -0.04  | 0.28  |
| RFW0h | 57.46  | 64.83  |  | 58.40 a  | 35.84-77.96 | 7.74  | -0.15  | 0.43  | 0.13  |
| RFW24h | 52.62  | 62.35\* |  | 55.73 a  | 32.69-73.24 | 7.72  | -0.56  | 0.45  | 0.14  |
| RFW36h | 51.73  | 61.01 \* |  | 53.71 a  | 35.28-77.56 | 7.22  | 0.07  | 0.59  | 0.13  |
| RFW48h | 48.98  | 59.83\* |  | 49.74 ab  | 21.55-70.54 | 8.68  | -0.47  | 0.35  | 0.17  |
| RFW60h | 48.34  | 54.32  |  | 43.73 b  | 17.16-65.91 | 9.58  | -0.45  | 0.03  | 0.22  |
| RFW72h | 43.62  | 45.54  |  | 36.66 c  | 7.20-67.35 | 10.70  | -0.21  | 0.10  | 0.29  |
| VI0h | 175.44  | 166.65  |  | 169.24 a  | 133.12-222.76 | 15.14  | 0.19  | 0.77  | 0.09  |
| VI24h | 142.39  | 149.66  |  | 144.21 b  | 91.47-200.34 | 21.55  | -0.07  | -0.02  | 0.15  |
| VI36h | 128.60  | 127.93  |  | 122.35 c  | 61.31-178.66 | 28.12  | -0.37  | -0.77  | 0.23  |
| VI48h | 104.81  | 110.74  |  | 100.49 d  | 18.43-155.11 | 34.63  | -0.54  | -0.62  | 0.34  |
| VI60h | 68.53  | 92.96  |  | 61.19 e  | 2.00-135.72 | 38.10  | 0.11  | -1.11  | 0.62  |
| VI72h | 44.87  | 63.44  |  | 39.38 e  | 0.10-119.18 | 32.36  | 0.67  | -0.59  | 0.82  |
| SVI0h | 11.01  | 10.69  |  | 10.62 a  | 8.62-13.95 | 0.89  | 0.44  | 1.16  | 0.08  |
| SVI24h | 9.63  | 9.84  |  | 9.59 a  | 7.01-12.79 | 1.08  | 0.11  | 0.30  | 0.11  |
| SVI36h | 9.00  | 8.72  |  | 8.46 ab  | 5.37-11.81 | 1.44  | -0.33  | -0.51  | 0.17  |
| SVI48h | 7.63  | 7.41  |  | 7.02 b  | 1.92-10.79 | 2.08  | -0.60  | -0.46  | 0.30  |
| SVI60h | 5.22  | 6.41  |  | 4.65 c  | 0.18-9.23 | 2.52  | -0.15  | -1.19  | 0.54  |
| SVI72h | 3.73  | 4.47  |  | 3.05 c  | 0.01-8.18 | 2.28  | 0.43  | -0.91  | 0.75  |

**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).