**Table S1: Details of *Gymnema sylvestre* accessions collected and used in the experiment**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl No** | **Genotype** | **Place of Collection** | **Latitude** ( oN) | **Longitude (0E)** |
| 1 | IIHR-GS-1 | Sonnenahalli, Karnataka | 13.15° N | 77.49° E |
| 2 | IIHR-GS-2 | Sonnenahalli, Karnataka | 13.15° N | 77.49° E |
| 3 | IIHR-GS-3 | Rajendranagar, Telengana | 17. 18 ° N | 78. 24° E |
| 4 | IIHR-GS-4 | Chikkabylakere, Karanataka | 13.11° N | 77.52° E |
| 5 | IIHR-GS-5 | Madurai, Tamil Nadu | 9.92° N | 78.12°E |
| 6 | IIHR-GS-6 | Dibbur, Karnataka | 13.17° N | 77.53° E |
| 7 | IIHR-GS-9 | Byatha, Karnataka | 13.18° N | 77.48° E |
| 8 | IIHR-GS-10 | Byatha, Karanataka | 13.18° N | 77.48° E |
| 9 | IIHR-GS-11 | V.R.Gudem, Andhra Pradesh | 18.33° N | 83.79° E |
| 10 | IIHR-GS-13 | Kurnool, Andhra Pradesh | 16.43° N | 80.56° E |
| 11 | IIHR-GS-14 | Anantpur, Andhra Pradesh | 14.64° N | 77.63° E |
| 12 | IIHR-GS-15 | Hesserghata Main Road, Karnataka | 13.13° N | 77.47° E |
| 13 | IIHR-GS-16 | Hessaraghatta Main Road, karanataka | 13.13° N | 77.47° E |
| 14 | IIHR-GS-20 | GKVK, Karnataka | 13.08° N | 77.57° E |
| 15 | IIHR-GS-21 | TDU, Yelahanka, Karanataka | 13.12° N | 77.54 ° E |
| 16 | IIHR-GS-23 | Jarakabandi stateforest, Karanataka | 13.06° N | 77.53° E |
| 17 | IIHR-GS-25 | Dindigul, Tamil Nadu | 10.28°N | 77.98°E |
| 18 | IIHR-GS-27 | Chikkaballapur, Karnataka | 13.43°N | 77.75°E |
| 19 | IIHR-GS-28 | Chikkaballapur, Karnataka | 13.43°N | 77.71°E |
| 20 | IIHR-GS-29 | Belavangala, Karanataka | 13.28°N | 77.42°E |
| 21 | IIHR-GS-30 | Kumbharhalli, Kranataka | 13.09°N | 77.49°E |
| 22 | IIHR-GS-31 | Byatha, Karanataka | 13.17°N | 77.481°E |
| 23 | IIHR-GS-32 | Hesserghata Lakeside-1, Karanataka | 13.15°N | 77.48°E |
| 24 | IIHR-GS-35 | Siddarabetta road, Tumakuru, Karanataka | 13.56°N | 77.14°E |
| 25 | IIHR-GS-36 | Mudigere, Karanataka | 13.19°N | 75.65°E |
| 26 | IIHR-GS-37 | Mudigere, Karanataka | 13.11°N | 75.62°E |
| 27 | IIHR-GS-38 | Mudigere, Karanataka | 13.08°N | 75.61°E |
| 28 | IIHR-GS-39 | Mudigere, Karanataka | 13.24°N | 75.64°E |
| 29 | IIHR-GS-40 | Vellayani, Kerala | 8.44°N | 76.99°E |
| 30 | IIHR-GS-41 | Pangodu, Kerala | 8.50°N | 76.98°E |
| 31 | IIHR-GS-42 | TBGRI, Kerala | 8.77°N | 77.02°E |
| 32 | IIHR-GS-44 | Tumakuru, Karnataka | 13.34°N | 77.14°E |
| 33 | IIHR-GS-12 | Byatha, Karanataka | 13.18°N | 77.48°E |
| 34 | IIHR-GS-18 | IIHR Field, Hesaraghatta, Karanataka | 13.13°N | 77.49°E |
| 35 | IIHR-GS-19 | IIHR Field, Hesaraghatta, Karanataka | 13.13°N | 77.49°E |

**Table S2. Analysis of variance for growth, yield and quality parameters in *G. sylvestre* accessions**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Source of variation** | **Block (ignoring Treatments)** | **Treatment (eliminating Blocks)** | **Block (eliminating Check+Treat.)** | **Checks** | **Treatment** | **Checks vs. Treatment** | **Error** |
| **Degrees of freedom (df)** | 3 | 34 | 3 | 2 | 31 | 1 | 6 |
| **Leaf length (cm)** | 0.536 \* | 1.360 \* | 0.001 | 8.772 \* | 0.975 \* | 0.058 | 0.013 |
| **Leaf breadth (cm)** | 0.278 \* | 0.940 \* | 0.033 | 7.525 \* | 0.559 \* | 0.292 \* | 0.015 |
| **Petiole length (cm)** | 0.051 \* | 0.115 | 0.003 | 0.808 \* | 0.076 | 0.084 | 0.002 |
| **Leaf thickness (mm)** | 0.001 | 0.003 | 0 | 0.014 \* | 0.002 | 0.002 | 0 |
| **Internodal length (cm)** | 1.180 \* | 5.649 \* | 0.131 | 13.932 \* | 5.048 \* | 10.865 \* | 0.153 |
| **Leaf area(cm2)** | 22.343 \* | 40.652 \* | 0.012 | 307.083 \* | 23.634 \* | 102.337 \* | 0.033 |
| **Leaf area index** | 0.000 \* | 0.001 \* | 0 | 0.005 \* | 0.000 \* | 0.002 \* | 0 |
| **Chlorophyll content (SPAD units)** | 52.581 | 40.385\* | 0.561 | 212.036\* | 34.492 \* | 35.824 \* | 2.526 |
| **Fresh leaf yield per plant (kg)** | 2.325 \* | 0.275\* | 0.717 \* | 1.355 \* | 0.348\* | 0.685\* | 0.136 |
| **Dry leaf yield per plant (kg)** | 0.157 \* | 0.022\* | 0.057 \* | 0.109 \* | 0.024\* | 0.067 \* | 0.008 |
| **Gymnemagenin content (%) (w/w)** | 0.198 \* | 0.389 \* | 0.001 | 3.049 \* | 0.231 \* | 0.542 \* | 0.006 |

## \* Correlation is significant at 0.05 level

**Table S 3. *Per se* performance of individual accession with respect to various growth, yield and quality from two different years (2021-22 and 2022-23)**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl no** | **Accessions** | **Leaf length (cm)** | | **Leaf breadth (cm)** | | **Petiole length (cm)** | | **Leaf thickness (mm)** | | **Internodal length (cm)** | |
|  |  | **2021-22** | **2022-23** | **2021-22** | **2022-23** | **2021-22** | **2022-23** | **2022-23** | **2022-23** | **2022-23** | **2022-23** |
| **1.** | IIHR-GS-1 | 5.84 | 5.88 | 3.00 | 2.98 | 0.95 | 0.99 | 0.28 | 0.3 | 11.60 | 11.8 |
| **2.** | IIHR-GS-2 | 4.77 | 4.89 | 2.27 | 2.31 | 0.94 | 0.96 | 0.28 | 0.28 | 10.40 | 10.45 |
| **3.** | IIHR-GS-3 | 4.96 | 5.00 | 2.92 | 3.03 | 0.91 | 0.95 | 0.33 | 0.32 | 10.52 | 10.60 |
| **4.** | IIHR-GS-4 | 5.44 | 5.45 | 3.42 | 3.44 | 1.35 | 1.37 | 0.24 | 0.24 | 11.24 | 11.20 |
| **5.** | IIHR-GS-5 | 5.15 | 5.13 | 3.24 | 3.22 | 1.06 | 1.06 | 0.29 | 0.28 | 13.65 | 13.70 |
| **6.** | IIHR-GS-6 | 5.25 | 5.21 | 2.79 | 2.75 | 1.27 | 1.29 | 0.33 | 0.32 | 11.07 | 11.10 |
| **7.** | IIHR-GS-9 | 4.81 | 4.83 | 3.25 | 3.33 | 1.17 | 1.21 | 0.28 | 0.27 | 14.54 | 14.60 |
| **8.** | IIHR-GS-10 | 4.39 | 4.13 | 2.50 | 2.48 | 0.81 | 0.86 | 0.32 | 0.31 | 12.40 | 12.39 |
| **9.** | IIHR-GS-11 | 5.79 | 5.77 | 3.60 | 3.58 | 1.71 | 1.75 | 0.32 | 0.31 | 8.54 | 8.64 |
| **10.** | IIHR-GS-13 | 5.11 | 5.16 | 2.69 | 2.73 | 1.02 | 1.04 | 0.26 | 0.25 | 13.34 | 13.32 |
| **11.** | IIHR-GS-14 | 5.51 | 5.94 | 3.33 | 3.29 | 1.41 | 1.43 | 0.37 | 0.36 | 13.44 | 13.52 |
| **12.** | IIHR-GS-15 | 5.75 | 5.77 | 3.61 | 3.59 | 1.03 | 1.07 | 0.36 | 0.35 | 16.99 | 16.85 |
| **13.** | IIHR-GS-16 | 5.86 | 6.06 | 3.11 | 3.15 | 1.17 | 1.19 | 0.32 | 0.34 | 12.94 | 12.82 |
| **14.** | IIHR-GS-20 | 4.42 | 4.46 | 2.40 | 2.50 | 1.49 | 1.51 | 0.32 | 0.33 | 6.41 | 6.36 |
| **15.** | IIHR-GS-21 | 4.13 | 4.00 | 2.15 | 2.11 | 1.19 | 1.21 | 0.25 | 0.27 | 10.88 | 10.96 |
| **16.** | IIHR-GS-23 | 5.97 | 5.99 | 2.99 | 3.08 | 1.48 | 1.52 | 0.29 | 0.31 | 10.9 | 10.91 |
| **17.** | IIHR-GS-25 | 6.05 | 6.09 | 3.49 | 3.41 | 1.11 | 1.13 | 0.27 | 0.29 | 13.15 | 13.23 |
| **18.** | IIHR-GS-27 | 4.37 | 4.42 | 3.48 | 3.46 | 1.05 | 1.06 | 0.31 | 0.34 | 10.74 | 10.82 |
| **19.** | IIHR-GS-28 | 4.43 | 4.37 | 2.80 | 2.86 | 0.66 | 0.68 | 0.27 | 0.29 | 10.76 | 10.73 |
| **20.** | IIHR-GS-29 | 5.13 | 5.15 | 3.45 | 3.54 | 1.50 | 1.51 | 0.28 | 0.29 | 10.8 | 10.89 |
| **21.** | IIHR-GS-30 | 4.32 | 4.40 | 2.50 | 2.44 | 0.96 | 0.97 | 0.25 | 0.27 | 14.28 | 14.29 |
| **22.** | IIHR-GS-31 | 5.70 | 5.68 | 3.70 | 3.68 | 1.05 | 1.07 | 0.33 | 0.35 | 12.20 | 12.13 |
| **23.** | IIHR-GS-32 | 4.78 | 4.82 | 2.89 | 2.79 | 1.26 | 1.27 | 0.42 | 0.43 | 13.66 | 13.56 |
| **24.** | IIHR-GS-35 | 4.99 | 5.12 | 2.70 | 2.80 | 1.25 | 1.27 | 0.33 | 0.35 | 12.24 | 12.22 |
| **25** | IIHR-GS-36 | 5.22 | 5.29 | 3.83 | 3.83 | 1.69 | 1.71 | 0.35 | 0.35 | 13.22 | 13.28 |
| **26.** | IIHR-GS-37 | 4.91 | 4.97 | 3.57 | 3.53 | 1.82 | 1.85 | 0.33 | 0.34 | 13.18 | 13.26 |
| **27.** | IIHR-GS-38 | 5.64 | 5.69 | 3.54 | 3.56 | 1.47 | 1.49 | 0.25 | 0.27 | 14.82 | 14.93 |
| **28.** | IIHR-GS-39 | 4.97 | 5.06 | 2.97 | 3.01 | 1.21 | 1.29 | 0.27 | 0.27 | 8.62 | 8.58 |
| **29.** | IIHR-GS-40 | 7.85 | 7.95 | 5.20 | 5.25 | 1.10 | 1.11 | 0.33 | 0.33 | 15.52 | 15.63 |
| **30.** | IIHR-GS-41 | 7.54 | 7.56 | 5.10 | 5.12 | 1.33 | 1.35 | 0.36 | 0.35 | 14.34 | 14.42 |
| **31.** | IIHR-GS-42 | 7.57 | 7.59 | 4.50 | 4.59 | 0.96 | 0.98 | 0.39 | 0.42 | 16.44 | 16.34 |
| **32.** | IIHR-GS-44 | 3.42 | 3.49 | 1.99 | 2.09 | 0.64 | 0.69 | 0.31 | 0.34 | 12.75 | 12.62 |
| **33.** | IIHR-GS-12 | 6.25 | 6.29 | 3.57 | 3.65 | 1.50 | 1.52 | 0.32 | 0.33 | 15.50 | 15.49 |
| **34.** | IIHR-GS-18 | 6.24 | 6.28 | 4.59 | 4.62 | 1.17 | 1.18 | 0.38 | 0.39 | 13.46 | 13.52 |
| **35.** | IIHR-GS-19 | 3.69 | 3.71 | 1.89 | 1.94 | 0.60 | 0.63 | 0.26 | 0.27 | 11.61 | 11.56 |
|  | **Mean comparison** | **5.32** | **5.36** | **3.22** | **3.24** | **1.17** | **1.21** | **0.31** | **0.32** | **12.46** | **12.47** |
|  | **Minimum mean value** | 3.42 | 3.49 | 1.89 | 1.94 | 0.60 | 0.63 | 0.24 | 0.24 | 6.41 | 6.36 |
|  | **Maximum mean value** | 7.85 | 7.95 | 5.20 | 5.25 | 1.82 | 1.85 | 0.42 | 0.43 | 16.99 | 16.85 |
|  | **Mean value** | **5.34** | | **3.23** | | **1.19** | | **0.31** | | **12.46** | |

**Table S 4.** ***Per se* performance of individual accession with respect to various growth, yield and quality from two different years (2021-22 and 2022-23)**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl no** | **Accessions** | **Chlorophyll content (SPAD units)** | | **Fresh leaf yield per plant (kg)** | | **Dry leaf yield per plant (kg)** | | **Gymnemagenin content (%) (w/w)** | |
|  |  | **2021-22** | **2022-23** | **2021-22** | **2022-23** | **2021-22** | **2022-23** | **2021-22** | **2022-23** |
| **1.** | IIHR-GS-1 | 51.15 | 50.56 | 0.76 | 0.82 | 0.16 | 0.19 | 1.49 | 1.52 |
| **2.** | IIHR-GS-2 | 57.35 | 58.02 | 0.09 | 0.19 | 0.003 | 0.007 | 1.63 | 1.6 |
| **3.** | IIHR-GS-3 | 45.95 | 44.23 | 1.11 | 1.32 | 0.30 | 0.38 | 1.11 | 1.14 |
| **4.** | IIHR-GS-4 | 36.85 | 37.26 | 0.27 | 0.45 | 0.08 | 0.14 | 1.23 | 1.29 |
| **5.** | IIHR-GS-5 | 40.42 | 39.61 | 1.04 | 1.25 | 0.36 | 0.46 | 1.53 | 1.61 |
| **6.** | IIHR-GS-6 | 49.42 | 49.99 | 0.48 | 0.52 | 0.18 | 0.20 | 1.63 | 1.65 |
| **7.** | IIHR-GS-9 | 54.25 | 55.36 | 1.59 | 1.87 | 0.47 | 0.53 | 1.48 | 1.56 |
| **8.** | IIHR-GS-10 | 45.65 | 43.91 | 0.96 | 1.23 | 0.28 | 0.34 | 1.29 | 1.27 |
| **9.** | IIHR-GS-11 | 48.25 | 45.29 | 0.15 | 0.32 | 0..01 | 0.02 | 1.46 | 1.53 |
| **10.** | IIHR-GS-13 | 39.45 | 37.27 | 1.43 | 1.61 | 0.35 | 0.41 | 1.36 | 1.37 |
| **11.** | IIHR-GS-14 | 42.85 | 44.65 | 1.05 | 1.42 | 0.3 | 0.37 | 0.42 | 0.36 |
| **12.** | IIHR-GS-15 | 50.35 | 51.45 | 1.26 | 1.55 | 0.34 | 0.40 | 1.29 | 1.25 |
| **13.** | IIHR-GS-16 | 42.35 | 42.35 | 1.23 | 1.45 | 0.33 | 0.39 | 1.1 | 1.12 |
| **14.** | IIHR-GS-20 | 50.32 | 49.44 | 0.55 | 0.85 | 0.16 | 0.22 | 1.36 | 1.39 |
| **15.** | IIHR-GS-21 | 43.05 | 44.95 | 0.17 | 0.39 | 0.05 | 0.10 | 0.97 | 0.98 |
| **16.** | IIHR-GS-23 | 44.65 | 44.21 | 0.39 | 0.52 | 0.09 | 0.13 | 1.56 | 1.55 |
| **17.** | IIHR-GS-25 | 44.02 | 43.55 | 1.4 | 1.79 | 0.42 | 0.53 | 1.32 | 1.29 |
| **18.** | IIHR-GS-27 | 42.65 | 42.93 | 1.51 | 1.89 | 0.20 | 0.27 | 1.27 | 1.22 |
| **19.** | IIHR-GS-28 | 45.05 | 44.9 | 0.32 | 0.49 | 0.11 | 0.17 | 1.15 | 1.16 |
| **20.** | IIHR-GS-29 | 41.65 | 42.03 | 0.79 | 0.97 | 0.21 | 0.28 | 1.4 | 1.44 |
| **21.** | IIHR-GS-30 | 38.65 | 39.36 | 0.94 | 1.29 | 0.26 | 0.33 | 1.43 | 1.42 |
| **22.** | IIHR-GS-31 | 49.15 | 50.86 | 1.05 | 1.31 | 0.29 | 0.35 | 1.47 | 1.46 |
| **23.** | IIHR-GS-32 | 51.95 | 49.94 | 0.73 | 1.13 | 0.16 | 0.23 | 1.53 | 1.59 |
| **24.** | IIHR-GS-35 | 46.65 | 47.06 | 0.49 | 0.66 | 0.15 | 0.22 | 1.52 | 1.5 |
| **25** | IIHR-GS-36 | 35.25 | 37.33 | 1.09 | 1.35 | 0.29 | 0.35 | 1.11 | 1.12 |
| **26.** | IIHR-GS-37 | 44.85 | 44.5 | 1.16 | 1.53 | 0.29 | 0.37 | 1.73 | 1.72 |
| **27.** | IIHR-GS-38 | 48.45 | 46.76 | 1.15 | 1.62 | 0.26 | 0.35 | 1.54 | 1.58 |
| **28.** | IIHR-GS-39 | 47.85 | 46.34 | 0.54 | 0.86 | 0.14 | 0.24 | 0.89 | 0.95 |
| **29.** | IIHR-GS-40 | 33.85 | 32.06 | 0.37 | 0.73 | 0.12 | 0.23 | 0.03 | 0.02 |
| **30.** | IIHR-GS-41 | 34.15 | 32.12 | 0.52 | 0.94 | 0.16 | 0.27 | 0.008 | 0.008 |
| **31.** | IIHR-GS-42 | 39.55 | 38.26 | 0.82 | 1.15 | 0.18 | 0.28 | 0.13 | 0.14 |
| **32.** | IIHR-GS-44 | 53.82 | 52.91 | 0.35 | 0.63 | 0.12 | 0.21 | 1.97 | 1.99 |
| **33.** | IIHR-GS-12 | 42.42 | 41.08 | 1.38 | 1.85 | 0.38 | 0.42 | 1.25 | 1.24 |
| **34.** | IIHR-GS-18 | 35.65 | 35.98 | 1.42 | 1.79 | 0.49 | 0.53 | 0.004 | 0.005 |
| **35.** | IIHR-GS-19 | 50.53 | 50.69 | 0.4 | 0.83 | 0.15 | 0.24 | 1.69 | 1.68 |
|  | **Mean comparison** | **44.81** | **44.49** | **0.82** | **1.10** | **0.23** | **0.29** | **1.21** | **1.22** |
|  | **Minimum mean value** | 33.85 | 32.06 | 0.09 | 0.19 | 0.003 | 0.02 | 0.004 | 0.005 |
|  | **Maximum mean value** | 57.35 | 58.02 | 1.59 | 1.89 | 0.49 | 0.53 | 1.97 | 1.99 |
|  | **Mean value** | **44.65** | | **0.96** | | **0.26** | | **1.21** | |

**Table S 5. Estimates of correlation coefficients for growth, quality and yield parameters in *G. sylvestre* accessions**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Traits** |  | **Petiole length** | **Internodal length** | **Leaf length** | **Leaf breadth** | **Leaf area** | **Leaf area index** | **Leaf thickness** | **Chlorophyll content** | **Fresh leaf yield per plant** | **Gymnemagenin content** | **Dry leaf yield per plant** |
| **Petiole length** | **G** | **1.0000** | 0.2149\* | 0.2036\* | 0.2790\*\* | 0.0326 | 0.0301 | 0.1276 | -0.0946 | 0.2212\*\* | 0.2658\* | 0.1535 |
| **P** | **1.0000** | -0.1998 | 0.2137\*\* | 0.2927\*\* | 0.0360 | 0.0329 | 0.1333 | -0.1123 | 0.1534\* | 0.1906 | 0.1335 |
| **Internodal length** | **G** |  | **1.0000** | 0.451\* | 0.541\*\* | 0.625\*\* | 0.621\*\* | 0.2531 | 0.3104 | 0.412\* | 0.486\* | 0.3337 |
| **P** |  | **1.0000** | 0.458\* | 0.528\* | 0.609\*\* | 0.607\*\* | 0.2590 | -0.2958 | 0.375\* | 0.2810\*\* | - 0.3165 |
| **Leaf length** | **G** |  |  | **1.0000** | 0.891\*\* | 0.729\*\* | 0.729\*\* | 0.362\* | -0.432\* | 0.962\*\* | 0.1517 | 0.703\*\* |
| **P** |  |  | **1.0000** | 0.882\*\* | 0.722\*\* | 0.723\*\* | 0.347\* | -0.416\* | 0.158\* | 0.1673 | 0.691\*\* |
| **Leaf breadth** | **G** |  |  |  | **1.0000** | 0.632\*\* | 0.629\*\* | 0.382\* | -0.483\* | 0.0505 | 0.1302 | 0.664\*\* |
| **P** |  |  |  | **1.0000** | 0.626\*\* | 0.624\*\* | 0.392\* | -0.488\* | 0.0180 | 0.0991 | 0.656\*\* |
| **Leaf area** | **G** |  |  |  |  | **1.0000** | 0.825\*\* | 0.603\*\* | -0.397\* | 0.273\* | 0.1314 | 0.682\* |
| **P** |  |  |  |  | **1.0000** | 0.835\*\* | 0.507\* | -0.384\* | 0.280\* | 0.1101 | 0.672\*\* |
| **Leaf area index** | **G** |  |  |  |  |  | **1.0000** | 0.595\*\* | -0.395\* | 0.233 | 0.1290 | -0.685\*\* |
| **P** |  |  |  |  |  | **1.0000** | 0.507\* | -0.385\* | 0.189 | 0.1018 | -0.674\*\* |
| **Leaf thickness** | **G** |  |  |  |  |  |  | **1.0000** | 0.1152 | 0.3124\* | 0.2738 | 0.466\* |
| **P** |  |  |  |  |  |  | **1.0000** | -0.0104 | -0.0703 | - 0.0776 | 0.367\* |
| **Chlorophyll content** | **G** |  |  |  |  |  |  |  | **1.0000** | 0.1994 | 0.2042 | 0.643 |
| **P** |  |  |  |  |  |  |  | **1.0000** | 0.1868 | 0.1921 | 0.592 |
| **Fresh leaf yield per plant** | **G** |  |  |  |  |  |  |  |  | **1.0000** | - 0.928\*\* | 0.884\* |
| **P** |  |  |  |  |  |  |  |  | **1.0000** | - 0.954\*\* | 0.703\* |
| **Gymnemagenin content** | **G** |  |  |  |  |  |  |  |  |  | **1.0000** | - 0.6206\*\* |
| **P** |  |  |  |  |  |  |  |  |  | **1.0000** | - 0.5059\* |
| **Dry leaf yield per plant** | **G** |  |  |  |  |  |  |  |  |  |  | **1.0000** |
| **P** |  |  |  |  |  |  |  |  |  |  | **1.0000** |

## \*\* Correlation is significant at 0.01 level

## \* Correlation is significant at 0.05 level

G-Genotypic correlation

P-Phenotypic correlation

**Table S 6. Path analysis for dry leaf yield per plant in *G. sylvestre* accessions**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Traits** | **L** | **Petiole length** | **Internodal length** | **Leaf length** | **Leaf breadth** | **Leaf area** | **Leaf area index** | **Leaf thickness** | **Chlorophyll content** | **Fresh leaf yield per plant** | **Gymnemagenin content** | **Dry leaf yield per plant** |
| **Petiole length** | **G** | **-0.0261** | 0.0056 | -0.0053 | -0.0073 | -0.0009 | -0.0008 | -0.0033 | 0.0025 | 0.0058 | -0.0011 | -0.2658 |
| **P** | **-0.0525** | 0.0105 | -0.0112 | -0.0154 | -0.0019 | -0.0017 | -0.0070 | 0.0059 | 0.0081 | -0.0012 | -0.1906 |
| **Internodal length** | **G** | 0.0571 | **-0.2659** | -0.1199 | -0.1439 | -0.1662 | -0.1652 | -0.0673 | 0.0825 | -0.1096 | 0.0887 | 0.486\* |
| **P** | 0.0007 | **-0.0034** | -0.0016 | -0.0018 | -0.0021 | -0.0021 | -0.0009 | 0.0010 | -0.0007 | 0.0011 | 0.2810 |
| **Leaf length** | **G** | -0.1697 | -0.3757 | **0.8334** | -0.7423 | -0.6074 | -0.6073 | -0.3013 | 0.3596 | -0.0801 | 0.5860 | 0.1517\* |
| **P** | -0.0385 | -0.0825 | **0.1803** | -0.1590 | -0.1302 | -0.1303 | -0.0626 | 0.0750 | -0.0029 | 0.1245 | 0.0673\* |
| **Leaf breadth** | **G** | 0.2259 | 0.4382 | 0.7211 | **0.8096** | 0.5119 | 0.5096 | 0.3088 | -0.3908 | 0.0409 | -0.5371 | 0.1302\* |
| **P** | 0.0716 | 0.1291 | 0.2157 | **0.2445** | 0.1530 | 0.1526 | 0.0959 | -0.1192 | 0.0044 | -0.1603 | 0.0791\*\* |
| **Leaf area** | **G** | -0.4513 | - 0.6482 | - 0.0818 | - 0.7462 | **-0.1383** | -0.1383 | - 0.3341 | 0.4843 | -0.3771 | 0.4272 | 0.1314 |
| **P** | -0.0780 | - 0.3193 | - 0.5653 | - 0.3561 | **- 0.1668** | - 0.1665 | - 0.0976 | 0.8329 | -0.0608 | 0.4551 | 0.1101 |
| **Leaf area index** | **G** | 0.4344 | 0.9728 | 0.5236 | 0.0903 | 0.1444 | **0.1444** | 0.5896 | - 0.7057 | 0.3368 | - 0.8906 | 0.1290 |
| **P** | 0.0776 | 0.4294 | 0.7033 | 0.4710 | 0.3559 | **0.3563** | 0.1955 | -0.9064 | 0.0445 | - 0.5869 | 0.1018 |
| **Leaf thickness** | **G** | -0.0460 | -0.0913 | -0.1304 | -0.1376 | -0.2173 | -0.2145 | **0.3606** | -0.0416 | -0.1126 | 0.1679 | 0.2738\* |
| **P** | -0.0166 | -0.0323 | -0.0434 | -0.0490 | -0.0632 | -0.0633 | **0.1248** | 0.0013 | 0.0088 | 0.0458 | -0.0776 |
| **Chlorophyll content** | **G** | -0.0221 | -0.0723 | -0.1006 | -0.1125 | -0.0924 | -0.0921 | 0.0269 | **- 0.2331** | 0.0465 | 0.1499 | 0.2042 |
| **P** | -0.0127 | -0.0333 | -0.0468 | -0.0549 | -0.0433 | -0.0433 | -0.0012 | **- 0.1126** | 0.0210 | 0.0667 | 0.1921 |
| **Fresh leaf yield per plant** | **G** | -0.2642 | 0.4924 | 0.1149 | 0.0603 | 0.0326 | 0.0279 | 0.3731 | 0.2382 | **1.1944** | 0.2198 | 0.928\*\* |
| **P** | -0.1426 | 0.1911 | 0.0147 | 0.0168 | 0.0261 | 0.0176 | -0.0654 | 0.1737 | **0.9296** | 0.0654 | 0.954\*\* |
| **Gymnemagenin content** | **G** | -0.0039 | 0.0301 | 0.0634 | 0.0598 | 0.0615 | 0.0618 | 0.0420 | -0.0580 | -0.0166 | **-0.0902** | 0.1206 |
| **P** | 0.0006 | -0.0082 | -0.0178 | -0.0169 | -0.0173 | -0.0174 | -0.0095 | 0.0153 | 0.0018 | **0.0258** | 0.0359 |
| **Dry leaf yield per plant** | **G** | -0.2658 | 0.468\* | 0.1517\* | 0.1302\* | 0.1314 | 0.1290 | 0.2738\* | 0.2042 | 0.928\*\* | 0.1206 | **1.0000** |
| **P** | -0.1906 | 0.2810 | 0.0673\* | 0.0791\*\* | 0.1101 | 0.1018 | -0.0776 | 0.1921 | 0.954\*\* | 0.0359 | **1.0000** |

Residual effect = value (0.228) is unexplained; 77.2% is explained for Genotypic correlation and value (0.252) is unexplained; 74.8% is explained for Phenotypic correlation

## \*\* Correlation is significant at 0.01 level

## \* Correlation is significant at 0.05 level

G-Genotypic correlation

P-Phenotypic correlation

**Table S 7: Analysis of *G. sylvestre* accessions for various morphological, yield and bioactive traits**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No.** | **Accessions** | **Leaf length (cm)** | **Leaf breadth (cm)** | **Leaf thickness (mm)** | **Petiole length (cm)** | **Internodal length**  **(cm)** | **Chlorophyll content (SPAD units)** | **Leaf area (cm2)** | **Leaf Area Index** | **Fresh leaf yield per plant**  **(kg)** | **Dry leaf yield per plant**  **(kg)** | **Gymnemagenin content (%) (w/w)** |
| **1** | IIHR-GS-1 | 5.86 | 2.99 | 0.28 | 0.97 | 11.60 | 51.15 | 12.19 | 0.04 | 0.82 | 0.20 | 1.49 |
| **2** | IIHR-GS-2 | 4.80 | 2.29 | 0.27 | 0.95 | 10.40 | 57.35 | 10.72 | 0.04 | 0.09 | 0.003 | 1.62 |
| **3** | IIHR-GS-3 | 4.98 | 3.01 | 0.31 | 0.93 | 10.52 | 45.95 | 12.13 | 0.04 | 1.11 | 0.31 | 1.06 |
| **4** | IIHR-GS-4 | 5.44 | 3.43 | 0.24 | 1.36 | 11.24 | 36.85 | 14.15 | 0.05 | 0.30 | 0.08 | 1.27 |
| **5** | IIHR-GS-5 | 5.14 | 3.23 | 0.27 | 1.06 | 13.65 | 40.42 | 13.51 | 0.05 | 1.04 | 0.36 | 1.57 |
| **6** | IIHR-GS-6 | 5.24 | 2.89 | 0.30 | 1.28 | 11.07 | 49.42 | 14.75 | 0.05 | 0.52 | 0.20 | 1.61 |
| **7** | IIHR-GS-9 | 4.82 | 3.29 | 0.27 | 1.19 | 14.40 | 54.25 | 16.19 | 0.06 | 1.74 | 0.51 | 1.49 |
| **8** | IIHR-GS-10 | 4.26 | 2.49 | 0.32 | 0.82 | 12.10 | 44.05 | 15.20 | 0.06 | 0.99 | 0.29 | 1.27 |
| **9** | IIHR-GS-11 | 5.78 | 3.59 | 0.31 | 1.73 | 8.54 | 48.25 | 8.79 | 0.03 | 0.15 | 0.01 | 1.49 |
| **10** | IIHR-GS-13 | 5.14 | 2.71 | 0.25 | 1.03 | 13.34 | 39.45 | 10.82 | 0.04 | 1.61 | 0.41 | 1.38 |
| **11** | IIHR-GS-14 | 5.74 | 3.31 | 0.35 | 1.42 | 13.44 | 42.85 | 18.10 | 0.07 | 1.05 | 0.31 | 0.40 |
| **12** | IIHR-GS-15 | 5.76 | 3.63 | 0.35 | 1.05 | 16.99 | 50.35 | 21.40 | 0.08 | 1.49 | 0.41 | 1.28 |
| **13** | IIHR-GS-16 | 5.96 | 3.13 | 0.29 | 1.18 | 12.94 | 42.35 | 18.88 | 0.07 | 1.23 | 0.34 | 1.11 |
| **14** | IIHR-GS-20 | 4.48 | 2.45 | 0.32 | 1.50 | 6.41 | 50.32 | 6.91 | 0.02 | 0.65 | 0.20 | 1.37 |
| **15** | IIHR-GS-21 | 4.06 | 2.13 | 0.25 | 1.20 | 10.88 | 43.05 | 14.35 | 0.05 | 0.17 | 0.05 | 0.98 |
| **16** | IIHR-GS-23 | 5.98 | 3.03 | 0.29 | 1.50 | 10.90 | 44.65 | 18.17 | 0.07 | 0.49 | 0.13 | 1.56 |
| **17** | IIHR-GS-25 | 6.04 | 3.45 | 0.26 | 1.12 | 13.15 | 44.02 | 11.22 | 0.04 | 1.69 | 0.52 | 1.30 |
| **18** | **IIHR-GS-27** | 4.38 | 2.47 | 0.30 | 1.05 | 10.74 | 42.65 | 10.20 | 0.04 | **1.76** | 0.22 | 1.23 |
| **19** | IIHR-GS-28 | 4.40 | 2.83 | 0.26 | 0.67 | 10.76 | 45.05 | 6.99 | 0.02 | 0.32 | 0.11 | 1.15 |
| **20** | IIHR-GS-29 | 5.14 | 3.51 | 0.28 | 1.50 | 10.80 | 41.65 | 14.14 | 0.05 | 0.87 | 0.24 | 1.42 |
| **21** | IIHR-GS-30 | 4.36 | 2.47 | 0.23 | 0.96 | 14.28 | 38.65 | 10.46 | 0.04 | 0.98 | 0.28 | 1.43 |
| **22** | IIHR-GS-31 | 5.64 | 3.69 | 0.33 | 1.06 | 12.10 | 49.15 | 11.36 | 0.04 | 1.10 | 0.31 | 1.47 |
| **23** | IIHR-GS-32 | 4.78 | 2.87 | 0.41 | 1.26 | 13.66 | 51.95 | 16.92 | 0.06 | 0.79 | 0.19 | 1.56 |
| **24** | IIHR-GS-35 | 5.02 | 2.75 | 0.32 | 1.26 | 12.24 | 46.65 | 11.37 | 0.04 | 0.49 | 0.15 | 1.49 |
| **25** | IIHR-GS-36 | 5.21 | 3.83 | 0.34 | 1.70 | 13.22 | 35.25 | 12.78 | 0.05 | 1.12 | 0.31 | 1.10 |
| **26** | IIHR-GS-37 | 4.94 | 3.55 | 0.32 | 1.82 | 13.18 | 44.85 | 11.08 | 0.04 | 1.31 | 0.34 | 1.72 |
| **27** | IIHR-GS-38 | 5.62 | 3.55 | 0.25 | 1.48 | 14.82 | 48.45 | 8.18 | 0.03 | 1.30 | 0.31 | 1.57 |
| **28** | IIHR-GS-39 | 5.02 | 2.99 | 0.27 | 1.22 | 8.62 | 47.85 | 10.14 | 0.04 | 0.54 | 0.14 | 0.91 |
| **29** | IIHR-GS-40 | 7.90 | 5.23 | 0.32 | 1.10 | 15.52 | 33.85 | 24.06 | 0.09 | 0.37 | 0.12 | 0.02 |
| **30** | IIHR-GS-41 | 7.50 | 5.11 | 0.35 | 1.34 | 14.34 | 34.15 | 22.55 | 0.08 | 0.52 | 0.16 | 0.01 |
| **31** | IIHR-GS-42 | 7.58 | 4.57 | 0.39 | 0.97 | 16.44 | 39.55 | 24.34 | 0.09 | 0.87 | 0.20 | 0.11 |
| **32** | **IIHR-GS-44** | 3.42 | 2.07 | 0.31 | 0.64 | 12.75 | 49.62 | 6.15 | 0.02 | 0.40 | 0.14 | **1.95** |
| **33** | IIHR-GS-12 | 6.27 | 3.63 | 0.32 | 1.51 | 15.34 | 42.42 | 17.17 | 0.06 | 1.48 | 0.42 | 1.25 |
| **34** | **IIHR-GS-18** | **6.26** | **4.63** | 0.37 | 1.17 | 13.46 | 35.65 | **25.85** | 0.1 | 1.52 | 0.44 | 0.01 |
| **35** | IIHR-GS-19 | 3.70 | 1.92 | 0.25 | 0.62 | 11.61 | 50.20 | 8.32 | 0.03 | 0.49 | 0.14 | 1.69 |
|  | **Mean** | 5.33 | 3.22 | 0.30 | 1.18 | 12.44 | 44.63 | 13.98 | 0.05 | 0.89 | 0.24 | 1.21 |
|  | **Range** | 3.42-7.90 | 1.92-5.23 | 0.23-0.41 | 0.62-1.82 | 6.41-16.99 | 33.85-57.35 | 6.15-25.85 | 0.02-0.1 | 0.09-1.76 | 0.003-0.52 | 0.005-1.95 |
|  | **SD** | 1.01 | 0.79 | 0.04 | 0.30 | 2.24 | 5.81 | 5.19 | 0.02 | 0.49 | 0.13 | 0.51 |
|  | **CV (%)** | 18.87 | 24.56 | 14.40 | 24.85 | 18.03 | 13.03 | 37.10 | 40.01 | 54.97 | 54.89 | 42.06 |

(SD- standard deviation; CV (%) - coefficient of variation percentage)