Table S1. Origin and maturity groups of soybean germplasm

|  |  |  |
| --- | --- | --- |
| Accessions | Origin | MG |
| A1 | Niedersachsen, Germany | 000 |
| A2 | Minnesota, United States | 00 |
| A3 | Ontario, Canada | 00 |
| A4 | Ontario, Canada | 00 |
| A5 | Ontario, Canada | 00 |
| A6 | United States | 00 |
| A7 | Ontario, Canada | 0 |
| A8 | France | 0 |
| A9 | United States | 0 |
| A10 | Minnesota, United States | 0 |
| A11 | United States | 0 |
| A12 | Amur, Russian Federation | 0 |
| A13 | United States | 0 |
| A14 | North Dakota, United States | 0 |
| A15 | Minnesota United States | 0 |
| A16 | United States | 0 |
| A17 | Minnesota United States | 0 |
| A18 | Esfahan, Iran | I |
| A19 | Bosnia and Herzegovina | I |
| A20 | United States | I |
| A21 | Dnipropetrovsk, Ukraine | I |
| A22 | Jilin Sheng, China | I |
| A23 | Wisconsin, United States | I |
| A24 | United States | I |
| A25 | Kyonggi, Korea South | I |
| A26 | United States | I |
| A27 | Minnesota, United States | I |
| A28 | Unknown | I |
| A29 | Russian Federation | I |
| A30 | United States | I |
| A31 | United States | I |
| A32 | United States | I |
| A33 | United States | I |
| A34 | United States | I |
| A35 | United States | I |
| A36 | United States | I |
| A37 | United States | I |
| A38 | China | I |
| A39 | United States | I |
| A40 | United States | I |
| A41 | United States | I |
| A42 | Wisconsin, United States | II |
| A43 | United States | II |
| A44 | United States | II |
| A45 | United States | II |
| A46 | Indiana, United States | II |
| A47 | Illinois, United States | II |
| A48 | United States | II |
| A49 | United States | II |
| A50 | United States | II |
| A51 | United States | II |
| A52 | Illinois, United States | II |
| A53 | United States | II |
| A54 | United States | II |
| A55 | United States | II |
| A56 | United States | II |
| A57 | United States | II |
| A58 | United States | II |
| A59 | Unknown | Unknown |
| A60 | United States | Unknown |
| A61 | Illinois, USA | IV |
| A62 | Kentucky, USA | IV |
| A63 | North Carolina, USA | IV |
| A64 | Ohio, USA | III |
| A65 | United States | II |
| A66 | Indiana, USA | II |
| A67 | Ohio, USA | III |
| A68 | Nebraska, USA | III |
| A69 | United States | IV |
| A70 | United States | III |
| A71 | Unknown | Unknown  |
| A72 | Illinois, USA | Unknown  |
| A73 | Illinois USA | Unknown  |
| A74 | Mississippi, USA | Unknown  |
| A75 | Illinois, USA | IV |
| A76 | Missouri, USA | Unknown |
| A77 | North Carolina, USA | Unknown  |
| A78 | Illinois, USA | Unknown  |
| A79 | Illinois, USA | IV |
| A80 | Nebraska, USA | III |
| A81 | Ohio, USA | III |
| A82 | Illinois, USA | IV |
| A83 | Indiana, USA | IV |
| A84 | Maryland, USA  | Unknown  |
| A85 | Maryland, USA | Unknown  |
| A86 | Minnesota, USA | 0 |
| A87 | United States | II |
| A88 | Ohio, United States | II |
| A89 | Illinois, USA | III |
| A90 | Maryland, USA | IV |
| A91 | Iowa, USA | III |
| A92 | Ontario, Canada | II |
| A93 | Iowa, USA | III |
| A94 | Kansas, USA | IV |
| A95 | Delaware, USA | IV |
| A96 | Missouri, USA | IV |
| A97 | Unknown  | Unknown |
| A98 | Unknown | Unknown |
| A99 | Illinois, United States | IV |
| A100 | Iowa, USA | III |
| A101 | United States | III |
| A102 | Illinois, United States | III |
| A103 | United States | III |
| A104 | United States | III |
| A105 | United States | III |
| A106 | United States | IV |
| A107 | China | IV |
| A108 | Illinois, United States | IV |
| A109 | United States | IV |
| A110 | United States | IV |
| A111 | Ohio, United States | IV |
| A112 | Ohio, United States | IV |
| A113 | Ohio, United States | IV |
| A114 | Ohio, United States | IV |
| A115 | Heilongjiang Sheng, China | IV |
| A116 | Hukusimia, Japan | IV |
| A117 | Ajmeri (Local) |  |
| A118 | Faisal Soy (Local) |  |
| A119 | Malakand (Local) |  |
| A120 | NARC-II (Local) |  |
| A121 | Rawal (Local) |  |
| A122 | Swat-18 (Local) |  |
| A123 | William (Local) |  |

Table S2. Summary of six agro-morphological traits of soybean germplasm.

|  |  |  |
| --- | --- | --- |
|  | **Year 2020** | **Year 2021** |
|   | **Range**  | **Mean** | **Var. (n)** | **SD (n)** | **CV %** | **Range** | **Mean** | **Var. (n)** | **SD (n)** | **CV %** |
| **PH** | 10.9-72 | 32.143 | 108.131 | 10.399 | 32.351 | 7.9-74 | 32.17 | 134.397 | 11.593 | 36.02 |
| **Pods** | 9-119 | 35.435 | 408.72 | 20.217 | 57.053 | 5-115 | 35.6 | 344.8 | 18.57 | 52.15 |
| **Seeds** | 17-249 | 70.043 | 1577.711 | 39.72 | 56.708 | 4-225 | 71.9 | 1282.8 | 35.8 | 49.75 |
| **HSW** | 7.5-17.6 | 12.43 | 4.452 | 2.11 | 16.974 | 5-21.6 | 12.44 | 11.93 | 3.45 | 27.76 |
| **YPP** | 1.6-38.7 | 9.916 | 46.114 | 6.791 | 68.485 | 1.04-36.2 | 10.06 | 35.64 | 5.97 | 59.29 |
| **DM** | 96-133 | 114.5 | 58.276 | 7.634 | 6.666 | 95-133 | 114.5 | 60.29 | 7.76 | 6.78 |

SD: Standard deviation, CV: Variation coefficient, Var: Variance, PH: Plant height, Pods: Number of pods, Seeds: Number of seeds, HSW: 100 seed weight, YPP: Yield per plant, DM: Days to maturity.



Figure S1. Mean comparison of plant height and number of pods of soybean accessions for the years 2020 and 2021 on both plantation dates



Figure S2. Mean comparison of seeds and 100-seed weight of soybean accessions for the years 2020 and 2021 on both plantation dates.



Figure S3. Mean comparison of yield per plant and days to maturity of soybean genotypes for the years 2020 and 2021 on both plantation dates.



Figure S4: Climatic diagrams across the study period of 2020 and 2021.



Figure S5. Combined cluster analysis of 123 Soybean genotypes of both plantation dates for the year 2020.



Figure S6: Combined cluster analysis of 123 Soybean genotypes of both plantation dates for the year 2021.