**Supplementary Table 1: Correlation among various traits of cotton under control condition**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | FL | K+ | K+/Na+ | LMPB | LMPS | Na+ | NB | PH | SMPB | SI | SNPB | BW | SCY | FF | FS | SV | LI | LP | SD | Proline | POD | CAT | TSP | H2O2 |
| K+ | -0.04 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| K+/Na+ | -0.07 | 0.17 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| LMPB | 0.13 | 0.12 | 0.168 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| LMPS | 0.14 | 0.09 | 0.102 | 0.7\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Na+ | -0.03 | 0.32\*\* | -0.8\*\* | -0.087 | -0.043 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| NB | -0.10 | -0.174 | -0.11 | 0.166 | 0.144 | 0.021 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PH | -0.11 | -0.115 | -0.02 | 0.203 | 0.1122 | -0.014 | 0.6\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SMPB | 0.121 | 0.078 | 0.08 | 0.8\*\* | 0.63\*\* | -0.015 | 0.26\* | 0.6\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SI | 0.08 | -0.104 | -0.01 | 0.3\*\* | 0.54\*\* | 0.007 | 0.5\*\* | 0.26\* | 0.5\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SNPB | -0.08 | 0.069 | 0.016 | 0.15 | -0.3\*\* | 0.012 | -0.039 | 0.5\*\* | 0.25\* | -0.4\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| BW | 0.03 | 0.002 | 0.097 | 0.7\*\* | 0.44\*\* | 0.058 | 0.4\*\* | 0.5\*\* | 0.7\*\* | 0.6\*\* | 0.3\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SCY | 0.09 | 0.157 | 0.205 | 0.3\*\* | 0.31\*\* | -0.18 | 0.928 | 0.4\*\* | 0.5\*\* | 0.6\*\* | -0.010 | 0.4\*\* |  |  |  |  |  |  |  |  |  |  |  |  |
| FF | -0.22 | 0.200 | 0.28\* | -0.036 | 0.0006 | -0.202 | -0.019 | 0.928 | -0.267 | -0.19 | -0.14 | -0.150 | 0.022 |  |  |  |  |  |  |  |  |  |  |  |
| FS | 0.3\*\* | -0.06 | -0.18 | 0.012 | 0.2414 | 0.133 | -0.154 | -0.019 | -0.008 | 0.106 | -0.3\*\* | -0.173 | -0.025 | -0.24\* |  |  |  |  |  |  |  |  |  |  |
| SV | 0.03 | -0.042 | -0.08 | 0.3\*\* | 0.42\*\* | 0.098 | 0.4\*\* | -0.154 | 0.5\*\* | 0.7\*\* | -0.175 | 0.56\* | 0.35\* | -0.3\*\* | 0.023 |  |  |  |  |  |  |  |  |  |
| LI | 0.11 | -0.008 | 0.138 | 0.6\*\* | 0.76\*\* | -0.121 | 0.3\*\* | 0.3\*\* | 0.3\*\* | 0.6\*\* | -0.4\*\* | 0.5\*\* | 0.406 | 0.167 | 0.123 | 0.3\*\* |  |  |  |  |  |  |  |  |
| LP | 0.03 | 0.101 | 0.192 | 0.3\*\* | 0.35\*\* | -0.162 | -0.196 | 0.3\*\* | -0.133 | -0.2\* | -0.147 | -0.011 | -0.108 | 0.4\*\* | 0.048 | -0.4\*\* | 0.5\*\* |  |  |  |  |  |  |  |
| SD | -0.01 | -0.08 | -0.02 | 0.5\*\* | 0.33\*\* | -0.020 | 0.8\*\* | 0.5\*\* | 0.6\*\* | 0.5\*\* | 0.170 | 0.6\*\* | 0.275 | -0.052 | -0.157 | 0.3\*\* | 0.3\*\* | -0.123 |  |  |  |  |  |  |
| Proline | 0.52\* | -0.04 | 0.11 | 0.46\* | 0.44\* | -0.13 | 0.55\* | 0.41\* | 0.37\* | 0.45\* | -0.24\* | 0.42\* | 0.45\* | -0.25\* | 0.41\* | 0.37\* | 0.45\* | -0.2\* | 0.023 |  |  |  |  |  |
| POD | 0.16 | -0.03 | 0.01 | 0.83\* | 0.89\* | -0.02 | 0.80\* | 0.75\* | 0.89\* | 0.15 | 0.03 | 0.08 | 0.97\* | 0.84\* | -0.08 | 0.70\* | 0.68\* | 0.9\* | 0.024 | 0.91\* |  |  |  |  |
| CAT | 0.16 | -0.03 | 0.01 | 0.83\* | 0.89\* | -0.02 | 0.80\* | 0.75\* | 0.89\* | 0.15 | 0.03 | 0.08 | 0.97\* | 0.84\* | -0.08 | 0.70\* | 0.68\* | 0.9\* | -0.314 | 0.91\* | -0.4 |  |  |  |
| TSP | 0.4\* | -0.25\* | 0.34\* | -0.01 | 0.04 | 0.67\* | 0.66\* | -0.02 | 0.95\* | -0.13 | 0.69\* | 0.60\* | 0.78\* | 0.91\* | -0.48\* | 0.85\* | 0.86\* | -0.19 | 0.346 | 0.53\* | -0.1 | 0.37\* |  |  |
| H2O2 | -0.2\* | 0.14 | 0.06 | -0.28\* | -0.24\* | -0.01 | -0.47\* | -0.42\* | -0.43\* | -0.40\* | -0.07 | -0.38\* | -0.47\* | 0.78\* | 0.91\* | -0.48\* | 0.85\* | 0.8\* | 0.157 | -0.19 | 0.5\* | -0.1 | 0.3\* |  |
| SOD | 0.52\* | -0.04 | 0.11 | 0.46\* | 0.44\* | -0.13 | 0.55\* | 0.41\* | -0.14 | -0.06 | -0.09 | -0.02 | -0.12 | 0.11 | 0.03 | -0.01 | 0.13 | -0.01 | 0.358 | 0.30\* | 0.07 | 0.20 | 0.7\* | -0.10\* |

**Supplementary Table 2: Correlation among various traits of cotton under 10dSm-1 condition**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | FL | K+ | K+/Na+ | LMPB | LMPS | Na+ | NB | PH | SMPB | SI | SNPB | BW | SCY | FF | FS | SV | LI | LP | SD | Proline | POD | CAT | TSP | H2O2 |
| K+ | 0.090 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| K+/Na+ | -0.101 | 0.7\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| LMPB | 0.106 | 0.007 | -0.007 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| LMPS | 0.185 | -0.027 | -0.016 | 0.8\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Na+ | 0.129 | -0.3\*\* | -0.8\*\* | 0.01 | 0.018 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| NB | -0.029 | -0.042 | -0.132 | 0.6\*\* | 0.6\*\* | 0.135 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PH | 0.002 | -0.218 | -0.107 | 0.4\*\* | 0.4\*\* | -0.021 | 0.1443 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SMPB | -0.005 | -0.067 | -0.078 | 0.9\*\* | 0.8\*\* | 0.062 | 0.57\*\* | 0.5\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SI | 0.166 | -0.094 | -0.084 | 0.7\*\* | 0.8\*\* | 0.069 | 0.61\*\* | 0.5\*\* | 0.7\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SNPB | -0.20 | 0.067 | 0.007 | -0.02 | -0.4\*\* | 0.028 | -0.2186 | -0.034 | 0.099 | -0.5\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| BW | 0.125 | -0.003 | -0.030 | 0.9\*\* | 0.8\*\* | 0.056 | 0.62\*\* | 0.5\*\* | 0.9\*\* | 0.8\*\* | -0.002 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SCY | 0.2\*\* | 0.224 | 0.144 | 0.6\*\* | 0.597 | -0.064 | 0.94\*\* | 0.20\* | 0.7\*\* | 0.690 | 0.159 | 0.8\*\* |  |  |  |  |  |  |  |  |  |  |  |  |
| FF | -0.4\*\* | 0.216 | 0.18 | -0.5\*\* | -0.5\*\* | -0.127 | -0.42\*\* | -0.3\*\* | -0.5\*\* | -0.5\*\* | 0.120 | -0.6\*\* | -0.57\*\* |  |  |  |  |  |  |  |  |  |  |  |
| FS | 0.28\* | -0.112 | -0.128 | 0.004 | -0.059 | 0.128 | -0.270\* | 0.117 | 0.03 | -0.067 | 0.210 | 0.009 | 0.0784 | -0.064 |  |  |  |  |  |  |  |  |  |  |
| SV | 0.159 | -0.3\*\* | -0.27\* | 0.4\*\* | 0.3\*\* | 0.157 | 0.40\*\* | 0.198 | 0.4\*\* | 0.25\* | 0.094 | 0.4\*\* | 0.41\*\* | -0.3\*\* | -0.29\* |  |  |  |  |  |  |  |  |  |
| LI | 0.25\* | -0.012 | -0.015 | 0.7\*\* | 0.9\*\* | 0.03 | 0.63\*\* | 0.4\*\* | 0.6\*\* | 0.8\*\* | -0.5\*\* | 0.7\*\* | 0.5395 | -0.5\*\* | -0.099 | 0.26\* |  |  |  |  |  |  |  |  |
| LP | 0.27\* | 0.207 | 0.194 | 0.6\*\* | 0.7\*\* | -0.100 | 0.41\*\* | 0.101 | 0.4\*\* | 0.4\*\* | -0.243 | 0.5\*\* | 0.3519 | -0.3\*\* | -0.059 | 0.220 | 0.6\*\* |  |  |  |  |  |  |  |
| SD | -0.069 | -0.001 | -0.077 | 0.8\*\* | 0.7\*\* | 0.09 | 0.90\*\* | 0.3\*\* | 0.8\*\* | 0.7\*\* | -0.141 | 0.8\*\* | 0.276\* | -0.4\*\* | -0.072 | 0.25\* | 0.7\*\* | 0.4\*\* |  |  |  |  |  |  |
| Proline | 0.52\* | -0.04 | -0.13 | 0.46\* | 0.44\* | -0.13 | 0.55\* | 0.41\* | 0.37\* | 0.45\* | -0.24\* | 0.42\* | 0.45\* | -0.25\* | 0.41\* | 0.37\* | 0.45\* | -0.2\* | -0.235 |  |  |  |  |  |
| POD | 0.16 | -0.03 | -0.02 | 0.83\* | 0.89\* | -0.02 | 0.80\* | 0.75\* | 0.89\* | 0.15 | 0.03 | 0.08 | 0.97\* | 0.84\* | -0.08 | 0.70\* | 0.68\* | 0.9\* | 0.0354 | 0.91\* |  |  |  |  |
| CAT | 0.16 | -0.03 | -0.02 | 0.83\* | 0.89\* | -0.02 | 0.80\* | 0.75\* | 0.89\* | 0.15 | 0.03 | 0.08 | 0.97\* | 0.84\* | -0.08 | 0.70\* | 0.68\* | 0.9\* | 0.235\* | 0.91\* | -0.4 |  |  |  |
| TSP | 0.4\* | -0.25\* | 0.34\* | -0.01 | 0.04 | 0.67\* | 0.66\* | -0.02 | 0.95\* | -0.13 | 0.69\* | 0.60\* | 0.78\* | 0.91\* | -0.48\* | 0.85\* | 0.86\* | -0.19 | -0.024 | 0.53\* | -0.1 | 0.37\* |  |  |
| H2O2 | 0.16 | -0.03 | -0.02 | 0.83\* | 0.89\* | -0.02 | 0.80\* | 0.75\* | 0.89\* | 0.15 | 0.03 | 0.08 | 0.97\* | 0.84\* | -0.08 | 0.70\* | 0.68\* | 0.9\* | 0.0321 | 0.91\* | -0.4 | 0.68\* | 0.7\* |  |
| SOD | -0.25\* | 0.14 | 0.06 | -0.28\* | -0.24\* | -0.01 | -0.47\* | -0.42\* | -0.43\* | -0.40\* | -0.07 | -0.38\* | -0.47\* | 0.78\* | 0.91\* | -0.48\* | 0.85\* | 0.8\* | 0.0324 | -0.19 | 0.5\* | -0.1 | 0.3\* | 0.91\* |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | FL | K+ | K+/Na+ | LMPB | LMPS | Na+ | NB | PH | SMPB | SI | SNPB | BW | SCY | FF | FS | HS | LI | LP | SD | Proline | POD | CAT | TSP | H2O2 |
| K+ | -0.075 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| K+/Na+ | 0.099 | 0.7\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| LMPB | 0.195 | 0.04 | 0.11 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| LMPS | 0.20 | 0.026 | 0.12 | 0.9\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Na+ | -0.191 | -0.245 | -0.8\*\* | -0.141 | -0.161 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| NB | 0.3\*\* | -0.015 | 0.044 | 0.6\*\* | 0.6\*\* | -0.029 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| PH | 0.23\* | -0.088 | -0.015 | 0.6\*\* | 0.5\*\* | -0.016 | 0.89\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SMPB | 0.132 | 0.023 | 0.065 | 0.9\*\* | 0.7\*\* | -0.068 | 0.70\*\* | 0.7\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SI | 0.169 | -0.033 | 0.019 | 0.8\*\* | 0.8\*\* | -0.026 | 0.80\*\* | 0.7\*\* | 0.8\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SNPB | -0.107 | 0.131 | 0.062 | -0.127 | -0.4\*\* | -0.029 | -0.37\*\* | -0.27\* | 0.013 | -0.4\*\* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| BW | 0.159 | 0.037 | 0.080 | 0.9\*\* | 0.8\*\* | -0.08 | 0.70\*\* | 0.6\*\* | 0.9\*\* | 0.9\*\* | -0.049 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SCY | 0.3\*\* | 0.3\*\* | 0.4\*\* | 0.7\*\* | 0.7\*\* | -0.28\* | 0.93\*\* | 0.93\* | 0.8\*\* | 0.7\*\* | 0.037 | 0.8\*\* |  |  |  |  |  |  |  |  |  |  |  |  |
| FF | -0.25\* | 0.145 | 0.068 | -0.28\* | -0.24\* | -0.018 | -0.47\*\* | -0.4\*\* | -0.4\*\* | -0.4\*\* | -0.071 | -0.3\*\* | -0.47\*\* |  |  |  |  |  |  |  |  |  |  |  |
| FS | 0.5\*\* | -0.044 | 0.111 | 0.4\*\* | 0.4\*\* | -0.131 | 0.55\*\* | 0.4\*\* | 0.3\*\* | 0.4\*\* | -0.24\* | 0.4\*\* | 0.45\*\* | -0.25\* |  |  |  |  |  |  |  |  |  |  |
| SV | -0.114 | -0.006 | -0.096 | -0.002 | -0.122 | 0.118 | 0.0378 | -0.016 | 0.132 | -0.015 | 0.30\* | 0.071 | 0.2092 | -0.4\*\* | -0.10\* |  |  |  |  |  |  |  |  |  |
| LI | 0.24\* | 0.005 | 0.100 | 0.9\*\* | 0.9\*\* | -0.133 | 0.69\*\* | 0.6\*\* | 0.7\*\* | 0.9\*\* | -0.4\*\* | 0.8\*\* | 0.86\*\* | -0.196 | 0.5\*\* | -0.180 |  |  |  |  |  |  |  |  |
| LP | 0.133 | 0.149 | 0.24\* | 0.5\*\* | 0.6\*\* | -0.27\* | 0.1701 | 0.072 | 0.26\* | 0.3\*\* | -0.3\*\* | 0.3\*\* | 0.06\*\* | 0.3\*\* | 0.3\*\* | -0.3\*\* | 0.6\*\* |  |  |  |  |  |  |  |
| SD | -0.24\* | 0.015 | -0.035 | -0.7\*\* | -0.7\*\* | 0.026 | -0.89\*\* | -0.8\*\* | -0.8\*\* | -0.8\*\* | 0.221 | -0.8\*\* | 0.50\*\* | 0.3\*\* | -0.4\*\* | 0.129 | -0.7\*\* | -0.22 |  |  |  |  |  |  |
| Proline | 0.52\* | -0.04 | 0.11 | 0.46\* | 0.44\* | -0.13 | 0.55\* | 0.41\* | 0.37\* | 0.45\* | -0.24\* | 0.42\* | 0.45\* | -0.25\* | 0.41\* | 0.37\* | 0.45\* | -0.2\* | 0.023\* |  |  |  |  |  |
| POD | 0.16 | -0.03 | 0.01 | 0.83\* | 0.89\* | -0.02 | 0.80\* | 0.75\* | 0.89\* | 0.15 | 0.03 | 0.08 | 0.97\* | 0.84\* | -0.08 | 0.70\* | 0.68\* | 0.9\* | 0.0124 | 0.91\* |  |  |  |  |
| CAT | 0.16 | -0.03 | 0.01 | 0.83\* | 0.89\* | -0.02 | 0.80\* | 0.75\* | 0.89\* | 0.15 | 0.03 | 0.08 | 0.97\* | 0.84\* | -0.08 | 0.70\* | 0.68\* | 0.9\* | -0.0024 | 0.91\* | -0.4 |  |  |  |
| TSP | 0.4\* | -0.25\* | 0.34\* | -0.01 | 0.04 | 0.67\* | 0.66\* | -0.02 | 0.95\* | -0.13 | 0.69\* | 0.60\* | 0.78\* | 0.91\* | -0.48\* | 0.85\* | 0.86\* | -0.19 | 0.023\* | 0.53\* | -0.1 | 0.37\* |  |  |
| H2O2 | -0.25\* | 0.14 | 0.06 | -0.28\* | -0.24\* | -0.01 | -0.47\* | -0.42\* | -0.43\* | -0.40\* | -0.07 | -0.38\* | -0.47\* | 0.78\* | 0.91\* | -0.48\* | 0.85\* | 0.8\* | 0.0021 | -0.19 | 0.5\* | -0.1 | 0.3\* |  |
| SOD | 0.52\* | -0.04 | 0.11 | 0.46\* | 0.44\* | -0.13 | 0.55\* | 0.41\* | 0.37\* | 0.45\* | -0.24\* | 0.42\* | 0.84\* | -0.08 | 0.70\* | 0.68\* | 0.9\* | 0.9\* | 0.0045 | -0.4 | 0.8\* | -0.2\* | -0.7 | -0.38\* |

**Supplementary Table 3: Correlation among various traits of cotton under 20dSm-1 condition**