Measurement data of physiological and biochemical indexes of cold resistance, these are the average of three repeated data

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | Soluble sugar  C（mmol/L) | MDA(umol/g) | Prolinecontent（ug/g.FW) |
| 25℃ | WT | 2.189 | 1.3097 | 15 |
| WT | 2.131 | 1.4499 | 18.5 |
| WT | 2.167 | 1.3526 | 16.253 |
| Q4 | 2.189 | 1.5419 | 24.1 |
| Q4 | 1.779 | 1.4139 | 29.55 |
| Q4 | 1.989 | 1.4498 | 26.356 |
| Q9 | 3.291 | 1.7885 | 24.958 |
| Q9 | 3.489 | 1.9052 | 24.545 |
| Q9 | 3.325 | 1.0023 | 40.45 |
| 4℃ | WT | 4.203 | 2.524 | 30.925 |
| WT | 4.344 | 2.5745 | 32.275 |
| WT | 4.256 | 2.8967 | 31.562 |
| Q4 | 4.004 | 1.0025 | 37.75 |
| Q4 | 3.536 | 1.9491 | 41.375 |
| Q4 | 3.765 | 1.9355 | 39.213 |
| Q9 | 3.606 | 1.7731 | 38.625 |
| Q9 | 3.8057 | 1.6124 | 53.175 |
| Q9 | 3.716 | 1.7808 | 40.259 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | SOD(U/g.FW) | POD(U/g.FW) | CAT(U/mgprot） | T-AO（U/mgprot） |
| 25℃ | WT | 171.60143 | 370.5 | 1.2128 | 2.61734 |
| WT | 164.915 | 313.5 | 1.76627 | 2.4008 |
| WT | 125.923 | 285 | 2.31866 | 2.971574 |
| Q4 | 160.469 | 411.5 | 3.490156 | 2.7915 |
| Q4 | 212.28 | 583 | 3.151118 | 2.80965 |
| Q4 | 245.16 | 383.5 | 1.60123 | 2.61058 |
| Q9 | 185.835 | 640.5 | 0.72576 | 2.7555 |
| Q9 | 175.249 | 583.5 | 2.74176 | 1.808 |
| Q9 | 162.43 | 156 | 3.38688 | 2.5295 |
| 4℃ | WT | 237.888 | 598.5 | 7.644 | 7.2109 |
| WT | 217.8299 | 427.5 | 5.0669 | 8.5115 |
| WT | 231.7595 | 541.5 | 3.32 | 8.8407 |
| Q4 | 387.77 | 683.5 | 6.93625 | 10.4187 |
| Q4 | 388.3284 | 942.5 | 7.53655 | 7.346 |
| Q4 | 396.129 | 854.5 | 6.649 | 10.3699 |
| Q9 | 431.788 | 684 | 5.44067 | 8.80113 |
| Q9 | 419.5307 | 598.5 | 10.73259 | 9.8238 |
| Q9 | 420.08 | 1254 | 5.12133 | 9.07386 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Relative conductivity（%） | | | | |
| 0d | WT | 8.58 | 10.05 | 9.65 |
| Q4 | 7.19 | 6.818 | 6.45 |
| Q9 | 7.874 | 9.846 | 8.579 |
| 1d | WT | 30.239 | 29.547 | 30.587 |
| Q4 | 14.406 | 15.256 | 14.985 |
| Q9 | 19.93 | 19.063 | 20.152 |
| 2d | WT | 20.56 | 22.98 | 23.55 |
| Q4 | 11.37 | 13.67 | 15.34 |
| Q9 | 20.614 | 20.958 | 21.221 |
| 3d | WT | 31.53 | 31.24 | 32.9648 |
| Q4 | 22.32 | 22.59 | 22.93 |
| Q9 | 39.1129 | 29.51 | 30.89 |
| 4d | WT | 47.57 | 48.25 | 49.15 |
| Q4 | 29.82 | 30.08 | 28.96 |
| Q9 | 35.91 | 34.06 | 35.23 |
| 5d | WT | 29.31 | 30.56 | 31.25 |
| Q4 | 19.45 | 20.94 | 20.69 |
| Q9 | 44 | 36 | 39 |
| 6d | WT | 43.5 | 45.69 | 44.23 |
| Q4 | 25.63 | 30.25 | 26.78 |
| Q9 | 40.48 | 39.5 | 38.06 |
| 7d | WT | 45.48 | 50.69 | 49.21 |
| Q4 | 32.35 | 33.69 | 34.48 |
| Q9 | 41.81 | 42.13 | 43.14 |