**Seedling tolerance of castor genotypes with good root traits for drought, temperature and salinity (Lab study):**

Germplasm lines were screened for drought tolerance (with PEG induced drought stress), temperature tolerance (with temperature induction response (TIR) technique), salinity stress tolerance (with NaCl induced salt stress) during germination.

Table 1: Percent seedling survival for temperature (TIR technique)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S.No. | **Germplasm** | **% survival** | | |
| **Control** | **induction** | **lethal** |
| 1 | RG 1437 | 100 | 34 | 16 |
| 2 | RG 1922 | 100 | 50 | 10 |
| 3 | RG 1941 | 100 | 83 | 0 |
| 4 | RG 2048 | 100 | 67 | 11 |
| 5 | RG 2058 | 100 | 11 | 0 |
| 6 | RG 2059 | 100 | 100 | 33 |
| 7 | RG 2113 | 100 | 40 | 0 |
| 8 | RG 2124 | 100 | 25 | 0 |
| 9 | RG 2153 | 100 | 43 | 0 |
| 10 | RG 3063 | 100 | 40 | 30 |

Genotypes RG 1437, RG 1922, RG 2048, RG 2059,RG 3063 survived even at lethal temperature. RG 2059, RG 3063 recorded ≥40% (100, 40% resp.) survival at induction and ≥30% (33, 30% resp.) survival at lethal temperature (Table 1).

Table 2 : Percent germination with PEG induced drought stress

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.No.** | **Germplasm** | **% germintion** | | |
| **control** | **PEG concentration** | |
| **-2 bars** | **-4 bars** |
| 1 | RG 89 | 100 | 37.5 |  |
| 2 | RG 152 | 100 | 16.7 |  |
| 3 | RG 272 | 100 | 33.3 |  |
| 4 | RG 289 | 100 | 0.0 |  |
| 5 | RG 415 | 100 | 25.0 |  |
| 6 | RG 1437 | 100 | 0.0 |  |
| 7 | RG 1941 | 100 | 0.0 |  |
| 8 | RG 2048 | 100 | 24.7 | 13.0 |
| 9 | RG 2058 | 100 | 0.0 |  |
| 10 | RG 3063 | 100 | 5.0 |  |

Out of 10 lines screened for drought tolerance with PEG, only RG 2048 germinated (13%) at -4 bars and RG 89, RG 272, RG 415, RG 2048 (25-38%) showed germination at -2 bars drought stress (Table 2). None of the genotypes screened for salinity tolerance with NaCl solution germinated at 150 mmhos NaCl solution. RG 72 (54%), RG 289 (37%) germinated at 100 mmhos NaCl solution. These two recorded high germination even at 50mmhos (RG 72: 100%),(RG 289 (59%) followed by RG 373 (45%), RG 272 (30%) and RG 2113 (30%) (Table 10c)

Table 3 : Percent germination with NaCl induced salinity stress

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S.No.** | **Germplasm** | **% Germination** | | |
| **control** | **NaCl concentration** | |
| **50mM** | **100mM** |
| 1 | RG 72 | 100 | 100 | 54 |
| 2 | RG 272 | 100 | 30 | 0 |
| 3 | RG 289 | 100 | 59 | 37 |
| 4 | RG 373 | 100 | 45 | 0 |
| 5 | RG 1437 | 100 | 0 | 0 |
| 6 | RG 1759 | 100 | 19 | 0 |
| 7 | RG 1922 | 100 | 0 | 0 |
| 8 | RG 2113 | 100 | 30 | 0 |
| 9 | RG 2058 | 100 | 27 | 0 |
| 10 | RG 2059 | 100 | 0 | 0 |