**Confirmation of drought tolerance of castor lines with better root traits in field conditions:**

**(2009-10 to 2014-15)**

Out of 60 germplasm and 11 breeding lines selected (2006-2012) for good root traits, 36 germplasm lines were screened for their drought tolerance in field along with poor root genotypes and a variety (48-1) and hybrid (DCH-519) as checks during late *rabi,* from 2009-10 to 2014-15. Water stress was imposed from 30-90 DAS and data on important growth and biochemical parameters were recorded before relieving stress and yield components and yield were recorded to identify genotypes with better drought tolerance even in field. During different years, data on 10 genotypes out of 36 screened could not be recorded due to severe wilt incidence. Two years data of 22 genotypes and three years data of 4 genotypes was recorded.

In general, water stress resulted in severe growth reduction in terms of reduced plant height, leaf number, stem girth, branches and dry matter. Growth of primaries and secondaries was affected and there was significant reduction in effective spike length, capsule number and seed yield. After relieving stress, tolerant genotypes tried to compensate the growth reduction with production of more no. of tertiaries and quarternaries. Based on the data, a total of 12 best genotypes with good root growth and drought tolerance were recorded. The data on % reduction in seed yield and drought susceptibility index of the selected genotypes is presented in Table 3.

Table 3. Total seed yield, seed yield reduction (%) and drought susceptibility index (DSI) of the selected genotypes

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S. No.** | **Genotype** | **Year** | **Total seed yield(g/plant)** | | **% reduction** | **DSI** |
| **Control** | **Stress** |
| 1 | RG 27 | 2013-14 | 164 | 120 | 27.0 | 0.82 |
|  |  | 2014-15 | 109 | 92 | 16.0 | 1.00 |
| 2 | RG 72 | 00-01 | 30.2 | 26 | 13.9 | 0.33 |
|  |  | 14-15 | 116 | 102 | 12.6 | 0.79 |
| 3 | RG 82 | 2010-11 | 98.0 | 70.5 | 28.0 | 0.77 |
|  |  | 2011-12 | 152 | 78 | 48.8 | 1.4 |
| 4 | RG 89 | 2002-03 | 43 | 49 | -15 | -0.56 |
|  |  | 2014-15 | 72.5 | 70.2 | 2.3 | 0.20 |
| 5 | RG111 | 2002-03 | 34.5 | 34.3 | 0.6 | 0.02 |
|  |  | 2011-12 | 141.4 | 109.3 | 22.7 | 0.65 |
| 6 | RG 298 | 2002-03 | 49 | 52 | -5.9 | -0.23 |
|  |  | 2013-14 | 128 | 86 | 32 | 0.96 |
| 7 | RG 1437 | 2010-11 | 80.5 | 60.2 | 18.0 | 0.50 |
|  |  | 2011-12 | 124.1 | 64.6 | 47.9 | 1.37 |
| 8 | RG 1494 | 2010-11 | 36.7 | 40.5 | -10.2 | -0.28 |
|  |  | 2011-12 | 95.4 | 79.0 | 17.1 | 0.49 |
| 9 | RG 1826 | 2014-15 | 114.8 | 114.6 | 0.2 | 0.01 |
| 10 | RG1941 | 2010-11 | 63 | 49 | 22.2 | 0.61 |
|  |  | 2011-12 | 72.4 | 41.12 | 43.2 | 1.24 |
| 11 | RG 2139 | 2010-11 | 66.1 | 56.7 | 14.2 | 0.39 |
|  |  | 2011-12 | 106.1 | 84.4 | 20.5 | 0.59 |
| 12 | RG 2797 | 2010-11 | 118.6 | 95.3 | 19.6 | 0.54 |
|  |  | 2011-12 | 144.9 | 62.1 | 57.1 | 1.64 |
| **Poor root checks** | | | | | | |
| 1 | RG 1520 | 2011-12 | 84.6 | 25.3 | 70.1 | 1.43 |
| 2 | RG 1628 | 2010-11 | 92 | 54.7 | 40.5 | 1.12 |
|  |  | 2011-12 | 112.6 | 24.4 | 78.3 | 1.60 |
| 3 | RG 2068 | 2010-11 | 96.7 | 66.6 | 31.1 | 0.86 |
|  |  | 2011-12 | 94.0 | 29.5 | 68.6 | 1.40 |