**Effect of Trichoderma on drought stress alleviation in castor: (2012-13)**

An experiment was conducted using ten trichoderma isolates as seed treatment @10g per kg seed in DCH-519 castor hybrid during *rabi/summer*, 2012-13. Drought stress was imposed by withholding irrigation from 30-90DAS along with irrigated and untreated controls as checks. There was growth reduction due to water stress (reduction in plant height, leaf no., stem girth, branch production and TDM). In stressed plots, trichoderma seed treatment improved the crop growth and dry matter production compared to untreated control. But in irrigated plots, the effect of trichoderma is not significant. SCMR increased in drought stressed plots due to decreased leaf area and increased specific leaf weight.

Table 6: Seed yield of different order branches and total seed yield (g/plant)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.No.** | **Trichoderma treatments** | **Seed yield of different order branches (g/pl.)** | | | | **total seed yield (g/pl.)** | **TDM at harvest (g/pl.)** | **HI (%)** |
| **Primary** | **Secondary** | **Tertiary** | **Quarternary** |
| **Control (irrigated)** | |  |  |  |  |  |  |  |
| 1 | TV 2 | 75.3 | 48.3 | 22.0 | 45.2 | 190.7 | 559.2 | 34.1 |
| 2 | TV 5 | 59.1 | 53.9 | 33.0 | 51.2 | 197.2 | 588.3 | 33.5 |
| 3 | TA 2 | 59.8 | 53.7 | 36.6 | 44.6 | 194.7 | 611.9 | 31.8 |
| 4 | T 79 | 70.5 | 52.1 | 30.2 | 39.4 | 192.1 | 590.3 | 32.5 |
| 5 | KA 8D | 66.3 | 61.0 | 57.0 | 57.8 | 242.1 | 641.0 | 37.8 |
| 6 | T 673 | 72.6 | 54.2 | 24.7 | 60.2 | 211.6 | 624.0 | 33.9 |
| 7 | T 7316 | 58.7 | 50.8 | 20.6 | 38.4 | 168.6 | 547.9 | 30.8 |
| 8 | Th 4d | 49.4 | 51.1 | 24.7 | 29.0 | 154.3 | 541.4 | 28.5 |
| 9 | GJ 11A | 66.0 | 54.9 | 41.2 | 38.2 | 200.3 | 543.8 | 36.8 |
| 10 | TN 13 | 61.8 | 51.0 | 41.0 | 12.4 | 166.2 | 512.4 | 32.4 |
| **11** | **untreated C** | **70.0** | **39.4** | **21.3** | **31.2** | **161.8** | **493.7** | **32.8** |
|  | ***average*** | ***64.5*** | ***51.8*** | ***32.0*** | ***40.7*** | ***189.0*** | ***568.5*** | ***33.2*** |
| **Drought stress** | |  |  |  |  |  |  |  |
| 12 | TV 2 | 46.1 | 51.1 | 53.2 | 32.3 | 182.7 | 468.9 | 39.0 |
| 13 | TV 5 | 39.5 | 41.8 | 66.7 | 38.0 | 186.1 | 595.5 | 31.2 |
| 14 | TA 2 | 31.3 | 49.6 | 75.3 | 32.3 | 188.4 | 572.1 | 32.9 |
| 15 | T 79 | 25.0 | 35.7 | 62.4 | 39.5 | 162.6 | 598.3 | 27.2 |
| 16 | KA 8D | 30.5 | 44.8 | 53.0 | 33.8 | 162.1 | 527.3 | 30.7 |
| 17 | T 673 | 42.8 | 55.6 | 69.0 | 36.4 | 203.8 | 552.2 | 36.9 |
| 18 | T 7316 | 37.5 | 39.1 | 71.8 | 43.4 | 191.8 | 596.2 | 32.2 |
| 19 | Th 4d | 44.8 | 55.1 | 58.0 | 13.6 | 171.4 | 622.6 | 27.5 |
| 20 | GJ 11A | 27.7 | 38.2 | 32.3 | 18.7 | 117.0 | 472.9 | 24.7 |
| 21 | TN 13 | 35.0 | 50.7 | 48.8 | 34.0 | 168.6 | 604.7 | 27.9 |
| **22** | **untreated S** | **26.3** | **22.5** | **17.8** | **15.3** | **81.9** | **277.4** | **29.5** |
|  | ***average*** | ***35.1*** | ***43.3*** | ***55.3*** | ***30.5*** | ***163.4*** | ***535.3*** | ***30.1*** |

In general, with water stress from 30-90DAS, there was reduction in seed yield of primaries, secondaries and total seed yield. Trichoderma seed treatment improved the seed yield of primaries, secondaries, tertiaries, quarternaries and thereby total seed yield by increasing spike number, effective spike length, capsule number and test weight in stressed plots. However, there was variation in growth due to slope of the field which effected the growth of untreated plots. Hence, the effect of trichoderma strains on drought stress alleviation needs confirmation. T673 and T7316 isolates recorded more total seed yield followed by TV2, TV5 and TA2 in stressed plots. Further studies on effect of trichoderma on drought stress alleviation were being carried out in AMAAS project.