**Table S1: Estimation of heterosis for yield and its attributes under irrigated (E1) and rainfed condition (E2)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Crosses** | **Days to 75 % heading** | | | | **Days to maturity** | | | | **Plant height (cm)** | | | | **Spike length (cm)** | | | |
| **Environment (E1)** | | **Environment (E2)** | | **Environment (E1)** | | **Environment (E2)** | | **Environment (E1)** | | **Environment (E2)** | | **Environment (E1)** | | **Environment (E2)** | |
| **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** |
| C1 | -5.44\*\* | 1.16 | -8.50\*\* | -2.09 | -2.54\*\* | 2.13\* | -1.40 | -0.94 | -12.04\*\* | -12.36\*\* | -10.33\*\* | 2.32 | 8.97\*\* | 8.00\* | -15.25\*\* | -12.94\* |
| C2 | -2.54\* | 4.26\*\* | -6.86\*\* | -0.35 | -3.55\*\* | 1.07 | -3.04\*\* | -2.59\*\* | -6.06\*\* | -6.40\*\* | -6.53\*\* | 6.65\*\* | 9.96\*\* | 8.98\*\* | -18.94\*\* | -16.74\*\* |
| C3 | -5.80\*\* | 0.78 | -7.19\*\* | -0.70 | -4.06\*\* | 0.54 | -3.98\*\* | -3.53\*\* | -1.11 | -1.48 | -8.62\*\* | 4.27\*\* | -0.51 | -1.40 | -20.93\*\* | -18.79\*\* |
| C4 | -8.33\*\* | -1.94 | -14.05\*\* | -8.04\*\* | -6.85\*\* | -2.39\* | -3.75\*\* | -3.30\*\* | 14.58\*\* | 14.15\*\* | 4.79\*\* | 19.56\*\* | 11.97\*\* | 10.97\*\* | 0.68 | 3.42 |
| C5 | -3.62\*\* | 3.10\*\* | -12.09\*\* | -5.94\*\* | -3.55\*\* | 1.07 | -2.11\*\* | -1.65\* | 15.75\*\* | 15.32\*\* | 8.62\*\* | 23.93\*\* | 15.90\*\* | 14.87\*\* | -3.30 | -0.67 |
| C6 | -6.88\*\* | -0.39 | -16.34\*\* | -10.49\*\* | -2.79\*\* | 1.86 | -3.75\*\* | -3.30\*\* | 9.21\*\* | 8.80\*\* | -4.70\*\* | 8.74\*\* | 8.01\* | 7.05\* | -10.89 | -8.47 |
| C7 | -3.26\*\* | 3.49\*\* | -10.13\*\* | -3.84\*\* | -5.58\*\* | -1.06 | -3.28\*\* | -2.83\*\* | -2.72\* | -3.08\* | -6.53\*\* | 6.65\*\* | 9.24\*\* | 8.27\* | -4.01 | -1.40 |
| C8 | -1.81 | 5.04\*\* | -9.48\*\* | -3.14\* | -4.31\*\* | 0.27 | -2.81\*\* | -2.36\*\* | 9.41\*\* | 9.01\*\* | -5.92\*\* | 7.34\*\* | 17.76\*\* | 16.71\*\* | -1.31 | 1.37 |
| C9 | -5.80\*\* | 0.78 | -9.15\*\* | -2.79\* | -5.58\*\* | -1.06 | -3.51\*\* | -3.06\*\* | 2.61\* | 2.23 | -1.31 | 12.61\*\* | 6.48 | 5.53 | -5.43 | -2.87 |
| C10 | -8.33\*\* | -1.94 | -13.40\*\* | -7.34\*\* | -6.09\*\* | -1.59 | -1.87\* | -1.41 | 0.66 | 0.29 | -0.78 | 13.20\*\* | 4.98 | 4.04 | -2.36 | 0.29 |
| C11 | -7.25\*\* | -0.78 | -15.03\*\* | -9.09\*\* | -5.07\*\* | -0.53 | -4.92\*\* | -4.47\*\* | 3.85\*\* | 3.46\*\* | -2.22 | 11.57\*\* | 13.50\*\* | 12.49\*\* | 2.82 | 5.61 |
| C12 | -8.33\*\* | -1.94 | -10.13\*\* | -3.84\*\* | -5.84\*\* | -1.33 | -3.75\*\* | -3.30\*\* | -0.23\*\* | -0.60 | -10.71\*\* | 1.88 | 10.47\*\* | 9.49\*\* | -2.84 | -0.21 |
| C13 | -5.44\*\* | 1.16 | -11.11\*\* | -4.89\*\* | -2.03\* | 2.66\*\* | -4.92\*\* | -4.47\*\* | -4.88 | -5.23\*\* | -6.79\*\* | 6.35\*\* | 16.95\*\* | 15.91\*\* | -0.37 | 2.34 |
| C14 | -1.45 | 5.43\*\* | -1.96 | 4.90\*\* | -2.54\*\* | 2.13\* | -0.93 | -0.47 | 1.15 | 0.78 | -16.19\*\* | -4.37\*\* | 16.50\*\* | 15.46\*\* | 7.11 | 10.02 |
| C15 | 5.80\*\* | 13.18\*\* | -11.77\*\* | -5.59\*\* | 0.51 | 5.32\*\* | -3.75\*\* | -3.30\*\* | -16.46\*\* | -16.77\*\* | -12.52\*\* | -0.18 | 14.76\*\* | 13.74\*\* | 7.37 | 10.28 |
| C16 | -2.17\* | 4.65\*\* | -10.78\*\* | -4.54\*\* | -2.28\* | 2.40\* | -3.28\*\* | -2.83\*\* | 1.95\*\* | 1.57 | -1.77 | 12.08\*\* | 7.47\* | 6.51 | -2.59 | 0.06 |
| C17 | -1.45 | 5.43\*\* | -9.15\*\* | -2.79\* | -2.79\*\* | 1.86 | -4.45\*\* | -4.00\*\* | 5.55 | 5.16\*\* | -6.50\*\* | 6.68\*\* | 16.74\*\* | 15.70\*\* | 1.14 | 3.89 |
| C18 | -6.52\*\* | 0.00 | -8.50\*\* | -2.09 | -1.01 | 3.73\*\* | -5.15\*\* | -4.71\*\* | 5.97\*\* | 5.58\*\* | -7.83\*\* | 5.16\*\* | 20.25\*\* | 19.18\*\* | -2.33 | 0.32 |
| C19 | -1.81 | 5.04\*\* | -5.56\*\* | 1.05 | -2.54\*\* | 2.13\* | -2.34\*\* | -1.89\* | 3.27\* | 2.89\* | -8.75\*\* | 4.12\*\* | 20.22\*\* | 19.15\*\* | 2.13 | 4.91 |
| C20 | -4.71\*\* | 1.94 | -4.90\*\* | 1.75 | -3.81\*\* | 0.80 | -2.81\*\* | -2.36\*\* | 8.55\*\* | 8.15\*\* | 1.44 | 15.74\*\* | 17.25\*\* | 16.21\*\* | 10.44 | 13.44\* |
| C21 | -0.73 | 6.20\*\* | -7.84\*\* | -1.40 | -0.76 | 3.99\*\* | -1.17 | -0.71 | 12.05\*\* | 11.64\*\* | -1.38 | 12.53\*\* | 20.73\*\* | 19.66\*\* | 3.81 | 6.63 |
| C22 | -3.99\*\* | 2.71\* | -9.80\*\* | -3.49\* | -2.54\*\* | 2.13\* | -2.34\*\* | -1.89\* | -1.66 | -2.03 | -6.96\*\* | 6.15\*\* | 12.24\*\* | 11.24\*\* | -2.87 | -0.23 |
| C23 | -2.17\* | 4.65\*\* | 0.65 | 7.70\*\* | -3.04\*\* | 1.60 | -4.92\*\* | -4.47\*\* | -1.37 | -1.74 | -12.10\*\* | 0.29 | 15.39\*\* | 14.36\*\* | 7.59 | 10.52 |
| C24 | -5.07\*\* | 1.55 | -9.15\*\* | -2.79\* | -4.57\*\* | 0.003 | -3.75\*\* | -3.30\*\* | -0.74 | -1.11 | -14.88\*\* | -2.88 | 15.00\*\* | 13.98\*\* | -3.30 | -0.67 |
| C25 | -6.16\*\* | 0.39 | -5.88\*\* | 0.70 | -3.55\*\* | 1.07 | -4.68\*\* | -4.24\*\* | 5.39\*\* | 5.00\*\* | -4.79\*\* | 8.63\*\* | 6.99\* | 6.04 | -10.95 | -8.53 |
| C26 | -4.71\*\* | 1.94 | -7.84\*\* | -1.40 | -2.79\*\* | 1.86 | -0.23 | 0.23 | 6.83\*\* | 6.43\*\* | -1.35 | 12.56\*\* | 6.51 | 5.56\* | 0.40 | 3.13 |
| C27 | -4.71\*\* | 1.94 | -13.40\*\* | -7.34\*\* | -3.81\*\* | 0.80 | -0.93 | -0.47 | 5.34\*\* | 4.95\*\* | -7.31\*\* | 5.76\*\* | 9.00\*\* | 8.03 | 4.27 | 7.10 |
| C28 | -2.54\* | 4.26\*\* | -2.94 | 3.85\*\* | -0.51 | 4.26\*\* | -1.40 | -0.94 | -1.32 | -1.68 | -6.00\*\* | 7.25\*\* | 3.45 | 2.53\*\* | -5.86 | -3.30 |
| C29 | -5.07\*\* | 1.55 | -2.61 | 4.20\*\* | -4.57\*\* | 0.003 | -1.40 | -0.94 | 5.97\*\* | 5.57\*\* | -10.79\*\* | 1.78 | 14.01\*\* | 12.99\* | 9.64 | 12.62\* |
| C30 | -4.35\*\* | 2.34\* | -6.21\*\* | 0.35 | -3.81\*\* | 0.80 | -3.75\*\* | -3.30\*\* | 5.22\*\* | 4.83\*\* | 1.76 | 16.10\*\* | 8.49\* | 7.52\* | 1.45 | 4.21 |
| C31 | -7.97\*\* | -1.55 | -9.80\*\* | -3.49\* | -2.03\* | 2.66\*\* | -3.51\*\* | -3.06\*\* | 21.29\*\* | 20.84\*\* | 3.83\*\* | 18.47\*\* | 7.98\* | 7.02\* | -3.24 | -0.61 |
| C32 | -5.44\*\* | 1.16 | -5.23\*\* | 1.40 | -1.27 | 3.46\*\* | -4.45\*\* | -4.00\*\* | 26.51\*\* | 26.04\*\* | 2.87\* | 17.37\*\* | 20.49\*\* | 19.42\*\* | 15.64\*\* | 18.79\*\* |
| C33 | -7.25\*\* | -0.78 | -0.65 | 6.30\*\* | -0.76 | 3.99\*\* | -4.92\*\* | -4.47\*\* | 18.59\*\* | 18.15\*\* | 5.14\*\* | 19.96\*\* | 6.24 | 5.29 | -3.70 | -1.08 |

\*,\*\* Significance at 5% and 1% probability levels, E1= Irrigated condition, E2= Rainfed condition, CP1= HD2967 and CP2= PBW660

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Crosses** | **Peduncle length (cm)** | | | | **Awn length (cm)** | | | | **Productive tillers / plant** | | | | **Spikelets / spike** | | | |
| **Environment (E1)** | | **Environment (E2)** | | **Environment (E1)** | | **Environment (E2)** | | **Environment (E1)** | | **Environment (E2)** | | **Environment (E1)** | | **Environment (E2)** | |
| **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** |
| C1 | -16.05\*\* | -8.63\*\* | -1.27 | -5.58 | 20.67\*\* | 11.08\*\* | 17.68\*\* | 5.10 | 100.00\*\* | 18.05\*\* | 0.00 | -14.81 | -2.18 | 3.32 | -18.38\*\* | -9.98\*\* |
| C2 | -16.20\*\* | -8.79\*\* | -7.65 | -11.68\*\* | 7.87 | -0.71 | 13.25\*\* | 1.14 | 44.44\*\* | -14.74\*\* | -23.08\* | -34.47\*\* | 8.29\*\* | 14.37\*\* | -9.83\*\* | -0.55 |
| C3 | -3.64 | 4.88 | -7.54 | -11.57\*\* | 15.06\*\* | 5.92 | 9.60 | -2.11 | 52.78\*\* | -9.82\* | -11.54 | -24.64\*\* | -10.56\*\* | -5.54\* | -16.05\*\* | -7.41\* |
| C4 | 22.10\*\* | 32.89\*\* | 24.57\*\* | 19.14\*\* | 3.89 | -4.37 | 5.37 | -5.89 | 25.00\*\* | -26.22\*\* | 71.18\*\* | 45.83\*\* | 0.97 | 6.65\* | -8.80\*\* | 0.58 |
| C5 | 15.81\*\* | 26.04\*\* | 15.85\*\* | 10.80\* | 22.25\*\* | 12.54\*\* | 19.35\*\* | 6.60 | 19.44\*\* | -29.50\*\* | -19.23 | -31.19\*\* | 8.29\*\* | 14.37\*\* | 4.17 | 14.88\*\* |
| C6 | 20.77\*\* | 31.44\*\* | 14.56\*\* | 9.57\* | 10.26\* | 1.50 | 14.03\*\* | 1.85 | 13.89 | -32.78\*\* | 30.77\*\* | 11.40 | 3.06 | 8.85\*\* | -18.13\*\* | -9.71\*\* |
| C7 | -1.28 | 7.45\* | 1.99 | -2.46 | 7.10 | -1.41 | 8.32 | -3.25 | 2.78 | -39.33\*\* | -19.23 | -31.19\*\* | -6.36\* | -1.09 | -18.64\*\* | -10.27\*\* |
| C8 | 0.85 | 9.76\*\* | 5.80 | 1.18 | 34.20\*\* | 23.53\*\* | 23.98\*\* | 10.73\* | 8.33 | -36.06\*\* | -21.54\* | -33.16\*\* | 12.46\*\* | 18.78\*\* | -18.38\*\* | -9.98\*\* |
| C9 | 3.96 | 13.15\*\* | 7.64 | 2.95 | 19.52\*\* | 10.02\*\* | 15.46\*\* | 3.12 | 2.78 | -39.33\*\* | 15.39 | -1.70 | -4.28 | 1.09 | -19.68\*\* | -11.42\*\* |
| C10 | -2.80 | 5.79 | 7.64 | 2.95 | 20.67\*\* | 11.08\*\* | 25.55\*\* | 12.14\*\* | 19.44\*\* | -29.50\*\* | 3.85 | -11.53 | -9.50\*\* | -4.41 | -11.38\*\* | -2.26 |
| C11 | -0.28 | 8.53\*\* | 6.67 | 2.02 | 27.87\*\* | 17.70\*\* | 29.49\*\* | 15.66\*\* | 16.67\* | -31.14\*\* | 61.54\*\* | 37.62\*\* | -0.08 | 5.54\* | -6.41\* | 3.22 |
| C12 | -7.26\* | 0.93 | -4.25 | -8.42\* | 29.45\*\* | 19.16\*\* | 24.82\*\* | 11.48\* | 30.56\*\* | -22.94\*\* | 28.21\*\* | 9.22 | -0.08 | 5.54\* | -4.38 | 5.45 |
| C13 | -7.81\*\* | 0.34 | -6.56 | -10.64\* | 21.44\*\* | 11.79\*\* | 8.37 | -3.21 | 41.67\*\* | -16.38\*\* | -18.00 | -30.14\*\* | 7.24\*\* | 13.26\*\* | -6.72\* | 2.88 |
| C14 | -8.60\*\* | -0.53 | -5.55 | -9.67\* | 7.87 | -0.71 | 9.60 | -2.11 | 8.33 | -36.06\*\* | -23.07\* | -34.47\* | 6.18\* | 12.15\*\* | 3.13 | 13.74\*\* |
| C15 | -7.92\*\* | 0.22 | -4.51 | -8.68\* | 3.89 | -4.37 | 16.69\*\* | 4.22 | -2.78 | -42.61\*\* | -16.67 | -29.01\*\* | -15.79\*\* | -11.06\*\* | -12.42\*\* | -3.41 |
| C16 | -4.05 | 4.42 | 4.24 | -0.31 | 12.37\*\* | 3.44 | 16.45\*\* | 4.00 | 72.22\*\* | 1.66 | -13.85 | -26.61\*\* | -7.42\*\* | -2.22 | -16.56\*\* | -7.97\* |
| C17 | 5.56 | 14.88\*\* | 6.73 | 2.08 | 19.86\*\* | 10.33\*\* | 22.35\*\* | 9.28 | 69.44\*\* | 0.02 | -4.56 | -18.70\* | 8.27\*\* | 14.35\*\* | -8.78\*\* | 0.60 |
| C18 | -1.01 | 7.73\* | 1.23 | -3.18 | 19.86\*\* | 10.33\*\* | 13.74\*\* | 1.58 | 55.56\*\* | -8.18 | -42.31\*\* | -50.85\*\* | -3.22 | 2.22 | -19.15\*\* | -10.84\*\* |
| C19 | 0.20 | 9.05\*\* | 1.17 | -3.25 | 17.46\*\* | 8.12\* | 19.45\*\* | 6.68 | 66.67\*\* | -1.62 | 19.23 | 1.57 | -6.37\* | -1.11 | -13.28\*\* | -4.36 |
| C20 | 9.54\*\* | 19.22\*\* | 12.96 | 8.03 | 27.87\*\* | 17.70\*\* | 12.26\* | 0.26 | 59.72\*\* | -5.72 | 51.54\*\* | 29.10\*\* | -8.44\*\* | -3.30 | -13.98\*\* | -5.13 |
| C21 | 7.30\* | 16.78\*\* | 11.54 | 6.68 | 21.49\*\* | 11.83\*\* | 11.32\* | -0.57 | 66.67\*\* | -1.62 | 186.41\*\* | 143.99\*\* | 6.18\* | 12.15\*\* | -5.68 | 4.03 |
| C22 | -3.43 | 5.10 | -0.81 | -5.14 | 24.65\*\* | 14.75\*\* | 17.68\*\* | 5.10 | 63.89\*\* | -3.26 | -1.28 | -15.90 | -0.08 | 5.54\* | -9.31\*\* | 0.02 |
| C23 | -7.08\* | 1.13 | -5.80 | -9.91 | 22.25\*\* | 12.54\*\* | 22.50\*\* | 9.41\* | 47.22\*\* | -13.10\*\* | 0.00 | -14.81 | 10.37\*\* | 16.58\*\* | 0.54 | 10.89\*\* |
| C24 | -6.32\* | 1.95 | -4.93 | -9.08 | 17.65\*\* | 8.30\* | 17.82\*\* | 5.23 | 38.89\*\* | -18.02\*\* | -21.13\* | -32.81\*\* | 12.46\*\* | 18.78\*\* | -7.74\*\* | 1.75 |
| C25 | 12.16\*\* | 22.07\*\* | 13.64\*\* | 8.68 | 26.09\*\* | 16.07\*\* | 25.21\*\* | 11.83\*\* | 16.67\* | -31.14\*\* | -24.36\* | -35.56\*\* | -5.32\* | 0.00 | -9.31\*\* | 0.02 |
| C26 | 0.57 | 9.46\*\* | 2.78 | -1.70 | 27.87\*\* | 17.70\*\* | 36.93\*\* | 22.30\*\* | 75.00\*\* | 3.30 | -7.69 | -21.36\* | -2.18 | 3.32 | -9.31\*\* | 0.02 |
| C27 | 5.40 | 14.71\*\* | 6.92 | 2.26 | 28.01\*\* | 17.84\*\* | 35.70\*\* | 21.20\*\* | 58.33\*\* | -6.54 | 11.54 | -4.98 | -3.22 | 2.22 | -9.83\*\* | -0.55 |
| C28 | 0.67 | 9.56\*\* | 4.32 | -0.23 | 7.48 | -1.06 | 11.72\* | -0.22 | 62.03\*\* | -4.36 | -38.46\*\* | -47.58\*\* | -1.13 | 4.43 | -10.87\*\* | -1.70 |
| C29 | 2.82 | 11.91\*\* | 7.33 | 2.64 | 11.46\*\* | 2.61 | 14.82\*\* | 2.55 | 33.33\*\* | -21.30\*\* | -11.54 | -24.64\*\* | 7.24\*\* | 13.26\*\* | 7.81\*\* | 18.90\*\* |
| C30 | 1.00 | 9.93\*\* | 7.23 | 2.55 | -1.87 | -9.67\* | 3.50 | -7.56 | 55.56\*\* | -8.18 | 15.39 | -1.70 | -6.36\* | -1.09 | -8.78\*\* | 0.60 |
| C31 | 33.53\*\* | 45.33\*\* | 25.88\*\* | 20.38\*\* | 12.23\*\* | 3.31 | 15.71\*\* | 3.34 | 86.11\*\* | 9.85\* | -36.51\*\* | -45.92\*\* | -11.60\*\* | -6.63\* | -15.53\*\* | -6.84\* |
| C32 | 20.36\*\* | 30.99\*\* | 18.52\*\* | 13.35\*\* | 31.46\*\* | 21.02\*\* | 29.20\*\* | 15.39\*\* | 102.78\*\* | 19.69\*\* | 20.51 | 2.67 | 0.96 | 6.63\* | 1.06 | 11.45\*\* |
| C33 | 34.45\*\* | 46.32\*\* | 34.83\*\* | 28.94\*\* | 20.19\*\* | 10.64\*\* | 20.29\*\* | 7.43 | 119.44\*\* | 29.53\*\* | -43.59\*\* | -51.94\*\* | -8.46\*\* | -3.32 | -13.98\*\* | -5.13 |

\*,\*\* Significance at 5% and 1% probability levels, E1= Irrigated condition, E2= Rainfed condition, CP1= HD2967 and CP2= PBW660

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Crosses** | **Flag leaf area (cm2)** | | | | **1000 grain weight** | | | | **Grains / spike** | | | | **Grain weight / spike** | | | |
| **Environment (E1)** | | **Environment (E2)** | | **Environment (E1)** | | **Environment (E2)** | | **Environment (E1)** | | **Environment (E2)** | | **Environment (E1)** | | **Environment (E2)** | |
| **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** |
| C1 | -42.32\*\* | -0.49 | -8.98 | 12.14\* | 0.98 | -4.04 | -9.49\*\* | -13.36\*\* | 9.28\*\* | 25.77\*\* | -3.84 | -10.88\*\* | 23.44 | 48.75\*\* | -20.61\*\* | -16.93\*\* |
| C2 | -21.23\*\* | 35.90\*\* | 1.16 | 24.63\*\* | -1.04 | -5.96\* | -3.64 | -7.73\*\* | -3.46 | 11.11\*\* | -7.98\*\* | -14.72\*\* | -5.12 | 14.33 | -37.87\*\* | -34.99\*\* |
| C3 | -33.32\*\* | 15.04\* | 3.85 | 27.95\*\* | -1.30 | -6.21\* | -12.78\*\* | -16.49\*\* | 10.79\*\* | 27.51\*\* | -35.90\*\* | -40.59\*\* | 23.93 | 49.33\*\* | -40.43\*\* | -37.67\*\* |
| C4 | -30.21\*\* | 20.40\*\* | 23.37\*\* | 51.99\*\* | 15.65\*\* | 9.90\*\* | 5.33 | 0.85 | 4.01\* | 19.70\*\* | 0.87 | -6.52\*\* | 32.37\*\* | 59.50\*\* | -10.06\*\* | -5.88 |
| C5 | -34.41\*\* | 13.16 | 9.07 | 34.38\*\* | 1.67 | -3.38 | -10.05\*\* | -13.87\*\* | 27.78\*\* | 47.06\*\* | 3.01 | -4.53\* | 30.71\* | 57.5\*\* | -12.82\*\* | -8.77\* |
| C6 | -22.58\*\* | 33.57\*\* | 8.35 | 33.49\*\* | 7.97\*\* | 2.60 | -3.94 | -8.02\*\* | 11.20\*\* | 27.99\*\* | -16.35\*\* | -22.47\*\* | 36.38\*\* | 64.33\*\* | -28.01\*\* | -24.67\*\* |
| C7 | -31.97\*\* | 17.37\* | -15.91\*\* | 3.60 | 8.90\*\* | 3.49 | -3.37 | -7.48\*\* | 15.29\*\* | 32.70\*\* | -12.52\*\* | -18.93\*\* | 26.97\* | 53.00\*\* | -30.18\*\* | -26.94\*\* |
| C8 | -34.93\*\* | 12.26 | 13.68\*\* | 40.06\*\* | 14.65\*\* | 8.95\*\* | 0.13 | -4.12 | 3.55 | 19.18\*\* | -9.25\*\* | -15.90\*\* | 9.96 | 32.50\* | -21.11\*\* | -17.44\*\* |
| C9 | -23.02\*\* | 32.80\*\* | 0.94 | 24.36\*\* | 13.81\*\* | 8.15\*\* | 4.00 | -0.42 | 15.57\*\* | 33.02\*\* | 4.48\* | -2.84 | 20.47 | 45.17\*\* | -16.27\*\* | -12.38\*\* |
| C10 | -34.12\*\* | 13.66\* | -0.34 | 22.78\*\* | 8.14\*\* | 2.76 | 1.17 | -3.13 | 1.77 | 17.13\*\* | -12.98\*\* | -19.35\*\* | 15.49 | 39.17\*\* | -22.68\*\* | -19.09\*\* |
| C11 | -22.40\*\* | 33.87\*\* | 13.00\*\* | 39.21\*\* | 2.59 | -2.51 | -9.03\*\* | -12.90\*\* | 14.75\*\* | 32.08\*\* | 2.94 | -4.60\* | 11.07 | 33.83\* | -23.08\*\* | -19.51\*\* |
| C12 | -26.91\*\* | 26.09\*\* | 12.09\* | 38.10\*\* | 4.46 | -0.73 | -9.05\*\* | -12.91\*\* | 5.19\* | 21.06\*\* | 6.58\*\* | -1.23 | 9.68 | 32.17\* | -17.75\*\* | -13.93\*\* |
| C13 | -23.06\*\* | 32.73\*\* | 21.40\*\* | 49.57\*\* | -7.64\*\* | -12.23\*\* | -12.63\*\* | -16.35\*\* | -10.75\*\* | 2.72 | -10.01\*\* | -16.60\*\* | -10.37 | 8.00 | -27.42\*\* | -24.05\*\* |
| C14 | -17.46\*\* | 42.40\*\* | 29.22\*\* | 59.20\*\* | -10.11\*\* | -14.58\*\* | -17.43\*\* | -20.94\*\* | 20.71\*\* | 38.93\*\* | 7.78\*\* | -0.11 | 19.36 | 43.83\*\* | -20.02\*\* | -16.31\*\* |
| C15 | -3.15 | 67.09\*\* | 46.02\*\* | 79.89\*\* | -10.24\*\* | -14.71\*\* | -12.71\*\* | -16.42\*\* | -15.03\*\* | -2.21 | 33.42\*\* | 23.65\*\* | -6.64 | 12.50 | -5.82 | -1.45 |
| C16 | -46.33\*\* | -7.40 | -7.46 | 14.01\* | 4.31 | -0.88 | 5.36 | 0.89 | -10.66\*\* | 2.83 | -4.56\* | -11.55\*\* | 20.75 | 45.50\*\* | -19.43\*\* | -15.69\*\* |
| C17 | -27.20\*\* | 25.59\*\* | 2.26 | 25.98\*\* | -8.75\*\* | -13.29\*\* | -4.19 | -8.26\*\* | 12.91\*\* | 29.95\*\* | 14.10\*\* | 5.75\*\* | 0.42 | 21.00 | -3.85 | 0.62 |
| C18 | -46.42\*\* | -7.57 | -15.85\*\* | 3.67 | -9.92\*\* | -14.40\*\* | -16.27\*\* | -19.83\*\* | 24.59\*\* | 43.40\*\* | -29.46\*\* | -34.63\*\* | 13.28 | 36.50\* | -38.76\*\* | -35.91\*\* |
| C19 | -31.95\*\* | 17.40\* | -3.65 | 18.71\*\* | -4.69 | -9.43\*\* | -4.55 | -8.60\*\* | -11.48\*\* | 1.89 | 0.13 | -7.20\*\* | -14.39 | 3.17 | -13.31\*\* | -9.29\* |
| C20 | -31.38\*\* | 18.38\*\* | 17.23\*\* | 44.43\*\* | -0.12 | -5.09\* | -11.76\*\* | -15.51\*\* | -14.89\*\* | -2.04 | -17.29\*\* | -23.35\*\* | -18.12 | -1.33 | -40.04\*\* | -37.26\*\* |
| C21 | -47.66\*\* | -9.71 | -11.56\* | 8.96 | -20.92\*\* | -24.85\*\* | -3.76 | -7.85\*\* | 3.55 | 19.18\*\* | -23.65\*\* | -29.24\*\* | -9.13 | 9.50 | -42.80\*\* | -40.14\*\* |
| C22 | -35.67\*\* | 10.99 | 14.12\*\* | 40.59\*\* | -3.28 | -8.09\*\* | 5.83\* | 1.33 | -0.82 | 14.15\*\* | 3.46 | -4.12\* | 0.14 | 20.67 | -26.43\*\* | -23.01\*\* |
| C23 | -7.91\* | 58.87\*\* | 19.69\*\* | 47.46\*\* | -0.93 | -5.85\* | -6.86\* | -10.82\*\* | 32.79\*\* | 52.83\*\* | -15.73\*\* | -21.90\*\* | 47.30\*\* | 77.50\*\* | -21.50\*\* | -17.85\*\* |
| C24 | -38.74\*\* | 5.69 | -16.36\*\* | 3.05 | 1.21 | -3.82 | -4.31 | -8.37\*\* | 33.20\*\* | 53.30\*\* | -12.84\*\* | -19.22\*\* | 37.34\*\* | 65.50\*\* | -24.95\*\* | -21.47\*\* |
| C25 | -27.98\*\* | 24.24\*\* | -14.65\*\* | 5.15 | 7.92\*\* | 2.55 | -1.78 | -5.95\* | 2.46 | 17.93\*\* | -16.43\*\* | -22.55\*\* | 12.45 | 35.50\* | -25.29\*\* | -21.82\*\* |
| C26 | -34.16\*\* | 13.59\* | -16.54\*\* | 2.83 | 7.85\*\* | 2.49 | 2.36 | -1.99 | 25.41\*\* | 44.34\*\* | -4.56\* | -11.55\*\* | 28.77\* | 55.17\*\* | -24.95\*\* | -21.47\*\* |
| C27 | -46.06\*\* | -6.95 | -17.71\*\* | 1.38 | 3.86 | -1.30 | -1.13 | -5.33\* | 21.95\*\* | 40.35\*\* | -3.27 | -10.35\*\* | 7.19 | 29.17 | -29.19\*\* | -25.90\*\* |
| C28 | -36.62\*\* | 9.34 | 2.50 | 26.28\*\* | 0.46 | -4.54 | -6.23\* | -10.22\*\* | 6.28\*\* | 22.32\*\* | -8.53\*\* | -15.23\*\* | 12.86 | 36.00\* | -30.47\*\* | -27.25\*\* |
| C29 | -22.87\*\* | 33.06\*\* | 17.97\*\* | 45.34\*\* | -4.04 | -8.82\*\* | -0.32 | -4.55 | 11.20\*\* | 27.99\*\* | 28.63\*\* | 19.21\*\* | -2.08 | 18.00 | 12.82\*\* | 18.06\*\* |
| C30 | -41.83\*\* | 0.35 | -12.64\* | 7.63 | 4.84 | -0.38 | -2.72 | -6.85\* | 6.83\*\* | 22.96\*\* | 8.30\*\* | 0.37 | 6.78 | 28.67 | -7.40\* | -3.10 |
| C31 | -49.44\*\* | -12.77 | -19.20\*\* | -0.46 | 16.79\*\* | 10.99\*\* | 8.33\*\* | 3.73 | 4.32\* | 20.07\*\* | -12.39\*\* | -18.80\*\* | 18.53 | 42.83\*\* | -29.39\* | -26.11\*\* |
| C32 | -11.57\*\* | 52.56\*\* | 1.07 | 24.51\*\* | 8.29\*\* | 2.90 | -0.91 | -5.12 | 30.33\*\* | 50.00\*\* | 16.84\*\* | 8.29\*\* | 36.93\*\* | 65.00\*\* | -3.16 | 1.34 |
| C33 | -41.45\*\* | 1.01 | -15.58\*\* | 4.01 | 6.45\* | 1.16 | 0.87 | -3.42 | -2.05 | 12.74\*\* | -19.64\*\* | -25.52\*\* | 7.61 | 29.67\* | -35.70\*\* | -32.71\*\* |

\*,\*\* Significance at 5% and 1% probability levels, E1= Irrigated condition, E2= Rainfed condition, CP1= HD2967 and CP2= PBW660

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Crosses** | **Biological yield / plant** | | | | **Grain yield / plant** | | | |
| **Environment (E1)** | | **Environment (E2)** | | **Environment (E1)** | | **Environment (E2)** | |
| **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** | **CP1** | **CP2** |
| C1 | 65.72\*\* | 9.51\*\* | -41.07\*\* | -34.74\*\* | 18.20\*\* | -8.22 | -21.93\* | -23.88\* |
| C2 | 58.46\*\* | 4.71 | -30.22\*\* | -22.72\*\* | 36.58\*\* | 6.06 | -20.48\* | -22.46\* |
| C3 | 48.77\*\* | -1.69 | -22.18\*\* | -13.82\* | -6.78 | -27.61\*\* | -16.30 | -18.38 |
| C4 | 90.75\*\* | 26.05\*\* | -5.11 | 5.10 | -6.31 | -27.25\*\* | 4.93 | 2.32 |
| C5 | 60.09\*\* | 5.79 | -46.49\*\* | -40.73\*\* | 15.73\* | -10.14\* | -44.46\*\* | -45.85\*\* |
| C6 | 52.97\*\* | 1.08 | 4.16 | 15.37\*\* | 40.46\*\* | 9.06 | 16.01 | 13.11 |
| C7 | 42.46\*\* | -5.86 | 3.93 | 15.11\*\* | 1.04 | -21.54\*\* | -32.94\*\* | -34.61\*\* |
| C8 | 17.09\*\* | -22.63\*\* | 10.89\* | 22.81\*\* | 4.85 | -18.59\*\* | -11.26 | -13.47 |
| C9 | 34.96\*\* | -10.82\*\* | -6.13 | 3.96 | 1.39 | -21.28\*\* | -0.69 | -3.16 |
| C10 | 2.19 | -32.48\*\* | -8.97 | 0.82 | 24.63\*\* | -3.23 | -0.74 | -3.22 |
| C11 | 44.21\*\* | -4.71 | -35.30\*\* | -28.35\*\* | 22.75\*\* | -4.69 | -22.60\* | -24.53\* |
| C12 | 59.09\*\* | 5.13 | -2.96 | 7.48 | 38.48\*\* | 7.53 | 6.60 | 3.94 |
| C13 | 65.26\*\* | 9.20\*\* | -28.02\*\* | -20.28\*\* | 51.07\*\* | 17.31\*\* | -22.53\* | -24.46\* |
| C14 | 51.75\*\* | 0.28 | -0.44 | 10.27 | 14.01\* | -11.47\* | -11.11 | -13.33 |
| C15 | 52.55\*\* | 0.80 | 26.92\*\* | 40.57\*\* | -8.54 | -28.98\*\* | 4.06 | 1.47 |
| C16 | 24.17\*\* | -17.95\*\* | 19.30\*\* | 32.13\*\* | 20.62\*\* | -6.34 | -24.31\* | -26.19\*\* |
| C17 | 53.48\*\* | 1.42 | -11.27\* | -1.72 | 63.22\*\* | 26.74\*\* | 0.91 | -1.61 |
| C18 | 64.92\*\* | 8.98\*\* | 7.32 | 18.86\*\* | 42.85\*\* | 10.92\* | -0.51 | -2.99 |
| C19 | 78.26\*\* | 17.80\*\* | 16.82\*\* | 29.38\*\* | -7.50 | -28.18\*\* | 6.91 | 4.24 |
| C20 | 120.47\*\* | 45.69\*\* | 71.16\*\* | 89.57\*\* | 61.95\*\* | 25.76\*\* | 76.29\*\* | 71.90\*\* |
| C21 | 5.88 | -30.03\*\* | 71.56\*\* | 90.01\*\* | 26.57\*\* | -1.72 | 70.93\*\* | 66.67\*\* |
| C22 | 134.52\*\* | 54.97\*\* | 10.91\* | 22.84\*\* | 60.83\*\* | 24.89\*\* | 16.62 | 13.72 |
| C23 | 97.39\*\* | 30.44\*\* | -18.22\*\* | -9.42 | 4.24 | -19.06\*\* | 1.49 | -1.04 |
| C24 | 107.56\*\* | 37.15\*\* | -21.40\*\* | -12.95\* | 62.22\*\* | 25.96\*\* | -5.78 | -8.13 |
| C25 | 69.53\*\* | 12.03\*\* | -43.95\*\* | -37.92\*\* | 19.02\*\* | -7.58 | -22.15\* | -24.09\* |
| C26 | 87.67\*\* | 24.01\*\* | -5.49 | 4.68 | -1.09 | -23.19\*\* | -4.28 | -6.66 |
| C27 | 54.11\*\* | 1.83 | -0.66 | 10.02 | 50.46\*\* | 16.83\*\* | 2.32 | -0.23 |
| C28 | 80.59\*\* | 19.33\*\* | 15.12\*\* | 27.49\*\* | 39.20\*\* | 8.09 | 3.32 | 0.74 |
| C29 | 126.47\*\* | 49.65\*\* | 5.10 | 16.40\*\* | 70.23\*\* | 32.18\*\* | 9.21 | 6.49 |
| C30 | 135.13\*\* | 55.37\*\* | 21.19\*\* | 34.22\*\* | 31.39\*\* | 2.02 | 20.72\* | 17.71 |
| C31 | 111.54\*\* | 39.79\*\* | -33.83\*\* | -26.71\*\* | 21.91\*\* | -5.34 | -21.57\* | -23.52\* |
| C32 | 188.47\*\* | 90.62\*\* | 23.19\*\* | 36.43\*\* | 45.29\*\* | 12.81\* | -16.15 | -18.24 |
| C33 | 202.22\*\* | 99.71\*\* | -10.39\* | -0.75 | 54.80\*\* | 20.20\*\* | -32.23\*\* | -33.92\*\* |