**Suppl. Table 7**. Heterobeltiosis values of hybrids for yield-related characteristics

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Hybrids** | **PH** | **SL** | **GNS** | **GWS** | **TGW** | **HI** | **GY** |
| **F1** | **F2** | **F1** | **F2** | **F1** | **F2** | **F1** | **F2** | **F1** | **F2** | **F1** | **F2** | **F1** | **F2** |
| NZFE-64/Tekirdağ | -6.95\* | 5.97 | -5.60 | -8.04\*\* | -11.33 | -19.97\*\* | 6.77 | 0.35 | 17.12\* | 9.14\*\* | 13.12\* | -10.55\*\* | -9.90 | -19.64\*\* |
| NZFE-64/Renan | -9.71\*\* | -18.51\*\* | -5.60 | -13.60\*\* | -11.24 | -10.21\*\* | 9.85 | -0.96 | 0.42 | 9.94\*\* | 1.44 | -6.69\*\* | -1.95 | -13.24\*\* |
| NZFE-64/Esperia | 1.20 | 9.01\* | -24.80\*\* | 1.79 | -17.85\*\* | -1.87 | -7.52 | 23.44\*\* | -4.30 | 1.65 | -1.06 | -0.61 | -8.51 | -6.85 |
| NZFE-63/Tekirdağ | 10.72\*\* | -3.05 | -31.76\*\* | -4.59 | 3.87 | -10.06\*\* | 39.32\*\* | -8.15\*\* | -1.16 | 9.14\*\* | 4.66 | -5.99\*\* | -20.79\* | 17.24\*\* |
| NZFE-63/Renan | -5.78\* | -4.94 | -19.41\*\* | -12.00\*\* | 13.75\* | 2.59 | 43.48\*\* | -4.26 | 4.09 | 2.07 | 22.84\*\* | 1.36\*\* | 36.90\*\* | 12.00\*\* |
| NZFE-63/Esperia | 0.13 | -5.44 | -32.94\*\* | 9.17\*\* | 4.07 | 6.90\* | 5.83\* | 10.24\*\* | -0.08 | 1.98 | 12.87\* | 3.09\*\* | 58.03\*\* | 2.59 |
| NZFE-62/Tekirdağ | 4.99 | -7.09\* | 0.78 | -7.14\* | -13.71\* | -11.46\*\* | -4.89 | -11.09\*\* | 12.55 | -12.01\*\* | 3.00 | -7.76\*\* | -15.59 | 19.03\*\* |
| NZFE-62/Renan | 6.00\* | -4.92 | -1.55 | -11.20\*\* | -9.42 | -10.56\*\* | -8.57 | -11.79\*\* | 7.12 | 3.61 | -11.37\* | -7.01\*\* | -10.71 | 7.69 |
| NZFE-62/Esperia | 2.61 | -3.74 | -8.53\* | -2.68 | -28.85\*\* | -7.47\*\* | -38.27\*\* | 3.63 | -11.66 | -4.17 | 7.31 | -2.50\*\* | 5.77 | 10.73\* |
| 4162-28/Tekirdağ | -4.86 | -8.85\* | 3.51 | -1.85 | -24.14\*\* | -22.10\*\* | -12.96 | -17.68\*\* | 20.28\*\* | 11.66\*\* | 11.63\* | -7.11\*\* | 18.96 | 14.31\*\* |
| 4162-28/Renan | -14.07\*\* | -9.57\*\* | 4.92 | -5.60\* | -28.55\*\* | -11.43\*\* | -3.52 | -5.48 | 34.92\*\* | 5.12\* | 26.13\*\* | -8.75\*\* | 33.69\* | 3.38 |
| 4162-28/Esperia | -5.35 | -6.66 | 5.31 | 9.43\*\* | -30.40\*\* | -5.89\* | -12.42 | 9.89\*\* | 11.04 | -1.23 | -16.12\*\* | -1.99\*\* | -46.47\*\* | 3.00 |
| 4166-1/Tekirdağ | -3.49 | -13.70\*\* | 4.39 | -2.78 | -33.68\*\* | -6.52\* | -7.96 | -1.25 | 13.46 | 11.99\*\* | -16.94\*\* | -2.92\*\* | -56.32\*\* | -10.36\* |
| 4166-1/Renan | -11.01\*\* | -10.73\*\* | 9.84\* | -16.80\*\* | -4.60 | -15.61\*\* | 3.63 | -4.16 | 16.93\* | 11.71\*\* | 5.88 | 5.33\*\* | 6.24 | -4.15 |
| 4166-1/Esperia | -16.18\*\* | -16.42\*\* | -7.48 | -4.08 | -22.85\*\* | -13.65\*\* | -21.93 | -2.40 | -10.98 | 0.37 | -7.68 | 4.22\*\* | -31.48\* | 24.72\*\* |
| 4164-36/Tekirdağ | -18.70\*\* | -7.32\* | 0.88 | -0.93 | -39.49\*\* | -8.54\*\* | -18.35 | -2.14 | 26.77\*\* | 12.72\*\* | -23.09\*\* | 2.43\*\* | -69.80\*\* | -1.83 |
| 4164-36/Renan | -16.90\*\* | -13.35\*\* | 2.46 | -11.20\*\* | -14.18 | -16.16\*\* | 13.10 | -7.80\* | 35.22\*\* | 6.80\*\* | 8.94 | -7.58\*\* | 4.28 | -10.00\* |
| 4164-36/Esperia | -7.77\* | -8.50\* | 8.49 | -0.93 | -10.90 | -6.47\* | 4.75 | 1.07 | 13.87\* | -0.48 | -13.56\*\* | 0.33 | -8.14 | 14.45\*\* |
| NZFE-25/Tekirdağ | 2.87 | 2.82 | -1.69 | -6.67\* | -0.60 | -5.18 | 17.06\*\* | 9.40\*\* | -12.06 | 12.50\*\* | 6.70 | -9.88\*\* | -24.44\* | -0.29 |
| NZFE-25/Renan | -8.07\*\* | 2.42 | -6.56 | -13.60\*\* | -7.37 | -12.04\*\* | 11.75 | 0.96 | 4.79 | 4.62 | 19.24\*\* | -7.48\*\* | -12.66 | -5.22 |
| NZFE-25/Esperia | -0.13 | 3.58 | -8.47\* | -12.50\*\* | -19.16\*\* | -4.74 | -26.28\* | 14.65\*\* | -17.49\*\* | 1.84 | -21.72\*\* | 0.78\* | -55.25\*\* | 0.87 |
| NZFE-38/Tekirdağ | 9.98\*\* | 6.82\* | -10.74\*\* | 5.50 | -19.97\*\* | 7.62\* | -11.86 | 11.16\*\* | -0.49 | 10.07\*\* | -20.68\*\* | -4.17\*\* | -62.67\*\* | -1.61 |
| NZFE-38/Renan | -7.85\*\* | -0.63 | 0.82 | -8.80\*\* | 12.71 | -6.25\* | 19.37\*\* | 12.72\*\* | 14.10\* | 8.18\*\* | 18.21\*\* | 2.12\*\* | -1.61 | -20.15\*\* |
| NZFE-38/Esperia | 4.84 | 5.30 | -14.05\*\* | 2.75 | 8.26 | -4.60 | 9.91\* | 9.40\*\* | -5.04 | -1.36 | 14.92\*\* | -3.09\*\* | -24.23\*\* | 9.32\* |
| NZFE-55/Tekirdağ | -1.85 | 7.90\* | -6.56 | -8.93\*\* | -18.03\*\* | -9.76\*\* | -6.05 | -4.86 | -7.31 | 5.31\* | -7.69 | -4.15\*\* | -20.79\* | 8.05 |
| NZFE-55/Renan | -10.58\*\* | 0.32 | -6.56 | -6.40\* | -5.67 | -8.69\*\* | -23.71\* | -3.44 | 9.93 | 2.62 | -15.56\*\* | -5.31\*\* | -34.76\*\* | -27.54\*\* |
| NZFE-55/Esperia | -0.98 | 10.95\*\* | -11.48\*\* | -5.36 | -4.30 | -10.49\*\* | -2.40 | 5.54 | -17.80\*\* | 0.83 | -16.95\*\* | -2.16\*\* | -32.98\* | 8.20 |
| NZFMT-14/Tekirdağ | 6.61\* | -9.52\*\* | 4.39 | 0.86 | 2.68 | 3.81 | 14.30\*\* | 20.24\*\* | -4.81 | 8.68\*\* | -7.37 | 0.49 | -48.31\*\* | 11.27\* |
| NZFMT-14/Renan | -4.14 | -4.29 | 4.92 | -11.20\*\* | 11.36 | -7.62\* | 27.56\*\* | 4.03 | 14.57\* | 10.20\*\* | 15.17\*\* | -0.28 | 0.48 | 10.62\* |
| NZFMT-14/Esperia | 1.52 | -0.31 | 3.60 | -4.31 | 6.33 | -3.30 | 11.86\* | 8.72\*\* | -5.32 | 1.84 | 13.93\*\* | -0.85\*\* | 14.49 | 9.57\* |
| NZFMT-15/Tekirdağ | 1.99 | -4.97 | 10.53\* | -0.93 | 14.61 | -4.57 | 55.15\*\* | 5.18 | 1.74 | 1.37 | 16.30\*\* | -1.53\*\* | -2.53 | 15.89\*\* |
| NZFMT-15/Renan | 0.22 | 0.74 | 0.82 | -10.40\*\* | 11.23 | -11.43\*\* | 22.36\*\* | 1.52 | -2.24 | 1.94 | 10.56 | -6.08\*\* | 7.13 | -10.15\* |
| NZFMT-15/Esperia | 1.05 | -5.08 | 18.69\*\* | 0.93 | 11.78 | -11.49\*\* | 26.38\*\* | -1.52 | 2.24 | -0.37 | 11.74\* | -4.80\*\* | 67.88\*\* | 31.92\*\* |
| NZFMT-21/Tekirdağ | -6.60\* | -3.66 | -9.24\* | -1.75 | -18.33\*\* | -3.02 | 30.03\*\* | 4.48 | 8.35 | -4.33 | -5.38 | -4.71\*\* | -34.13\*\* | 14.12\*\* |
| NZFMT-21/Renan | -8.51\*\* | 0.84 | 1.64 | -11.20\*\* | 16.76\* | -17.50\*\* | 37.41\*\* | -4.26 | 10.39 | -3.52 | 15.37\*\* | -5.41\*\* | -20.32 | 7.54 |
| NZFMT-21/Esperia | -12.40\*\* | -0.11 | 2.52 | -7.02\* | 15.29\* | -4.60 | 24.74\*\* | 11.57\*\* | -14.97\* | 0.04 | 7.29 | 2.78\*\* | 14.99 | 2.76 |

\*P<0,05 , \*\* P < 0,01 (PH: Plant height; SL: Spike length; GNS: Grain number per spike; GWS: Grain weight per spike; TGW: Thousand grain weight; HI: Harvest index; GY: Grain yield)

Table 8. Inbreeding depression values of hybrids for yield-related characteristics

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Hybrids** | **PH** | **SL** | **GNS** | **GWS** | **TGW** | **HI** | **GY** |
| NZFE-64/Tekirdağ | -21.11\*\* | 12.71\*\* | 11.76\*\* | -40.13\*\* | -20.75\*\* | -6.42\* | 16.41\*\* |
| NZFE-64/Renan | 6.40\* | 8.47\*\* | -9.68\* | -47.76\*\* | -44.36\*\* | -29.59\*\* | 17.07\*\* |
| NZFE-64/Esperia | -14.56\*\* | -21.28\*\* | -37.42\*\* | -110.50\*\* | -36.91\*\* | -30.96\*\* | 4.57 |
| NZFE-63/Tekirdağ | -0.34 | 10.34\*\* | 15.35\*\* | 1.71 | -43.08\*\* | -20.89\*\* | -20.57\*\* |
| NZFE-63/Renan | -4.63 | 19.71\*\* | -0.45 | -9.36 | -29.30\*\* | -14.60\*\* | 5.21\* |
| NZFE-63/Esperia | -10.56\*\* | -4.39 | -21.37\*\* | -64.30\*\* | -31.56\*\* | -19.07\*\* | 19.38\*\* |
| NZFE-62/Tekirdağ | -6.79\*\* | 20.00\*\* | -1.38 | -26.58\*\* | -1.30 | -10.85\*\* | -14.48\*\* |
| NZFE-62/Renan | 0.62 | 12.60\*\* | 2.15 | -26.42\*\* | -27.54\*\* | -22.26\*\* | -29.15\*\* |
| NZFE-62/Esperia | -13.19\*\* | 7.63\*\* | -35.29\*\* | -124.19\*\* | -39.83\*\* | -8.42\*\* | 0.31 |
| 4162-28/Tekirdağ | -1.18 | 10.17\*\* | -0.39 | -41.02\*\* | -20.25\*\* | -12.36\*\* | 23.61\*\* |
| 4162-28/Renan | -9.14\*\* | 7.81\*\* | -49.74\*\* | -60.55\*\* | -2.74 | -6.70\*\* | 10.40\*\* |
| 4162-28/Esperia | -9.42\*\* | 2.52 | -65.40\*\* | -97.90\*\* | -14.66\*\* | -58.55\*\* | -133.20\*\* |
| 4166-1/Tekirdağ | 5.56\* | 11.76\*\* | -38.65\*\* | -59.97\*\* | -27.89\*\* | -57.29\*\* | -61.41\*\* |
| 4166-1/Renan | -4.04 | 22.39\*\* | -7.53 | -51.57\*\* | -25.98\*\* | -37.85\*\* | -4.53 |
| 4166-1/Esperia | -10.64\*\* | 5.05 | -36.90\*\* | -97.18\*\* | -45.34\*\* | -47.18\*\* | -109.69\*\* |
| 4164-36/Tekirdağ | -20.40\*\* | 6.96\*\* | -47.78\*\* | -78.69\*\* | -15.21\*\* | -79.24\*\* | -174.88\*\* |
| 4164-36/Renan | -8.14\*\* | 11.20\*\* | -18.03\*\* | -33.60\*\* | -4.14 | -24.70\*\* | 0.00 |
| 4164-36/Esperia | -10.08\*\* | 7.83\*\* | -28.40\*\* | -52.17\*\* | -12.65\*\* | -56.96\*\* | -60.61\*\* |
| NZFE-25/Tekirdağ | -14.79\*\* | 3.45 | 6.75 | -39.33\*\* | -59.17\*\* | -13.67\*\* | -27.88\*\* |
| NZFE-25/Renan | -15.54\*\* | 5.26\* | -14.71\*\* | -48.06\*\* | -25.45\*\* | -8.01\*\* | -33.47\*\* |
| NZFE-25/Esperia | -19.70\*\* | 2.78 | -44.13\*\* | -145.28\*\* | -59.11\*\* | -67.84\*\* | -233.01\*\* |
| NZFE-38/Tekirdağ | -11.90\*\* | -6.48\* | -31.47\*\* | -75.25\*\* | -37.77\*\* | -60.56\*\* | -102.65\*\* |
| NZFE-38/Renan | -11.83\*\* | 7.32\*\* | -0.49 | -26.98\*\* | -19.79\*\* | -8.37\*\* | 34.80\*\* |
| NZFE-38/Esperia | -18.23\*\* | -7.69\*\* | -7.79\* | -36.42\*\* | -33.89\*\* | -8.05\*\* | -10.93\*\* |
| NZFE-55/Tekirdağ | -19.80\*\* | 10.53\*\* | -7.64 | -50.99\*\* | -47.22\*\* | -32.50\*\* | -23.76\*\* |
| NZFE-55/Renan | -16.34\*\* | -2.63 | -9.11\* | -107.45\*\* | -23.09\*\* | -34.73\*\* | -28.69\*\* |
| NZFE-55/Esperia | -22.11\*\* | 1.85 | -11.85\*\* | -70.56\*\* | -58.13\*\* | -44.92\*\* | -123.32\*\* |
| NZFMT-14/Tekirdağ | -1.17 | 1.68 | 1.16 | -56.84\*\* | -49.47\*\* | -45.99\*\* | -95.92\*\* |
| NZFMT-14/Renan | -4.10 | 13.28\*\* | 0.33 | -33.66\*\* | -26.83\*\* | -16.01\*\* | -13.95\*\* |
| NZFMT-14/Esperia | -18.83\*\* | 3.48 | -11.24\*\* | -53.29\*\* | -38.65\*\* | -13.45\*\* | 1.25 |
| NZFMT-15/Tekirdağ | -2.98 | 15.08\*\* | 18.60\*\* | -1.08 | -39.49\*\* | -13.94\*\* | 6.48\* |
| NZFMT-15/Renan | -4.24 | 8.94\*\* | 3.81 | -35.97\*\* | -45.14\*\* | -21.80\*\* | 2.83 |
| NZFMT-15/Esperia | -3.82 | 14.17\*\* | 3.14 | -22.90\*\* | -26.77\*\* | -12.37\*\* | 12.50\*\* |
| NZFMT-21/Tekirdağ | -9.14\*\* | -3.70 | -17.34\*\* | -19.79\*\* | -29.77\*\* | -35.54\*\* | -49.89\*\* |
| NZFMT-21/Renan | -14.30\*\* | 10.48\*\* | 13.72\*\* | -14.18\*\* | -27.71\*\* | -16.31\*\* | -56.38\*\* |
| NZFMT-21/Esperia | -20.65\*\* | 13.11\*\* | -1.22 | -41.07\*\* | -60.69\*\* | -25.01\*\* | -17.88\*\* |