**Table S1.** GCA effects calculated using BLUPs for the twelve yield and yield attributing traits

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.No** | **LINE** | **DS** | **DT** | **ASI** | **PH** | **EH** | **EWWH** | **EWWOH** | **EL** | **ED** | **NGKR** | **SI** | **TGW** |
| **1** | YL-178 | 0.09 | -0.35 | 0.38 | 0.63 | 2.98 | 166.63 | 163.17 | 1.70 | 0.07 | 0.02 | 2.16 | 85.06 |
| **2** | YL-171 | 0.58 | 0.75 | -0.25 | 0.82 | 3.42 | 132.49 | 130.01 | 0.78 | 0.07 | 0.42 | 2.17 | 75.76 |
| **3** | YL-218 | -0.59 | -0.38 | -0.13 | 2.10 | 3.83 | 102.76 | 40.60 | -0.13 | 0.07 | -0.15 | 0.60 | 66.72 |
| **4** | YL-273 | 1.02 | 1.17 | -0.29 | 0.17 | -0.78 | 132.94 | 131.39 | -0.37 | 0.02 | -0.16 | 0.71 | 66.57 |
| **5** | YL-237 | -0.56 | -0.14 | -0.21 | 1.83 | 4.93 | 168.43 | 135.81 | 0.00 | 0.06 | 0.20 | 0.81 | 66.35 |
| **6** | YL-256 | -0.40 | -0.36 | -0.10 | -1.11 | -2.39 | 98.53 | 98.24 | 0.36 | 0.05 | 0.73 | 1.01 | 62.84 |
| **7** | YL-211 | -1.41 | -0.82 | -0.39 | 1.32 | 0.97 | 99.96 | 92.93 | -0.30 | 0.04 | 0.21 | -0.17 | 61.22 |
| **8** | YL-246 | 0.52 | 0.48 | -0.05 | -0.29 | -0.91 | 74.29 | 63.23 | 1.33 | 0.05 | 0.11 | 1.07 | 54.90 |
| **9** | YL-191 | 0.31 | 0.26 | -0.01 | -0.96 | -2.60 | 85.95 | 60.36 | 0.01 | 0.04 | 0.05 | 1.64 | 54.78 |
| **10** | YL-277 | -0.84 | -0.71 | 0.02 | -0.62 | -1.87 | 128.94 | 94.97 | 1.27 | -0.01 | -0.57 | 1.41 | 52.24 |
| **11** | YL-163 | -0.52 | -0.18 | -0.23 | -0.07 | -4.25 | 22.91 | 11.28 | 0.62 | 0.02 | -0.59 | 0.97 | 46.56 |
| **12** | YL-196 | -0.45 | -0.77 | 0.33 | 0.44 | -0.48 | 105.66 | 86.32 | 0.74 | -0.02 | -0.23 | 1.17 | 43.12 |
| **13** | YL-236 | 1.33 | 1.35 | -0.21 | 1.06 | 2.60 | 98.98 | 81.38 | 0.69 | 0.08 | 0.13 | 0.43 | 43.02 |
| **14** | YL-225 | 3.71 | 2.75 | 0.36 | -0.62 | 0.52 | 138.94 | 99.82 | 0.50 | 0.05 | 0.04 | 0.46 | 42.92 |
| **15** | YL-255 | -0.69 | -0.23 | -0.32 | -2.17 | -1.64 | 124.55 | 75.28 | -0.49 | 0.02 | 0.41 | 0.30 | 41.10 |
| **16** | YL-226 | -0.27 | -0.12 | -0.13 | 0.09 | 2.45 | 71.97 | 27.82 | 0.50 | 0.06 | 0.18 | 0.67 | 39.93 |
| **17** | YL-222 | -0.83 | -0.74 | 0.04 | 0.87 | 3.53 | 56.25 | 51.40 | 0.06 | 0.01 | 0.08 | 0.18 | 39.68 |
| **S.No** | **LINE** | **DS** | **DT** | **ASI** | **PH** | **EH** | **EWWH** | **EWWOH** | **EL** | **ED** | **NGKR** | **SI** | **TGW** |
| **18** | YL-248 | -0.32 | -0.17 | -0.13 | -0.23 | -5.50 | 98.43 | 64.07 | 0.38 | 0.03 | 0.22 | 0.64 | 39.46 |
| **19** | YL-209 | -1.05 | -0.94 | 0.03 | 0.21 | -3.28 | -5.54 | -15.24 | -0.18 | 0.06 | 0.08 | 0.57 | 34.49 |
| **20** | YL-186 | -0.35 | 0.08 | -0.11 | -3.02 | -3.82 | 47.18 | 57.33 | 0.65 | 0.05 | -0.08 | 2.40 | 32.00 |
| **21** | YL-238 | 1.91 | 1.66 | 0.01 | 3.93 | 13.64 | 134.63 | 54.10 | 1.78 | 0.10 | 0.44 | 1.68 | 31.00 |
| **22** | YL-216 | 0.90 | 0.46 | 0.11 | 0.35 | -0.82 | 187.11 | 72.30 | 0.81 | 0.07 | 0.96 | 1.60 | 30.69 |
| **23** | YL-231 | 0.48 | 0.54 | -0.18 | -2.06 | -9.43 | 97.89 | -35.12 | 1.09 | 0.06 | 0.44 | 0.36 | 29.13 |
| **24** | YL-243 | 0.63 | 0.66 | -0.12 | 0.96 | 9.48 | 67.47 | 72.15 | 0.24 | 0.02 | -0.40 | 2.36 | 27.02 |
| **25** | YL-223 | -0.06 | 0.05 | -0.10 | 0.79 | 2.98 | 18.78 | 18.79 | -0.33 | 0.00 | 0.15 | 0.34 | 26.37 |
| **26** | YL-263 | -0.21 | -0.75 | 0.46 | 1.53 | -0.14 | 62.78 | 53.89 | 0.74 | 0.07 | 0.57 | 1.53 | 25.14 |
| **27** | YL-275 | -0.06 | 0.11 | -0.11 | -0.25 | -0.84 | -9.62 | 7.89 | 0.83 | -0.06 | -0.26 | -0.27 | 23.79 |
| **28** | YL-270 | -0.85 | -0.15 | -0.46 | 0.60 | 0.69 | -23.26 | 5.86 | -0.48 | -0.01 | 0.42 | -0.62 | 22.94 |
| **29** | YL-198 | 0.62 | 0.49 | 0.03 | 1.84 | 2.44 | 87.21 | 57.59 | 1.03 | 0.02 | -0.03 | 0.45 | 19.87 |
| **30** | YL-213 | -1.78 | -1.55 | 0.28 | 0.39 | -1.78 | 26.30 | 25.00 | 0.10 | 0.04 | -0.63 | 1.25 | 18.95 |
| **31** | YL-190 | 0.81 | 0.49 | 0.07 | 0.60 | -1.60 | 20.70 | 20.08 | 0.31 | 0.04 | -0.18 | 0.88 | 17.53 |
| **32** | YL-208 | -1.57 | -1.00 | -0.31 | 1.50 | -0.79 | 31.45 | 39.65 | 0.20 | -0.01 | -0.04 | 0.52 | 17.52 |
| **33** | YL-257 | -0.93 | -0.66 | -0.14 | 1.16 | 0.19 | 81.65 | 41.87 | -0.39 | -0.01 | -0.13 | -0.05 | 16.49 |
| **34** | YL-181 | 1.03 | 0.89 | 0.00 | 2.71 | 12.23 | 43.07 | 23.17 | 0.32 | 0.12 | 0.28 | 0.74 | 12.79 |
| **35** | YL-221 | 1.04 | 1.01 | -0.15 | -0.06 | 2.49 | 60.91 | 52.48 | 0.02 | 0.00 | 0.01 | -0.17 | 12.34 |
| **S.No** | **LINE** | **DS** | **DT** | **ASI** | **PH** | **EH** | **EWWH** | **EWWOH** | **EL** | **ED** | **NGKR** | **SI** | **TGW** |
| **36** | YL-242 | 0.08 | 0.09 | 0.02 | 1.56 | 5.40 | -32.88 | -27.99 | 0.15 | 0.03 | 0.19 | 0.82 | 12.00 |
| **37** | YL-260 | -0.21 | 0.09 | -0.17 | -2.53 | -5.07 | 21.31 | 7.05 | 0.41 | 0.00 | -0.30 | 0.82 | 10.69 |
| **38** | YL-232 | -0.51 | -0.87 | 0.33 | 1.83 | 1.23 | -22.75 | -23.22 | -0.33 | 0.00 | 0.11 | 0.35 | 10.65 |
| **39** | YL-184 | -0.67 | -0.54 | -0.04 | -1.11 | 0.00 | -17.75 | 6.04 | 0.20 | -0.02 | 0.01 | -2.48 | 7.46 |
| **40** | YL-241 | 0.64 | 0.71 | -0.09 | 5.11 | 16.10 | 54.95 | 37.18 | 0.23 | -0.02 | 0.08 | -1.24 | 7.43 |
| **41** | YL-239 | 0.40 | 0.52 | -0.15 | 2.15 | 4.47 | 28.95 | 33.72 | 0.59 | 0.05 | 0.37 | 0.58 | 6.54 |
| **42** | YL-195 | -0.54 | -0.45 | 0.00 | 2.87 | 7.34 | 1.62 | 1.36 | 0.50 | -0.03 | 0.31 | 0.17 | 5.95 |
| **43** | YL-220 | 0.06 | 0.31 | -0.21 | -2.09 | 2.48 | 50.06 | 18.93 | -0.04 | -0.02 | 0.26 | -1.24 | 5.18 |
| **44** | YL-200 | -0.28 | 0.23 | -0.18 | -0.49 | 2.25 | 96.65 | 85.71 | -0.24 | 0.10 | -0.08 | 2.19 | 2.45 |
| **45** | YL-247 | -0.95 | -0.77 | -0.06 | -2.24 | -9.86 | 62.59 | 58.39 | -0.13 | 0.00 | 0.11 | 0.42 | 2.35 |
| **46** | YL-227 | 0.21 | 0.10 | 0.02 | 0.02 | -3.27 | -3.79 | 4.92 | 0.57 | 0.03 | 0.17 | -0.38 | 1.83 |
| **47** | YL-214 | -1.28 | -1.23 | 0.16 | -0.98 | -3.15 | 24.66 | 18.04 | 0.83 | 0.01 | 0.01 | 0.19 | 1.72 |
| **48** | YL-269 | -0.46 | -0.15 | -0.25 | 3.70 | 3.11 | -105.79 | -60.01 | -0.37 | -0.02 | 0.81 | -1.00 | -1.12 |
| **49** | YL-168 | -0.89 | -0.46 | -0.26 | -2.39 | -3.90 | 33.83 | 24.80 | 0.39 | 0.04 | 0.06 | 0.84 | -2.61 |
| **50** | YL-252 | 0.51 | 0.36 | 0.11 | -0.12 | -2.07 | -31.25 | -19.63 | -0.06 | 0.01 | 0.90 | -1.42 | -10.42 |
| **51** | YL-207 | 0.19 | 0.15 | -0.02 | -4.40 | -3.99 | -38.75 | -24.97 | -0.64 | -0.01 | -0.15 | -0.11 | -10.72 |
| **52** | YL-265 | 1.55 | 1.34 | -0.04 | -0.89 | 0.59 | -11.13 | -23.92 | -0.24 | -0.02 | -0.13 | 0.21 | -14.22 |
| **53** | YL-240 | 0.04 | 0.04 | -0.04 | -1.19 | -2.31 | -138.16 | -78.63 | -0.42 | -0.01 | 0.53 | 1.21 | -17.28 |
| **S.No** | **LINE** | **DS** | **DT** | **ASI** | **PH** | **EH** | **EWWH** | **EWWOH** | **EL** | **ED** | **NGKR** | **SI** | **TGW** |
| **54** | YL-271 | -1.16 | -1.08 | -0.06 | -1.36 | 5.15 | -66.06 | -22.63 | -0.38 | -0.03 | 0.30 | -1.44 | -18.46 |
| **55** | YL-262 | 0.36 | 0.28 | 0.09 | 2.39 | 2.93 | -22.77 | -3.30 | -0.19 | 0.01 | 0.05 | -0.37 | -18.96 |
| **56** | YL-230 | -0.08 | -0.19 | 0.09 | -0.69 | -0.78 | -33.81 | -25.95 | -0.42 | -0.03 | -0.02 | -0.91 | -19.72 |
| **57** | YL-250 | -0.34 | -0.39 | 0.07 | 1.89 | 3.89 | -58.30 | -23.71 | -0.35 | 0.01 | -0.09 | 0.62 | -20.29 |
| **58** | YL-176 | 0.56 | 0.21 | 0.17 | 1.87 | 3.34 | 113.83 | 34.55 | 0.06 | 0.02 | 0.21 | 0.01 | -20.76 |
| **59** | YL-261 | 0.33 | 0.15 | 0.10 | -0.63 | -1.36 | -60.28 | -36.65 | 0.52 | 0.02 | 0.21 | -0.10 | -24.76 |
| **60** | YL-224 | 0.36 | 0.05 | 0.22 | -0.87 | -1.26 | -53.62 | -54.16 | 0.12 | 0.03 | 0.28 | -1.24 | -26.58 |
| **61** | YL-259 | 0.01 | -0.49 | 0.39 | 4.16 | 3.92 | -61.30 | -48.57 | 0.58 | -0.01 | 0.02 | -0.74 | -28.34 |
| **62** | YL-185 | -0.36 | 0.01 | -0.28 | 0.28 | 2.18 | -58.21 | -51.26 | -0.57 | 0.01 | 0.23 | 0.07 | -32.44 |
| **63** | YL-170 | 0.40 | 0.65 | -0.22 | -2.20 | -4.27 | 44.20 | 19.75 | 0.14 | 0.04 | 0.70 | 0.20 | -34.31 |
| **64** | YL-272 | -0.29 | -0.24 | -0.04 | 1.21 | 1.98 | -116.57 | -76.81 | -0.03 | -0.03 | 0.22 | -0.94 | -35.76 |
| **65** | YL-193 | 2.29 | 1.42 | 0.48 | -2.45 | -1.76 | -139.47 | -76.73 | -0.76 | -0.04 | 0.02 | -0.87 | -36.73 |
| **66** | YL-164 | 0.22 | 0.29 | -0.14 | -1.22 | 7.71 | -76.28 | -81.32 | 0.78 | 0.05 | -0.10 | -1.84 | -37.51 |
| **67** | YL-229 | 1.42 | 0.79 | 0.40 | 5.85 | 5.96 | -67.01 | -64.34 | -0.32 | -0.01 | 0.33 | -0.96 | -46.96 |
| **68** | YL-253 | -0.35 | -0.18 | -0.16 | -1.80 | 0.67 | -165.73 | -115.97 | -0.95 | -0.01 | 0.04 | -0.13 | -60.80 |
| **69** | YL-245 | -0.18 | -0.11 | -0.11 | -0.85 | 2.80 | -145.64 | -105.23 | -0.82 | -0.07 | -0.23 | -1.70 | -61.05 |
| **70** | YL-219 | 0.33 | -0.71 | 0.87 | -4.61 | -7.92 | -152.19 | -115.28 | -1.64 | -0.20 | -1.50 | -2.91 | -63.90 |
| **71** | YL-267 | 1.40 | 1.07 | 0.09 | -0.50 | -3.27 | -145.82 | -114.39 | 0.69 | -0.05 | 0.15 | -1.57 | -65.88 |
| **S.No** | **LINE** | **DS** | **DT** | **ASI** | **PH** | **EH** | **EWWH** | **EWWOH** | **EL** | **ED** | **NGKR** | **SI** | **TGW** |
| **72** | YL-274 | -0.95 | -0.78 | -0.01 | -3.29 | -8.19 | -139.07 | -94.86 | -1.04 | -0.09 | -0.69 | -0.26 | -66.41 |
| **73** | YL-268 | 2.19 | 1.55 | 0.27 | -4.45 | -8.90 | -151.41 | -91.15 | -2.74 | -0.21 | -0.93 | -4.40 | -67.97 |
| **74** | YL-249 | -0.10 | 0.23 | -0.25 | 4.01 | -9.28 | -85.74 | -70.60 | -0.66 | -0.14 | -0.80 | -1.40 | -68.43 |
| **75** | YL-187 | -2.10 | -1.37 | -0.24 | 2.32 | -4.05 | -123.80 | -88.85 | 0.57 | 0.04 | 0.06 | 0.05 | -70.02 |
| **76** | YL-172 | -8.07 | -6.30 | -0.53 | -8.81 | -13.35 | -195.96 | -130.56 | -2.40 | -0.20 | -1.64 | -1.21 | -71.86 |
| **77** | YL-165 | 0.45 | -0.16 | 0.45 | 2.81 | -5.04 | -199.97 | -142.80 | -2.04 | -0.10 | -0.39 | -2.12 | -79.71 |
| **78** | YL-235 | 0.52 | 0.26 | 0.23 | -2.08 | 2.14 | -244.49 | -190.40 | -1.18 | -0.08 | -0.62 | -2.09 | -99.73 |
| **79** | YL-189 | -0.06 | -0.47 | 0.38 | -3.15 | -6.89 | -166.63 | -144.55 | -1.70 | -0.18 | -1.16 | -2.19 | -106.38 |
| **80** | YL-228 | 4.11 | 2.81 | 0.61 | -1.06 | -2.10 | -237.57 | -181.86 | -1.04 | -0.11 | -0.59 | -1.25 | -114.46 |
| **81** | LM-13 | -0.27 | -0.20 | -0.03 | 0.27 | -0.87 | -18.94 | -13.58 | -0.03 | -0.01 | -0.09 | -0.04 | -7.24 |
| **82** | LM-14 | 0.27 | 0.20 | 0.03 | -0.27 | 0.87 | 18.94 | 13.58 | 0.03 | 0.01 | 0.09 | 0.04 | 7.24 |

DT: Days to 50% tasselling; DS: Days to 50% silking; ASI: Anthesis Silking Interval; PH: Plant height (cm); EH: Ear height (cm); EWWH: Ear weight with husk (g); EWWOH: Ear weight without husk (g); EL: Ear length (cm); ED: Ear diameter (cm); NGR: Number of grain rows; SI: 100 grain weight (g); TGW: Total grain weight (g) \*The shadings in the table indicate that the genotypes are good performers for the respective trait under consideration

**Table S2.** SCA effects calculated using BLUPs for the twelve yield and yield attributing traits

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S.No** | **HYBRID** | **DS** | **DT** | **ASI** | **PH** | **EH** | **EWWH** | **EWWOH** | **EL** | **ED** | **NGKR** | **SI** | **TGW** |
| **1** | H-14-164 | 1.98 | 1.62 | 0.06 | -1.69 | 4.25 | 283.66 | 187.46 | 1.27 | 0.07 | 0.23 | 2.04 | 121.10 |
| **2** | H-13-245 | -2.24 | -1.33 | -0.53 | 1.95 | 2.23 | 231.51 | 162.09 | 1.09 | 0.07 | 0.11 | 1.25 | 113.07 |
| **3** | H-14-255 | -0.08 | 0.08 | -0.08 | 1.56 | 3.05 | 287.90 | 198.36 | 1.05 | 0.03 | 0.02 | 0.79 | 113.06 |
| **4** | H-13-193 | -1.78 | -0.93 | -0.53 | 3.95 | 9.81 | 243.38 | 195.28 | 1.83 | 0.07 | 0.44 | 1.34 | 112.25 |
| **5** | H-14-172 | 7.55 | 6.20 | 0.12 | 7.58 | 12.06 | 257.36 | 176.13 | 3.47 | 0.28 | 1.17 | 3.35 | 110.56 |
| **6** | H-14-165 | -1.35 | -0.66 | -0.47 | -3.09 | 0.29 | 204.50 | 144.86 | 1.71 | 0.15 | 0.61 | 3.17 | 90.38 |
| **7** | H-13-242 | -0.65 | -0.62 | 0.07 | 1.54 | 1.26 | 51.51 | 74.17 | 0.22 | 0.06 | 0.39 | 0.29 | 87.83 |
| **8** | H-14-236 | -0.92 | -0.66 | -0.14 | 1.92 | 0.90 | 162.16 | 128.51 | 0.26 | 0.04 | 0.15 | 2.08 | 85.76 |
| **9** | H-14-225 | -0.15 | -0.35 | 0.22 | 0.41 | -3.57 | 163.09 | 142.22 | 0.43 | 0.05 | -0.08 | 0.50 | 82.91 |
| **10** | H-14-250 | -0.57 | -0.75 | 0.30 | 1.00 | 2.87 | 145.21 | 108.16 | 0.49 | 0.04 | 0.25 | 1.04 | 82.42 |
| **11** | H-14-218 | 0.49 | 0.48 | -0.10 | 2.00 | 3.50 | 194.85 | 104.79 | 0.79 | 0.07 | 0.34 | 0.57 | 78.83 |
| **12** | H-13-231 | 0.25 | -0.10 | 0.22 | 0.98 | 4.48 | 225.99 | 58.12 | 0.53 | 0.03 | 0.13 | 0.87 | 78.30 |
| **13** | H-13-208 | -0.51 | -0.38 | -0.08 | 3.52 | 5.96 | 199.50 | 128.24 | -0.08 | 0.06 | 0.47 | -0.19 | 75.09 |
| **14** | H-13-274 | 0.34 | 0.12 | 0.16 | 0.44 | 1.11 | 151.06 | 120.02 | 0.87 | 0.07 | 0.24 | 2.27 | 74.07 |
| **15** | H-14-222 | -0.82 | -0.55 | -0.18 | 3.50 | 8.97 | 142.15 | 106.04 | 0.50 | 0.04 | 0.23 | 0.80 | 72.53 |
| **16** | H-14-240 | -1.02 | -0.62 | -0.13 | 3.03 | 4.50 | 47.13 | 47.11 | 1.08 | 0.03 | -0.17 | -1.25 | 72.53 |
| **17** | H-14-226 | -0.91 | -0.81 | -0.07 | 0.37 | 3.95 | 99.63 | 82.56 | 0.70 | 0.04 | 0.46 | 0.41 | 69.82 |
| **S.No** | **HYBRID** | **DS** | **DT** | **ASI** | **PH** | **EH** | **EWWH** | **EWWOH** | **EL** | **ED** | **NGKR** | **SI** | **TGW** |
| **18** | H-13-262 | -0.58 | -0.82 | 0.30 | -0.83 | 0.10 | 102.92 | 80.16 | 0.25 | 0.02 | 0.27 | 0.25 | 67.47 |
| **19** | H-14-219 | -1.10 | -0.66 | -0.29 | 3.24 | 7.79 | 99.93 | 79.08 | 1.40 | 0.11 | 0.13 | 2.15 | 66.80 |
| **20** | H-13-228 | -1.95 | -1.00 | -0.54 | 2.40 | 3.76 | 152.80 | 119.63 | 2.65 | 0.22 | 1.19 | 2.53 | 66.59 |
| **21** | H-13-246 | 0.64 | 0.39 | 0.14 | -0.27 | 1.94 | 123.89 | 111.96 | 0.39 | 0.04 | -0.22 | 1.28 | 66.40 |
| **22** | H-13-189 | -0.63 | -0.01 | -0.53 | 1.19 | -1.89 | 211.52 | 129.03 | 1.75 | 0.14 | 0.46 | 2.50 | 64.12 |
| **23** | H-14-267 | -0.65 | -0.73 | 0.09 | -0.18 | -6.53 | 113.26 | 93.11 | 0.48 | 0.02 | 0.24 | -0.75 | 61.58 |
| **24** | H-13-235 | -0.46 | -0.32 | -0.09 | 1.06 | 3.71 | 215.28 | 149.42 | 1.26 | 0.06 | 0.37 | -0.59 | 61.02 |
| **25** | H-13-196 | -0.79 | -0.67 | -0.04 | 1.41 | 2.95 | 90.38 | 59.80 | 0.31 | 0.04 | 0.20 | 0.38 | 60.88 |
| **26** | H-14-252 | -1.18 | -0.94 | -0.03 | 0.05 | -3.08 | 131.17 | 96.74 | 0.80 | 0.03 | 0.40 | 0.65 | 60.36 |
| **27** | H-13-239 | -0.81 | -0.76 | 0.10 | 2.71 | 0.80 | 107.81 | 84.13 | 0.18 | 0.02 | 0.10 | 0.69 | 59.61 |
| **28** | H-13-277 | 0.04 | 0.01 | -0.01 | -1.67 | -0.33 | 117.95 | 84.87 | 0.53 | 0.02 | -0.07 | 0.15 | 54.45 |
| **29** | H-14-184 | -0.66 | -0.74 | 0.14 | -1.67 | -4.52 | 121.10 | 94.59 | -0.14 | 0.01 | 0.02 | 1.13 | 53.93 |
| **30** | H-13-195 | 0.35 | 0.19 | 0.15 | 2.77 | 4.54 | 110.62 | 95.28 | 0.94 | -0.12 | -0.10 | -0.12 | 53.40 |
| **31** | H-13-243 | -0.38 | -0.53 | 0.12 | 1.00 | 4.26 | 128.68 | 79.55 | 0.67 | 0.05 | 0.10 | 1.26 | 52.04 |
| **32** | H-14-216 | -0.13 | 0.01 | -0.16 | 1.70 | 3.82 | 43.06 | 86.89 | 1.10 | 0.03 | -0.01 | 1.27 | 51.88 |
| **33** | H-13-185 | -0.48 | -0.26 | -0.09 | 1.63 | 3.31 | 86.11 | 98.27 | 0.90 | 0.03 | 0.04 | -0.10 | 51.86 |
| **34** | H-13-229 | -0.50 | -0.10 | -0.30 | -0.23 | -8.61 | 31.96 | 47.11 | 0.19 | 0.04 | 0.01 | -0.45 | 48.98 |
| **35** | H-13-273 | -0.41 | -0.35 | -0.03 | 0.20 | 3.78 | 173.07 | 135.54 | 0.08 | -0.01 | -0.12 | 0.09 | 48.19 |
| **S.No** | **HYBRID** | **DS** | **DT** | **ASI** | **PH** | **EH** | **EWWH** | **EWWOH** | **EL** | **ED** | **NGKR** | **SI** | **TGW** |
| **36** | H-13-176 | 0.69 | 0.71 | -0.09 | 2.61 | 2.25 | -5.63 | 6.08 | 1.30 | 0.01 | 0.23 | 0.55 | 46.86 |
| **37** | H-14-223 | -0.75 | -0.72 | 0.05 | 0.79 | 3.63 | 49.76 | 40.06 | -0.13 | 0.03 | 0.13 | 0.62 | 44.86 |
| **38** | H-13-253 | 0.54 | 0.50 | -0.02 | -1.79 | -3.86 | 124.23 | 82.33 | 0.23 | 0.06 | 0.08 | 1.11 | 42.12 |
| **39** | H-14-227 | -0.65 | -0.13 | -0.35 | 1.82 | 5.78 | 133.78 | 94.62 | 0.59 | -0.02 | -0.21 | 1.10 | 41.08 |
| **40** | H-13-260 | -0.18 | -0.42 | 0.21 | 2.90 | 8.68 | 79.63 | 58.51 | 0.35 | 0.00 | 0.13 | 0.03 | 40.36 |
| **41** | H-13-248 | -0.10 | -0.24 | 0.17 | -2.52 | -7.01 | 63.41 | 57.71 | -0.22 | 0.01 | 0.13 | 0.35 | 39.40 |
| **42** | H-13-181 | -1.18 | -0.92 | -0.09 | -1.13 | 4.04 | 73.06 | 57.23 | 0.10 | -0.01 | -0.01 | 1.84 | 38.54 |
| **43** | H-13-259 | 0.59 | 0.26 | 0.18 | -3.23 | -6.30 | 87.81 | 75.61 | 0.34 | 0.02 | -0.22 | 0.64 | 38.46 |
| **44** | H-14-170 | -0.04 | -0.13 | 0.09 | 1.83 | 2.29 | 11.92 | -5.52 | 0.61 | 0.05 | 0.25 | 1.27 | 37.44 |
| **45** | H-14-171 | -0.66 | -0.43 | -0.07 | -0.90 | -0.62 | 76.23 | 58.94 | -0.10 | -0.04 | 0.19 | -0.19 | 31.94 |
| **46** | H-13-230 | 0.03 | -0.08 | 0.05 | 0.43 | 2.68 | 99.20 | 72.55 | 0.36 | 0.00 | -0.04 | 0.25 | 31.70 |
| **47** | H-14-211 | -0.28 | -0.05 | -0.17 | 1.01 | 6.18 | 79.84 | 43.99 | 0.49 | -0.01 | 0.02 | -0.53 | 31.67 |
| **48** | H-14-272 | 0.03 | 0.31 | -0.17 | 0.14 | -1.28 | 90.10 | 62.90 | -0.12 | -0.02 | 0.03 | -0.76 | 31.67 |
| **49** | H-14-221 | -1.34 | -1.18 | -0.02 | -4.10 | -4.67 | 13.10 | -5.78 | 0.23 | 0.04 | 0.54 | -0.25 | 30.04 |
| **50** | H-14-191 | -0.58 | -0.35 | -0.22 | 2.34 | 5.60 | 37.25 | 26.14 | 0.69 | 0.06 | -0.06 | 1.30 | 26.18 |
| **51** | H-14-178 | -0.64 | -0.41 | -0.16 | -1.13 | -1.02 | 78.31 | 57.09 | 0.27 | 0.02 | 0.04 | 1.37 | 25.73 |
| **52** | H-13-232 | 0.10 | 0.21 | -0.11 | 0.44 | 0.21 | 54.25 | 45.77 | -0.01 | 0.00 | 0.12 | 0.34 | 25.27 |
| **53** | H-14-256 | 0.35 | 0.27 | -0.02 | -1.32 | -2.00 | 138.04 | 115.03 | -0.33 | 0.03 | 0.17 | -0.08 | 23.52 |
| **S.No** | **HYBRID** | **DS** | **DT** | **ASI** | **PH** | **EH** | **EWWH** | **EWWOH** | **EL** | **ED** | **NGKR** | **SI** | **TGW** |
| **54** | H-14-209 | -0.74 | -0.27 | -0.22 | 4.41 | 11.13 | 16.91 | 35.34 | 0.28 | 0.02 | 0.03 | 0.37 | 22.63 |
| **55** | H-13-271 | 0.03 | 0.26 | -0.13 | -0.82 | 1.89 | -24.37 | 4.13 | -0.42 | -0.02 | 0.14 | 0.51 | 22.42 |
| **56** | H-13-213 | 0.46 | 0.41 | -0.23 | -1.28 | 0.23 | -13.98 | 6.58 | 0.02 | -0.02 | -0.08 | 0.83 | 21.45 |
| **57** | H-14-263 | -1.23 | -0.46 | -0.56 | 2.14 | 0.43 | 28.01 | 31.61 | -0.58 | -0.01 | -0.01 | -0.74 | 19.77 |
| **58** | H-14-198 | -1.22 | -0.87 | -0.10 | -1.21 | -3.45 | -62.06 | -34.04 | 0.07 | -0.02 | 0.02 | 0.80 | 19.20 |
| **59** | H-13-257 | 0.50 | 0.51 | -0.06 | 0.91 | 3.36 | 27.45 | 15.38 | -0.01 | -0.02 | -0.29 | 0.28 | 19.03 |
| **60** | H-13-168 | -0.86 | -0.69 | -0.08 | 2.15 | 4.60 | 49.84 | 26.30 | 0.27 | 0.00 | 0.00 | 0.21 | 18.99 |
| **61** | H-14-187 | 2.08 | 1.28 | 0.33 | -0.81 | -3.23 | 93.09 | 62.35 | -1.26 | -0.10 | -0.80 | -0.52 | 18.51 |
| **62** | H-13-238 | -0.21 | 0.04 | -0.05 | -0.35 | 0.23 | -0.98 | 18.85 | -0.69 | -0.04 | -0.06 | -0.64 | 16.89 |
| **63** | H-13-237 | 0.16 | 0.08 | -0.09 | -0.93 | 0.59 | 33.02 | 10.11 | 0.38 | 0.03 | 0.37 | 0.07 | 15.23 |
| **64** | H-14-247 | -0.08 | -0.12 | 0.03 | 1.69 | -1.48 | 64.31 | 84.31 | 0.55 | -0.02 | -0.14 | -0.70 | 15.08 |
| **65** | H-13-268 | -0.36 | -0.13 | -0.15 | 0.56 | -0.23 | 78.80 | 55.20 | 0.43 | 0.01 | 0.17 | -0.29 | 14.52 |
| **66** | H-14-200 | -0.45 | -0.46 | -0.17 | -1.29 | -4.37 | 1.02 | 0.52 | 0.34 | 0.03 | 0.06 | 1.13 | 13.16 |
| **67** | H-14-269 | 0.58 | 0.34 | 0.09 | -1.64 | -0.83 | 48.51 | 26.81 | -0.08 | -0.01 | -0.28 | 0.84 | 12.91 |
| **68** | H-14-214 | -1.06 | -0.58 | -0.27 | 1.75 | 1.98 | 66.75 | 53.25 | 0.50 | 0.00 | -0.30 | 0.84 | 11.03 |
| **69** | H-14-265 | 0.23 | 0.15 | 0.03 | 1.90 | 2.00 | 26.23 | 38.48 | 0.02 | 0.00 | 0.15 | -1.11 | 10.57 |
| **70** | H-13-270 | -0.03 | 0.12 | -0.05 | -0.61 | -3.77 | 33.39 | 13.89 | -0.40 | -0.02 | -0.14 | -0.86 | 9.56 |
| **71** | H-13-190 | 0.72 | 0.59 | 0.03 | 1.73 | 0.67 | -6.96 | 2.52 | -0.29 | 0.03 | -0.47 | 0.97 | 9.34 |
| **S.No** | **HYBRID** | **DS** | **DT** | **ASI** | **PH** | **EH** | **EWWH** | **EWWOH** | **EL** | **ED** | **NGKR** | **SI** | **TGW** |
| **72** | H-14-186 | -0.71 | -0.37 | 0.06 | -1.57 | -0.72 | -20.14 | 4.13 | -0.88 | -0.01 | -0.09 | 0.27 | 8.49 |
| **73** | H-13-261 | -0.17 | -0.06 | -0.06 | 0.17 | -0.89 | 43.99 | 37.44 | -0.02 | -0.01 | 0.09 | 0.40 | 8.09 |
| **74** | H-14-163 | -0.36 | -0.31 | 0.03 | 2.79 | 1.41 | -48.48 | -32.81 | 0.01 | 0.02 | 0.18 | 0.29 | 6.66 |
| **75** | H-14-275 | -0.62 | -0.40 | -0.03 | -0.42 | 0.16 | -36.33 | -30.64 | 0.40 | -0.04 | -0.02 | -0.99 | 5.85 |
| **76** | H-13-249 | 1.50 | 1.46 | -0.08 | 2.73 | -6.48 | -71.11 | -50.48 | 1.24 | 0.07 | 0.44 | 1.31 | 5.46 |
| **77** | H-13-220 | 0.25 | 0.28 | -0.06 | 1.06 | -3.65 | -36.39 | -21.84 | -0.04 | 0.00 | 0.03 | -0.52 | 3.03 |
| **78** | H-14-241 | -0.12 | -0.21 | 0.08 | -3.71 | -14.21 | 44.89 | -0.53 | 0.18 | 0.00 | 0.11 | -0.42 | 1.82 |
| **79** | H-13-224 | 0.69 | 0.76 | -0.15 | -3.12 | -1.68 | -31.64 | 10.15 | -0.35 | -0.05 | -0.42 | 0.22 | 1.12 |
| **80** | H-13-207 | -0.43 | -0.34 | -0.08 | 0.56 | 2.24 | 14.21 | 6.19 | 0.02 | 0.03 | -0.23 | 0.51 | 0.80 |
| **81** | H-14-207 | 0.43 | 0.34 | 0.08 | -0.56 | -2.24 | -14.21 | -6.19 | -0.02 | -0.03 | 0.23 | -0.51 | -0.80 |
| **82** | H-14-224 | -0.69 | -0.76 | 0.15 | 3.12 | 1.68 | 31.64 | -10.15 | 0.35 | 0.05 | 0.42 | -0.22 | -1.12 |
| **83** | H-13-241 | 0.12 | 0.21 | -0.08 | 3.71 | 14.21 | -44.89 | 0.53 | -0.18 | 0.00 | -0.11 | 0.42 | -1.82 |
| **84** | H-14-220 | -0.25 | -0.28 | 0.06 | -1.06 | 3.65 | 36.39 | 21.84 | 0.04 | 0.00 | -0.03 | 0.52 | -3.03 |
| **85** | H-14-249 | -1.50 | -1.46 | 0.08 | -2.73 | 6.48 | 71.11 | 50.48 | -1.24 | -0.07 | -0.44 | -1.31 | -5.46 |
| **86** | H-13-275 | 0.62 | 0.40 | 0.03 | 0.42 | -0.16 | 36.33 | 30.64 | -0.40 | 0.04 | 0.02 | 0.99 | -5.85 |
| **87** | H-13-163 | 0.36 | 0.31 | -0.03 | -2.79 | -1.41 | 48.48 | 32.81 | -0.01 | -0.02 | -0.18 | -0.29 | -6.66 |
| **88** | H-14-261 | 0.17 | 0.06 | 0.06 | -0.17 | 0.89 | -43.99 | -37.44 | 0.02 | 0.01 | -0.09 | -0.40 | -8.09 |
| **89** | H-13-186 | 0.71 | 0.37 | -0.06 | 1.57 | 0.72 | 20.14 | -4.13 | 0.88 | 0.01 | 0.09 | -0.27 | -8.49 |
| **S.No** | **HYBRID** | **DS** | **DT** | **ASI** | **PH** | **EH** | **EWWH** | **EWWOH** | **EL** | **ED** | **NGKR** | **SI** | **TGW** |
| **90** | H-14-190 | -0.72 | -0.59 | -0.03 | -1.73 | -0.67 | 6.96 | -2.52 | 0.29 | -0.03 | 0.47 | -0.97 | -9.34 |
| **91** | H-14-270 | 0.03 | -0.12 | 0.05 | 0.61 | 3.77 | -33.39 | -13.89 | 0.40 | 0.02 | 0.14 | 0.86 | -9.56 |
| **92** | H-13-265 | -0.23 | -0.15 | -0.03 | -1.90 | -2.00 | -26.23 | -38.48 | -0.02 | 0.00 | -0.15 | 1.11 | -10.57 |
| **93** | H-13-214 | 1.06 | 0.58 | 0.27 | -1.75 | -1.98 | -66.75 | -53.25 | -0.50 | 0.00 | 0.30 | -0.84 | -11.03 |
| **94** | H-13-269 | -0.58 | -0.34 | -0.09 | 1.64 | 0.83 | -48.51 | -26.81 | 0.08 | 0.01 | 0.28 | -0.84 | -12.91 |
| **95** | H-13-200 | 0.45 | 0.46 | 0.17 | 1.29 | 4.37 | -1.02 | -0.52 | -0.34 | -0.03 | -0.06 | -1.13 | -13.16 |
| **96** | H-14-268 | 0.36 | 0.13 | 0.15 | -0.56 | 0.23 | -78.80 | -55.20 | -0.43 | -0.01 | -0.17 | 0.29 | -14.52 |
| **97** | H-13-247 | 0.08 | 0.12 | -0.03 | -1.69 | 1.48 | -64.31 | -84.31 | -0.55 | 0.02 | 0.14 | 0.70 | -15.08 |
| **98** | H-14-237 | -0.16 | -0.08 | 0.09 | 0.93 | -0.59 | -33.02 | -10.11 | -0.38 | -0.03 | -0.37 | -0.07 | -15.23 |
| **99** | H-14-238 | 0.21 | -0.04 | 0.05 | 0.35 | -0.23 | 0.98 | -18.85 | 0.69 | 0.04 | 0.06 | 0.64 | -16.89 |
| **100** | H-13-187 | -2.08 | -1.28 | -0.33 | 0.81 | 3.23 | -93.09 | -62.35 | 1.26 | 0.10 | 0.80 | 0.52 | -18.51 |
| **101** | H-14-168 | 0.86 | 0.69 | 0.08 | -2.15 | -4.60 | -49.84 | -26.30 | -0.27 | 0.00 | 0.00 | -0.21 | -18.99 |
| **102** | H-14-257 | -0.50 | -0.51 | 0.06 | -0.91 | -3.36 | -27.45 | -15.38 | 0.01 | 0.02 | 0.29 | -0.28 | -19.03 |
| **103** | H-13-198 | 1.22 | 0.87 | 0.10 | 1.21 | 3.45 | 62.06 | 34.04 | -0.07 | 0.02 | -0.02 | -0.80 | -19.20 |
| **104** | H-13-263 | 1.23 | 0.46 | 0.56 | -2.14 | -0.43 | -28.01 | -31.61 | 0.58 | 0.01 | 0.01 | 0.74 | -19.77 |
| **105** | H-14-213 | -0.46 | -0.41 | 0.23 | 1.28 | -0.23 | 13.98 | -6.58 | -0.02 | 0.02 | 0.08 | -0.83 | -21.45 |
| **106** | H-14-271 | -0.03 | -0.26 | 0.13 | 0.82 | -1.89 | 24.37 | -4.13 | 0.42 | 0.02 | -0.14 | -0.51 | -22.42 |
| **107** | H-13-209 | 0.74 | 0.27 | 0.22 | -4.41 | -11.13 | -16.91 | -35.34 | -0.28 | -0.02 | -0.03 | -0.37 | -22.63 |
| **S.No** | **HYBRID** | **DS** | **DT** | **ASI** | **PH** | **EH** | **EWWH** | **EWWOH** | **EL** | **ED** | **NGKR** | **SI** | **TGW** |
| **108** | H-13-256 | -0.35 | -0.27 | 0.02 | 1.32 | 2.00 | -138.04 | -115.03 | 0.33 | -0.03 | -0.17 | 0.08 | -23.52 |
| **109** | H-14-232 | -0.10 | -0.21 | 0.11 | -0.44 | -0.21 | -54.25 | -45.77 | 0.01 | 0.00 | -0.12 | -0.34 | -25.27 |
| **110** | H-13-178 | 0.64 | 0.41 | 0.16 | 1.13 | 1.02 | -78.31 | -57.09 | -0.27 | -0.02 | -0.04 | -1.37 | -25.73 |
| **111** | H-13-191 | 0.58 | 0.35 | 0.22 | -2.34 | -5.60 | -37.25 | -26.14 | -0.69 | -0.06 | 0.06 | -1.30 | -26.18 |
| **112** | H-13-221 | 1.34 | 1.18 | 0.02 | 4.10 | 4.67 | -13.10 | 5.78 | -0.23 | -0.04 | -0.54 | 0.25 | -30.04 |
| **113** | H-13-272 | -0.03 | -0.31 | 0.17 | -0.14 | 1.28 | -90.10 | -62.90 | 0.12 | 0.02 | -0.03 | 0.76 | -31.67 |
| **114** | H-13-211 | 0.28 | 0.05 | 0.17 | -1.01 | -6.18 | -79.84 | -43.99 | -0.49 | 0.01 | -0.02 | 0.53 | -31.67 |
| **115** | H-14-230 | -0.03 | 0.08 | -0.05 | -0.43 | -2.68 | -99.20 | -72.55 | -0.36 | 0.00 | 0.04 | -0.25 | -31.70 |
| **116** | H-13-171 | 0.66 | 0.43 | 0.07 | 0.90 | 0.62 | -76.23 | -58.94 | 0.10 | 0.04 | -0.19 | 0.19 | -31.94 |
| **117** | H-13-170 | 0.04 | 0.13 | -0.09 | -1.83 | -2.29 | -11.92 | 5.52 | -0.61 | -0.05 | -0.25 | -1.27 | -37.44 |
| **118** | H-14-259 | -0.59 | -0.26 | -0.18 | 3.23 | 6.30 | -87.81 | -75.61 | -0.34 | -0.02 | 0.22 | -0.64 | -38.46 |
| **119** | H-14-181 | 1.18 | 0.92 | 0.09 | 1.13 | -4.04 | -73.06 | -57.23 | -0.10 | 0.01 | 0.01 | -1.84 | -38.54 |
| **120** | H-14-248 | 0.10 | 0.24 | -0.17 | 2.52 | 7.01 | -63.41 | -57.71 | 0.22 | -0.01 | -0.13 | -0.35 | -39.40 |
| **121** | H-14-260 | 0.18 | 0.42 | -0.21 | -2.90 | -8.68 | -79.63 | -58.51 | -0.35 | 0.00 | -0.13 | -0.03 | -40.36 |
| **122** | H-13-227 | 0.65 | 0.13 | 0.35 | -1.82 | -5.78 | -133.78 | -94.62 | -0.59 | 0.02 | 0.21 | -1.10 | -41.08 |
| **123** | H-14-253 | -0.54 | -0.50 | 0.02 | 1.79 | 3.86 | -124.23 | -82.33 | -0.23 | -0.06 | -0.08 | -1.11 | -42.12 |
| **124** | H-13-223 | 0.75 | 0.72 | -0.05 | -0.79 | -3.63 | -49.76 | -40.06 | 0.13 | -0.03 | -0.13 | -0.62 | -44.86 |
| **125** | H-14-176 | -0.69 | -0.71 | 0.09 | -2.61 | -2.25 | 5.63 | -6.08 | -1.30 | -0.01 | -0.23 | -0.55 | -46.86 |
| **S.No** | **HYBRID** | **DS** | **DT** | **ASI** | **PH** | **EH** | **EWWH** | **EWWOH** | **EL** | **ED** | **NGKR** | **SI** | **TGW** |
| **126** | H-14-273 | 0.41 | 0.35 | 0.03 | -0.20 | -3.78 | -173.07 | -135.54 | -0.08 | 0.01 | 0.12 | -0.09 | -48.19 |
| **127** | H-14-229 | 0.50 | 0.10 | 0.30 | 0.23 | 8.61 | -31.96 | -47.11 | -0.19 | -0.04 | -0.01 | 0.45 | -48.98 |
| **128** | H-14-185 | 0.48 | 0.26 | 0.09 | -1.63 | -3.31 | -86.11 | -98.27 | -0.90 | -0.03 | -0.04 | 0.10 | -51.86 |
| **129** | H-13-216 | 0.13 | -0.01 | 0.16 | -1.70 | -3.82 | -43.06 | -86.89 | -1.10 | -0.03 | 0.01 | -1.27 | -51.88 |
| **130** | H-14-243 | 0.38 | 0.53 | -0.12 | -1.00 | -4.26 | -128.68 | -79.55 | -0.67 | -0.05 | -0.10 | -1.26 | -52.04 |
| **131** | H-14-195 | -0.35 | -0.19 | -0.15 | -2.77 | -4.54 | -110.62 | -95.28 | -0.94 | 0.12 | 0.10 | 0.12 | -53.40 |
| **132** | H-13-184 | 0.66 | 0.74 | -0.14 | 1.67 | 4.52 | -121.10 | -94.59 | 0.14 | -0.01 | -0.02 | -1.13 | -53.93 |
| **133** | H-14-277 | -0.04 | -0.01 | 0.01 | 1.67 | 0.33 | -117.95 | -84.87 | -0.53 | -0.02 | 0.07 | -0.15 | -54.45 |
| **134** | H-14-239 | 0.81 | 0.76 | -0.10 | -2.71 | -0.80 | -107.81 | -84.13 | -0.18 | -0.02 | -0.10 | -0.69 | -59.61 |
| **135** | H-13-252 | 1.18 | 0.94 | 0.03 | -0.05 | 3.08 | -131.17 | -96.74 | -0.80 | -0.03 | -0.40 | -0.65 | -60.36 |
| **136** | H-14-196 | 0.79 | 0.67 | 0.04 | -1.41 | -2.95 | -90.38 | -59.80 | -0.31 | -0.04 | -0.20 | -0.38 | -60.88 |
| **137** | H-14-235 | 0.46 | 0.32 | 0.09 | -1.06 | -3.71 | -215.28 | -149.42 | -1.26 | -0.06 | -0.37 | 0.59 | -61.02 |
| **138** | H-13-267 | 0.65 | 0.73 | -0.09 | 0.18 | 6.53 | -113.26 | -93.11 | -0.48 | -0.02 | -0.24 | 0.75 | -61.58 |
| **139** | H-14-189 | 0.63 | 0.01 | 0.53 | -1.19 | 1.89 | -211.52 | -129.03 | -1.75 | -0.14 | -0.46 | -2.50 | -64.12 |
| **140** | H-14-246 | -0.64 | -0.39 | -0.14 | 0.27 | -1.94 | -123.89 | -111.96 | -0.39 | -0.04 | 0.22 | -1.28 | -66.40 |
| **141** | H-14-228 | 1.95 | 1.00 | 0.54 | -2.40 | -3.76 | -152.80 | -119.63 | -2.65 | -0.22 | -1.19 | -2.53 | -66.59 |
| **142** | H-13-219 | 1.10 | 0.66 | 0.29 | -3.24 | -7.79 | -99.93 | -79.08 | -1.40 | -0.11 | -0.13 | -2.15 | -66.80 |
| **143** | H-14-262 | 0.58 | 0.82 | -0.30 | 0.83 | -0.10 | -102.92 | -80.16 | -0.25 | -0.02 | -0.27 | -0.25 | -67.47 |
| **S.No** | **HYBRID** | **DS** | **DT** | **ASI** | **PH** | **EH** | **EWWH** | **EWWOH** | **EL** | **ED** | **NGKR** | **SI** | **TGW** |
| **144** | H-13-226 | 0.91 | 0.81 | 0.07 | -0.37 | -3.95 | -99.63 | -82.56 | -0.70 | -0.04 | -0.46 | -0.41 | -69.82 |
| **145** | H-13-240 | 1.02 | 0.62 | 0.13 | -3.03 | -4.50 | -47.13 | -47.11 | -1.08 | -0.03 | 0.17 | 1.25 | -72.53 |
| **146** | H-13-222 | 0.82 | 0.55 | 0.18 | -3.50 | -8.97 | -142.15 | -106.04 | -0.50 | -0.04 | -0.23 | -0.80 | -72.53 |
| **147** | H-14-274 | -0.34 | -0.12 | -0.16 | -0.44 | -1.11 | -151.06 | -120.02 | -0.87 | -0.07 | -0.24 | -2.27 | -74.07 |
| **148** | H-14-208 | 0.51 | 0.38 | 0.08 | -3.52 | -5.96 | -199.50 | -128.24 | 0.08 | -0.06 | -0.47 | 0.19 | -75.09 |
| **149** | H-14-231 | -0.25 | 0.10 | -0.22 | -0.98 | -4.48 | -225.99 | -58.12 | -0.53 | -0.03 | -0.13 | -0.87 | -78.30 |
| **150** | H-13-218 | -0.49 | -0.48 | 0.10 | -2.00 | -3.50 | -194.85 | -104.79 | -0.79 | -0.07 | -0.34 | -0.57 | -78.83 |
| **151** | H-13-250 | 0.57 | 0.75 | -0.30 | -1.00 | -2.87 | -145.21 | -108.16 | -0.49 | -0.04 | -0.25 | -1.04 | -82.42 |
| **152** | H-13-225 | 0.15 | 0.35 | -0.22 | -0.41 | 3.57 | -163.09 | -142.22 | -0.43 | -0.05 | 0.08 | -0.50 | -82.91 |
| **153** | H-13-236 | 0.92 | 0.66 | 0.14 | -1.92 | -0.90 | -162.16 | -128.51 | -0.26 | -0.04 | -0.15 | -2.08 | -85.76 |
| **154** | H-14-242 | 0.65 | 0.62 | -0.07 | -1.54 | -1.26 | -51.51 | -74.17 | -0.22 | -0.06 | -0.39 | -0.29 | -87.83 |
| **155** | H-13-165 | 1.35 | 0.66 | 0.47 | 3.09 | -0.29 | -204.50 | -144.86 | -1.71 | -0.15 | -0.61 | -3.17 | -90.38 |
| **156** | H-13-172 | -7.55 | -6.20 | -0.12 | -7.58 | -12.06 | -257.36 | -176.13 | -3.47 | -0.28 | -1.17 | -3.35 | -110.56 |
| **157** | H-14-193 | 1.78 | 0.93 | 0.53 | -3.95 | -9.81 | -243.38 | -195.28 | -1.83 | -0.07 | -0.44 | -1.34 | -112.25 |
| **158** | H-13-255 | 0.08 | -0.08 | 0.08 | -1.56 | -3.05 | -287.90 | -198.36 | -1.05 | -0.03 | -0.02 | -0.79 | -113.06 |
| **159** | H-14-245 | 2.24 | 1.33 | 0.53 | -1.95 | -2.23 | -231.51 | -162.09 | -1.09 | -0.07 | -0.11 | -1.25 | -113.07 |
| **160** | H-13-164 | -1.98 | -1.62 | -0.06 | 1.69 | -4.25 | -283.66 | -187.46 | -1.27 | -0.07 | -0.23 | -2.04 | -121.10 |

 DT: Days to 50% tasselling; DS: Days to 50% silking; ASI: Anthesis Silking Interval; PH: Plant height (cm); EH: Ear height (cm); EWWH: Ear weight with husk (g); EWWOH: Ear weight without husk (g); EL: Ear length (cm); ED: Ear diameter (cm); NGR: Number of grain rows; SI: 100 grain weight (g); TGW: Total grain weight (g) \*The shadings in the table indicate that the genotypes are good performers for the respective trait under consideration

**Table S3.** The mean square values of the twelve yield and yield attributing traits obtained from the general ANOVA

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Source of** **Variation** | **d.f.** | **DT** | **DS** | **ASI** | **PH** | **EH** | **EWWH** | **EWWOH** | **EL** | **ED** | **NGR** | **SI** | **TGW** |
| Replication | 1 | 4.34 | 0 | 1.86 | 204.05 | 566.1 | 1854 | 11 | 4.26 | 0.51 | 0.77 | 18.8 | 673 |
| Hybrids | 96 | 13.49 \*\*\* | 17.59 \*\*\* | 4.6 \*\*\* | 1232.08\*\*\* | 907.52 \*\*\* | 306665 \*\*\* | 192342 \*\*\* | 13.84 \*\*\* | 0.69 \*\*\* | 6.99 \*\*\* | 29.72 \*\*\* | 102378\*\*\* |
| Residuals | 96 | 2.59 | 2.7 | 2.87 | 483.97 | 433.33 | 57236 | 46323 | 3.56 | 0.26 | 3.93 | 9.44 | 24960 |

DT: Days to 50% tasselling; DS: Days to 50% silking; ASI: Anthesis Silking Interval; PH: Plant height (cm); EH: Ear height (cm); EWWH: Ear weight with husk (g); EWWOH: Ear weight without husk (g); EL: Ear length (cm); ED: Ear diameter (cm); NGR: Number of grain rows; SI: 100 grain weight (g); TGW: Total grain weight (g)

**Table S4.** Genetic distance, Total grain weight (g) Heterosis indices and GCA effects of the top 20 hybrids derived from crosses between inbreds from two heterotic groups

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S No.** | **Cross** | **GD\_SSR** | **TGW (g)** | **SCA Effects** | **BPH (%)** | **Female GCA** | **Male GCA** | **Avg. GCA** | **BPH sig** |
| 1 | YL-262×YL-246 | 0.39 | 997 | 169 | 1648 | -3 | 42 | 20 | \*\*\* |
| 2 | YL-231×YL-277 | 0.39 | 923 | 415 | 1057 | 145 | -14 | 65 | \*\*\* |
| 3 | YL-227×YL-231 | 0.07 | 900 | 219 | 385 | -57 | 145 | 44 | \*\*\* |
| 4 | YL-252×YL-231 | 0.39 | 856 | 90 | 372 | -48 | 145 | 48 | \*\*\* |
| 5 | YL-231×YL-255 | 0.39 | 793 | 317 | 349 | 145 | 12 | 78 | \*\*\* |
| 6 | YL-231×YL-252 | 0.39 | 719 | -69 | 277 | 145 | -48 | 48 | \*\*\* |
| 7 | YL-246×YL-259 | 0.26 | 686 | 149 | 254 | 42 | 145 | 93 | \*\*\* |
| 8 | YL-184×YL-277 | 0.13 | 678 | 13 | 249 | 19 | -14 | 2 | \*\* |
| 9 | YL-246×YL-262 | 0.39 | 660 | -23 | 171 | 42 | -3 | 20 | \*\*\* |
| 10 | YL-184×YL-255 | 0.26 | 648 | 64 | 162 | 19 | 12 | 15 | \*\* |
| 11 | YL-277×YL-262 | 0.39 | 629 | 200 | 155 | -14 | -3 | -9 | \*\*\* |
| 12 | YL-255×YL-246 | 0.16 | 586 | 113 | 143 | 12 | 42 | 27 | \*\* |
| 13 | YL-277×YL-184 | 0.13 | 574 | 247 | 139 | -14 | 19 | 2 | \* |
| 14 | YL-184×YL-262 | 0.39 | 547 | 204 | 128 | 19 | -3 | 8 | \* |
| 15 | YL-184×YL-246 | 0.26 | 529 | 54 | 125 | 19 | 42 | 31 |   |
| 16 | YL-259×YL-231 | 0.39 | 516 | 113 | 121 | -95 | 145 | 25 | \*\* |
| 17 | YL-255×YL-259 | 0.18 | 505 | -52 | 102 | 12 | -95 | -42 | \* |
| 18 | YL-184×YL-231 | 0.39 | 498 | 42 | 93 | 19 | 145 | 82 |   |
| 19 | YL-255×YL-231 | 0.39 | 494 | -7 | 86 | 12 | 145 | 78 | \* |
| 20 | YL-277×YL-231 | 0.39 | 486 | -98 | 75 | -14 | 145 | 65 | \* |

\*: α ≤ 0.10 ; \*\* : α ≤ 0.05 ; \*\*\*: α ≤ 0.01

**Supplementary Figure 1**



**Supplementary Figure 1**. The GCA effects of the female lines and the corresponding SCA effects of the high yielding topcrosses grouped in YG I for the SCA and HSGCA methods