***Suppplementary Table 1: Details of material used for developing test crosses during Kharif, 2013; Rabi, 2013 and 2014 and used in the study for development of pedigree crosses***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **S. No.** | **Inbred** | **Source/Pedigree** | **S. No.** | **Inbred** | **Source/Pedigree** |
| **Lines used for developing crosses (*Kharif*, 2013)** |
| 1 | QIL-4-2065 | Seed Tech 2324 | 37 | QIL-4- 2034 | HQPM 9 |
| 2 | QIL-4-2047 | HQPM-1 | 38 | QIL-4- 2025 | DMRQPM-3-124-5-1-1 |
| 3 | QIL-4-2024 | DMRQPM-3-124-2-1 | 39 | QIL-4- 2026-1 | DMRQPM-3-113-1-2-1-2-1-1 |
| 4 | QIL-4-2050 | CML 169-5-1-1-1 | 40 | QIL-4- 2052 | HM 4-5-2-1-1 |
| 5 | QIL-4-2029 | DMRQPM-3-113-1-5-1  | 41 | QIL-4- 2066-1 | HQPM 1 |
| 6 | QIL-4- 2057 | HQPM-7 | 42 | QIL-4- 2017 | CML 161-4-2-1-1 |
| 7 | QIL-4- 2064 | Seed Tech 2324 | 43 | QIL-4- 2032-2 | DMRQPM-3-124-1-4-1-1-1 |
| 8 | QIL-4- 2026 | DMRQPM-3-113-1-2-1-1 | 44 | QIL-4- 2038-1 | HQPM 9 |
| 9 | QIL-4- 2053 | HM-4-2-1-1-1 | 45 | WNC 18737 | HKI 164-D-3-3-2-1-1 |
| 10 | QIL-4- 2082 | HQPM-7 | 46 | QIL-4- 2050-1 | CML 169-5-1-2-1-1 |
| 11 | QIL-4- 2031 | CLQRCY 47-1-2-1-1 | 47 | QIL-4- 2057-1 | HQPM 7 |
| 12 | QIL-4- 2039 | HQPM-9 | **Lines used for developing crosses (*Rabi* , 2014)** |
| 13 | QIL-4- 2052 | HM-4-1-3-1-1 | 48 | QIL-4- 2216 | P65C6-BBB-41-1-2-1-1 |
| 14 | QIL-4- 2023 | DMRQPM-3-124-1-1 | 49 | QIL-4- 2192 | su2su2o2o2Com(Red)-27-BBB-1-1-1 |
| 15 | QIL-4- 2063 | Seed Tech 2324 | 50 | QIL-4- 2164 | P70CO-BBB-5-1-1-1 |
| **Lines used for developing crosses (*Rabi*, 2013)** | 51 | QIL-4- 2230 | S99TLYQ-HG-AB\*4-7-BBB-1-1-1 |
| 16 | QIL-4- 2024-1 | DMRQPM-3-124-2-2-1-1 | 52 | QIL-4- 2238 | G33QC20-BBB-15-BBB-1-2-1-1-1 |
| 17 | QIL-4- 2080-1 | HQPM 7 | 53 | QIL-4- 2169 | Temp ×Trop(HO)QPM-48-BBB-1-1-1 |
| 18 | WNC 10175 | G26QC23-BBB-18-BBB-1-1-1 | 54 | QIL-4- 1302 | MRCHY6331-1-2-1-1 |
| 19 | QIL-4- 2032-2 | VQL-17-5-2-1-1 | 55 | QIL-4- 2248 | Temp ×Trop(HO)QPM-47-BBB-1-1-1 |
| 20 | QIL-4- 2144 | HQPM-5 | 56 | QIL-4- 2165 | su2su2o2o2Com-BBB-8-BBB-1-1-1 |
| 21 | QIL-4- 2072 | HQPM 7 | 57 | QIL-4- 2211 | P61C1-BBB-20-BBB-1-1-1 |
| 22 | QIL-4- 2085 | HQPM 7 | 58 | QIL-4- 2248-1 | Temp ×Trop(HO)QPM-47-BBB-1-2-1-1 |
| 23 | QIL-4- 2065-1 | Seed Tech 2324 | 59 | QIL-4- 2180 | G33QC20-BBB-5-BBB-1-1-1 |
| 24 | WNC 19082 | Temp × Trop (HO) QPM-BBB57-1-1 | 60 | QIL-4- 2172 | CML 171-1-2-1-1 |
| 25 | QIL-4- 2006 | DMRQPM 58-2-1-1 | 61 | QIL-4- 2261 | CML 187-BBB-1-2-1 |
| 26 | QIL-4- 2064-1 | Seed Tech 2324 | 62 | QIL-4-2274 | P66C0-BBB-38-BBB-1-2-1-1 |
| 27 | QIL-4- 2022 | HKI 5072-2-2BT-1-2-1-1 | 63 | QIL-4- 2208 | P61C1-BBB-45-BBB-1-1-1 |
| 28 | QIL-4- 2053-1 | HM-4-2-1-2-1-1-1 | 64 | QIL-4- 2184 | P69QC3NC7-5-2-1-1 |
| 29 | QIL-4- 2018-1 | CML 161-2-1-1 | 65 | QIL-4- 2187 | S00TLYWQHG-BBB-35-1-1 |
| 30 | QIL-4- 2039-1 | HQPM 9 | 66 | QIL-4- 2209 | P61C1-BBB-46-BBB-1-1-1 |
| 31 | QIL-4- 2058 | HQPM 7 |  |  |  |
| 32 | QIL-4- 2077 | HQPM 7 |  |  |  |
| 33 | QIL-4- 2042 | HQPM 1 |  |  |  |
| 34 | QIL-4- 2023-1 | DMRQPM-3-124-2-1-1-1 |  |  |  |
| 35 | QIL-4- 2066 | HQPM 1 |  |  |  |
| 36 | QIL-4- 2028-1 | DMRQPM-3-113-4-1-1 |  |  |  |
| **Tester I** | CML161 |  |  |  |  |
| **Tester II** | CML165 |  |  |  |  |

***Supplementary Table 2: Analysis of Variance for grain yield of testcross hybrids for three different seasons***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Source of variation** | **DF** | **MSS****(*Rabi*, 2013)** | **DF** | **MSS****(*Kharif*, 2014)** | **DF** | **MSS****(*Kharif*, 2015)** |
| Replication | 2 | 544.34ns | 2 | 238.40\*\* | 2 | 221.90\*\* |
| Variety | 46 | 633.36\*\* | 97 | 1148.91\*\* | 58 | 54.84\*\* |
| Parent (P) | 16 | 482.98\* | 33 | 816.18\*\* | 20 | 26.67 |
| Hybrid (H) | 29 | 738.17\*\* | 63 | 1341.44\*\* | 37 | 71.54\*\* |
| Line | 14 | 1101.21\* | 31 | 1733.95 \* | 18 | 58.59ns |
| Tester | 1 | 284.44ns | 1 | 2184.97 ns | 1 | 0.01ns |
| Line×Tester | 14 | 407.54\* | 31 | 921.71\*\* | 18 | 88.47\*\* |
| Error | 92 | 206.11 | 194 | 7.77 | 116 | 26.31 |

\* Significant at 0.05 probability level

\*\* Significant at 0.01 probability level

CV = 19.00% (*Rabi* 2013), 3.26% (*Kharif* 2014) and 15.58% (*Kharif* 2015) respectively.

***Supplementary Table 3: Mean grain yield (Q/ha), general and specific combining ability effects and heterotic grouping of 32 QPM inbred lines (Rabi, 2013; Kharif, 2014 and Kharif, 2015)***

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **S. No.** | **Inbred** | **Performance with testers (Q/Ha)** | **Difference (Ai-Bi)** | **Means** | **GCA effects** | **SCA effects based on Testers** | **Heterotic group** |
| **CML 161** | **CML 165** |  | **(Q/Ha)** | **CML 161 (A)**  | **CML 165** |
| **(Group A)** | **(Group B)** |  |   | **(B)** |
| ***Rabi*, 2013** |
| 1 | QIL-4- 2065 | 67.96 | 56.43 | 11.53 | 62.2 | -13.3489 | 3.988 | -3.988 | B |
| 2 | QIL-4- 2047 | 83.9 | 97.05 | 13.15 | 90.47 | 14.9178\* | -8.377 | 8.377 | AB |
| **3** | **QIL-4- 2024** | **56.85** | **69.82** | **12.97** | **63.33** | **12.2156** | **-8.277** | **8.277** | **A** |
| 4 | QIL-4- 2050 | 72.96 | 77.81 | 4.85 | 75.38 | -0.1489 | -4.177 | 4.177 | A |
| 5 | QIL-4- 2029 | 78.32 | 60.79 | 17.53 | 69.55 | -5.9989 | 6.972 | -6.972 | B |
| 6 | QIL-4- 2057 | 102.91 | 62.37 | 40.54 | 82.64 | 7.1011 | 18.472\* | -18.472 | B |
| **7** | **QIL-4- 2064** | **68.99** | **88.76** | **19.77** | **78.88** | **3.3344** | **11.661** | **-11.661** | **B** |
| 8 | QIL-4- 2026 | 74.01 | 64.66 | 9.35 | 69.33 | -6.1822 | 2.888 | -2.888 | B |
| 9 | QIL-4- 2053 | 117.83 | 94.17 | 23.66 | 106 | 30.4678\*\* | 10.038 | -10.038 | AB |
| 10 | QIL-4- 2082 | 67.76 | 72.63 | 4.87 | 70.2 | -5.3322 | -4.194 | 4.194 | A |
| 11 | QIL-4- 2031 | 89.26 | 82.48 | 6.78 | 85.87 | 10.3344 | 1.605 | -1.605 | B |
| 12 | QIL-4- 2039 | 60.38 | 65.41 | 5.03 | 62.9 | -12.6489 | -4.277 | 4.277 | A |
| 13 | QIL-4- 2052 | 57.39 | 65.96 | 8.57 | 61.67 | -13.8656 | -6.061 | 6.061 | A |
| 14 | QIL-4- 2023 | 59.77 | 64.51 | 4.74 | 62.14 | -13.3989 | -4.124 | 4.127 | A |
| 15 | QIL-4- 2063 | 101.51 | 83.55 | 17.96 | 92.53 | 16.9844\*\* | 7.188 | -7.188 | AB |
|   | Mean | 77.32 | 73.76 | 3.56 (x1) | 75.54 |   |   |   |   |
| ***Kharif*, 2014** |
| 16 | QIL-4- 2024 -1 | 85.71 | 95.24 | 9.53 | 90.475 | 2.121 | -2.709 | 2.709 | A |
| 17 | QIL-4- 2080-1 | 71.43 | 59.52 | 11.91 | 65.475 | -21.629 | 8.173\*,\*\* | -8.173 | B |
| 18 | WNC 10175 | 54.76 | 85.71 | 30.95 | 70.235 | -18.479 | -12.043 | 12.043\*,\*\* | A |
| 19 | QIL-4- 2032-2 | 61.9 | 69.05 | 7.15 | 65.475 | -21.779 | -2.043 | 2.043 | - |
| 20 | QIL-4- 2144 | 83.33 | 85.71 | 2.38 | 84.52 | -3.662 | 1.44 | -1.44 | - |
| 21 | QIL-4- 2072 | 69.05 | 121.43 | 52.38 | 95.24 | 9.055\*,\*\* | -20.943 | 20.943 | AB |
| 22 | QIL-4- 2085 | 69.05 | 119.05 | 50 | 94.05 | 7.738\*,\*\* | -18.293 | 18.293 | AB |
| 23 | QIL-4- 2065 -1 | 95.24 | 92.86 | 2.38 | 94.05 | 7.005\*,\*\* | 3.640\* | -3.64 | - |
| 24 | WNC 19082 | 100 | 128.57 | 28.57 | 114.285 | 26.838\*,\*\* | -9.359 | 9.359\*,\*\* | AB |
| 25 | QIL-4- 2006 | 59.52 | 66.67 | 7.15 | 63.095 | -22.095 | 0.673 | -0.637 | - |
| 26 | QIL-4- 2064 -1 | 107.14 | 116.67 | 9.53 | 111.905 | 24.171\*, \*\* | -4.059 | 4.059\* | AB |
| 27 | QIL-4- 2022 | 76.19 | 73.81 | 2.38 | 75 | -12.795 | 4.940\*,\*\* | -4.94 | - |
| 28 | QIL-4- 2053 -1 | 59.52 | 59.52 | 0 | 59.52 | -25.795 | 4.373\*,\*\* | -4.373 | - |
| 29 | QIL-4-2018-1 | 83.33 | 142.86 | 59.53 | 113.095 | 22.288\*, \*\* | -23.009 | 23.099\*,\*\* | AB |
| 30 | QIL-4- 2039-1 | 83.33 | 6'6.67 | 16.66 | 75 | -9.629 | 12.473\*,\*\* | -12.473 | B |
| **31** | **QIL-4- 2058** | **52.38** | **83.33** | **30.95** | **67.855** | **18.512** | **12.276** | **-12.276** | **B** |
| 32 | QIL-4- 2077 | 114.29 | 38.1 | 76.19 | 76.195 | -11.395 | 37.240\*,\*\* | -37.24 | B |
| 33 | QIL-4- 2042 | 130.95 | 104.76 | 26.19 | 117.855 | 25.838\*, \*\* | 13.906\*,\*\* | -13.906 | AB |
| 34 | QIL-4- 2023 | 66.67 | 119.05 | 52.38 | 92.86 | 2.171 | -18.859 | 18.859\*,\*\* | A |
| 35 | QIL-4- 2066 | 80.95 | 83.33 | 2.38 | 82.14 | -4.862 | 2.706 | -2.706 | - |
| 36 | QIL-4- 2028-1 | 83.33 | 80.95 | 2.38 | 82.14 | -3.145 | 3.523\* | -3.523 | - |
| 37 | QIL-4- 2034 | 126.19 | 123.81 | 2.38 | 125 | 36.205\*, \*\* | 5.273\*,\*\* | -5.273 | - |
| 38 | QIL-4- 2025 | 83.33 | 83.33 | 0 | 83.33 | -4.529 | 5.373\*,\*\* | -5.373 | - |
| 39 | QIL-4- 2026 -1 | 95.24 | 61.9 | 33.34 | 78.57 | -6.945 | -18.756 | 18.756\*,\*\* | A |
| 40 | QIL-4- 2052 | 83.33 | 114.29 | 30.96 | 98.81 | 9.305\*, \*\* | -6.126 | 6.126\*,\*\* | AB |
| 41 | QIL-4- 2066-1 | 50 | 73.81 | 23.81 | 61.905 | -25.829 | -7.426 | 7.426\*,\*\* | A |
| 42 | QIL-4-2017 | 97.62 | 116.67 | 19.05 | 107.145 | 19.338\*, \*\* | -5.826 | 5.826\*,\*\* | AB |
| 43 | QIL-4-2023 | 73.81 | 78.57 | 4.76 | 76.19 | -10.895 | 1.573 | -1.573 | - |
| 44 | QIL-4-2038-1 | 95.24 | 119.05 | 23.81 | 107.145 | 18.588\*, \*\* | -4.776 | 4.776 | AB |
| 45 | WNC18737 | 97.62 | 80.95 | 16.67 | 89.285 | 2.971\*, \*\* | 10.640\*,\*\* | -10.64 | AB |
| 46 | QIL-4-2050 -1 | 95.24 | 97.62 | 2.38 | 96.43 | 9.721\*, \*\* | 1.423 | -1.423 | - |
| 47 | QIL-4-2057 -1 | 90.48 | 73.81 | 16.67 | 82.145 | -1.379 | 11.623\*,\*\* | -11.623 | B |
|   | Mean | 83.63 | 91.15 | 7.52 (x2) | 87.39 | - | - | - | - |
| ***Kharif*, 2015** |
| 48 | QIL-4- 2216 | 22.603 | 28.333 | 5.73 | 25.468 | -1.7719 | 2.824 | -2.824 | B |
| 49 | QIL-4- 2192 | 37.77 | 33.087 | 4.683 | 35.429 | 2.7281\*,\*\* | 2.324 | -2.324 | AB |
| **50** | **QIL-4- 2164** | **32.119** | **26.468** | **5.651** | **29.294** | **3.7719** | **2.824** | **-2.824** | **B** |
| 51 | QIL-4- 2230 | 38.738 | 35 | 3.738 | 36.869 | 4.061\*,\*\* | 1.991 | -1.991 | AB |
| 52 | QIL-4- 2238 | 36.127 | 34.754 | 1.373 | 35.44 | 2.3947\*,\*\* | 0.657 | -0.657 | AB |
| 53 | QIL-4- 2169 | 33.333 | 26.619 | 6.714 | 29.976 | -3.1053 | 3.491 | -3.491 | B |
| 54 | DML 1302 | 41.508 | 26.452 | 15.056 | 33.98 | 1.0614 | 7.657\* | -7.657 | B |
| **55** | **QIL-4- 2248** | **33.841** | **34.82** | **0.979** | **34.331** | **1.3947** | **-0.342** | **0.342** | **A** |
| 56 | QIL-4- 2165 | 28.428 | 29.238 | 0.81 | 28.833 | -4.1053 | -0.508 | 0.508 | A |
| 57 | QIL-4- 2211 | 35.206 | 24.048 | 11.158 | 29.627 | 2.5614\*,\*\* | -0.508 | 0.508 | AB |
| 58 | QIL-4- 2248-1 | 26.968 | 46.119 | 19.151 | 36.544 | 3.5614\*,\*\* | -9.842 | 9.842\*,\*\* | AB |
| **59** | **QIL-4- 2180** | **26.73** | **26.127** | **0.603** | **26.429** | **6.4386** | **0.157** | **-0.158** | **B** |
| 60 | QIL-4- 2172 | 34.897 | 30.603 | 4.294 | 32.75 | -0.2719 | 1.991 | -1.991 | B |
| 61 | QIL-4- 2261 | 32.944 | 37.556 | 4.612 | 35.25 | 2.3947\*,\*\* | -2.342 | 2.342 | AB |
| **62** | **QIL-4-2274** | **34.873** | **33.04** | **1.833** | **33.956** | **0.7281** | **0.991** | **-0.991** | **B** |
| **63** | **QIL-4- 2208** | **25.135** | **35.579** | **10.444** | **30.357** | **2.6053** | **-5.342** | **5.342** | **A** |
| **64** | **QIL-4- 2184** | **31.603** | **42.905** | **11.302** | **37.254** | **4.3947\*,\*\*** | **-5.675** | **5.675** | **AB** |
| 65 | QIL-4- 2187 | 21.508 | 31.881 | 10.373 | 26.694 | -0.9386 | -0.009 | 0.009 | A |
| 66 | QIL-4- 2209 | 30.286 | 30.825 | 0.539 | 30.556 | -2.2719 | -0.342 | 0.342 | A |
|   | Mean | 31.82 | 32.29 | 0.47 (x3) | 32.05 |   |   |   |   |

\*, \*\* significant at 0.05 and 0.01 probability level respectively

***Supplementary Table 4. Recycling of inbred lines based on heterotic grouping and pedigree crosses based inbred line development***

|  |  |  |
| --- | --- | --- |
| **S. No.** | **Pedigree crosses** | **Number of Inbred lines developed in F2:F3 progenies** |
|  | **Heterotic Group A** |  |
| **1.** | QIL-4-2024 (A) × QIL-4-2184 (AB) | 145 |
| **2.** | QIL-4-2024 (A) × QIL-4-2208 (A) | 121 |
| **3.** | QIL-4-2248 (A) × QIL-4-2208 (A) | 152 |
|  | **Heterotic Group B** |  |
| **1.** | QIL-4-2180 (B) × QIL-4-2274 (B)  | 107 |
| **2.** | QIL-4- 2164 (B) × QIL-4-2184 (AB) | 133 |
| **3.** | QIL-4- 2058 (B) × QIL-4- 2064 (B) | 146 |
| **4.** | QIL-4- 2164 (B) × QIL-4- 2180 (B) | 144 |

***Supplementary Table 5. Analysis of variance for grain yield of inbred lines of maize***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S. No.** | **Sources of Variation** | **df** | **Type III SS** | **Mean Square** | **F value** | **p>F** |
| 1. | Treatments | 23 | 848.37 | 36.88 | 5.48 | <0.001\*\* |
| 2. | Blocks | 1 | 86.94 | 86.94 | 12.91 | 0.0015\*\* |
| 3. | Residuals | 23 | 154.77 | 6.72 | - | - |
|  | CV | 10.39 |  |  |  |  |
|  | LSD | 5.36 |  |  |  |  |

 \*\* Significant at 1% level of significance

***Supplementary Table 6. Analysis of variance for grain yield of hybrids of maize***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S. No.** | **Sources of Variation** | **df** | **Type III SS** | **Mean Square** | **F value** | **p>F** |
| 1. | Treatments | 17 | 6922.38 | 407.19 | 16.35 | <0.001\*\* |
| 2. | Blocks | 1 | 3.01 | 3.01 | 0.12 | 0.7323 |
| 3. | Residuals | 17 | 423.20 | 24.89 | - | - |
|  | CV | 8.20 |  |  |  |  |
|  | LSD | 10.52 |  |  |  |  |

 \*\* Significant at 1% level of significance

***Supplementary Table 7. Grain yield of inbred lines and their respective tryptophan content along with their opaqueness and hundred kernel weight***

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S. No.** | **Cross** | **Inbred Line** | **GY (q/ha)** | **% Opaqueness** | **HKW** | **Tryptophan content** |
| **1** | **QIL-4-2248 x QIL-4-2208 (Group-A)** | QIL-4-2370 | 27.58 | - | - | - |
| **2** |  | QIL-4-2372 | 7.11 | 25 | 20.56 | 0.068 |
| **3** |  | QIL-4-2373 | 22.51 | 75 | 29.58 | 0.072 |
| **4** |  | QIL-4-2376 | 13.69 | 25 | 20.35 | 0.062 |
| **5** |  | QIL-4-2380 | 21.19 | 25 | 22.46 | 0.066 |
| **6** |  | QIL-4-2379 | 12.04 | 25 | 21.19 | 0.086 |
| **7** |  | QIL-4-2381 | 13.54 | 25 | 21.93 | 0.089 |
| **8** |  | QIL-4-2382 | 18.82 | ­ | ­ | ­ |
| **9** |  | QIL-4-2383 | 0.00 | ­ | ­ | ­ |
| **10** |  | QIL-4-2384 | 14.29 | 100 | 27.94 | 0.063 |
| **11** | **QIL-4-2058 x QIL-4-2064 (Group-B)** | QIL-4-2385 | 12.44 | 25 | 16.74 | 0.066 |
| **12** |  | QIL-4-2386 | 22.34 | 50 | 16.33 | 0.061 |
| **13** |  | QIL-4-2386-1 | 21.20 | 50 | 23.25 | 0.067 |
| **14** |  | QIL-4-2386-2 | 11.39 | 25 | 17.85 | 0.054 |
| **15** |  | QIL-4-2387 | 14.80 | 25 | 22.01 | 0.065 |
| **16** |  | QIL-4-2387-1 | 0.00 | ­ | ­ | ­ |
| **17** |  | QIL-4-2388 | 18.74 | 100 | 26.07 | 0.072 |
| **18** |  | QIL-4-2390 | 16.65 | 25 | 20.4 | 0.061 |
| **19** |  | QIL-4-2391 | 14.53 | 25 | 18.02 | 0.065 |
| **20** |  | QIL-4-2392 | 13.82 | 50 | 16.91 | 0.068 |
| **21** |  | QIL-4-2393 | 19.50 | 25 | 23.67 | 0.06 |
| **22** |  | QIL-4-2397 | 15.19 | 50 | 18.26 | 0.059 |
| **23** |  | QIL-4-2398 | 12.68 | 50 | 22.04 | 0.064 |
| **24** |  | QIL-4-2399 | 22.72 | 25 | 22.84 | 0.068 |
| **25** |  | QIL-4-2401 | 32.66 | 50 | 31.74 | 0.07 |
| **26** |  | QIL-4-2403 | 24.61 | 50 | 18.68 | 0.063 |
| **27** | **QIL-4-2024 x QIL-4-2184 (Group-A)** | QIL-4-2408 | 13.73 | 50 | 17.18 | 0.06 |
| **28** |  | QIL-4-2409 | 17.93 | 25 | 20.32 | 0.064 |
| **29** |  | QIL-4-2412 | 0.00 | 50 | 29.96 | 0.06 |
| **30** |  | QIL-4-2415 | 0.00 | ­ | ­ | ­ |
| **31** |  | QIL-4-2417 | 20.33 | 50 | 22.73 | 0.075 |
| **32** |  | QIL-4-2420 | 19.63 | 75 | 20.56 | 0.056 |
| **33** |  | QIL-4-2423 | 19.71 | 75 | 19.1 | 0.059 |
| **34** |  | QIL-4-2424 | 15.24 | 50 | 20.1 | 0.069 |
| **35** |  | QIL-4-2424-1 | 11.33 | 50 | 21.09 | 0.072 |
| **36** |  | QIL-4-2426 | 13.39 | 50 | 18.1 | 0.065 |
| **37** |  | QIL-4-2508 | 12.06 | ­ | ­ | ­ |
| **38** | **QIL-4-2248 x QIL-4-2184 (Group-B)** | QIL-4-2429 | 14.52 | 25 | 21.96 | 0.061 |
| **39** |  | QIL-4-2431 | 19.88 | 25 | 21.28 | 0.064 |
| **40** |  | QIL-4-2432 | 17.77 | 25 | 27.2 | 0.057 |
| **41** |  | QIL-4-2433 | 18.10 | 25 | 26.51 | 0.068 |
| **42** |  | QIL-4-2434 | 16.61 | 25 | 22.39 | 0.073 |
| **43** |  | QIL-4-2434-2 | 21.69 | 50 | 21.27 | 0.066 |
| **44** |  | QIL-4-2434-1 | 10.44 | 25 | 24.68 | 0.06 |
| **45** |  | QIL-4-2435 | 13.99 | 25 | 21.66 | 0.061 |
| **46** |  | QIL-4-2436 | 14.80 | 50 | 16.66 | 0.078 |
| **47** |  | QIL-4-2439 | 13.61 | 50 | 22.63 | 0.101 |
| **48** |  | QIL-4-2443 | 17.71 | 25 | 21.47 | 0.081 |
| **49** |  | QIL-4-2451 | 17.28 | 25 | 19.74 | 0.078 |
| **50** |  | QIL-4-2451-1 | 27.02 | 25 | 26.55 | 0.061 |
| **51** |  | QIL-4-2452 | 17.44 | 50 | 22.26 | 0.063 |
| **52** |  | QIL-4-2454 | 20.18 | 25 | 21.5 | 0.067 |
| **53** | **QIL-4-2164 x QIL-4-2180 (Group-B)** | QIL-4-2455 | 26.54 | 50 | 20.8 | 0.061 |
| **54** |  | QIL-4-2456 | 16.27 | >25 | 24.89 | 0.072 |
| **55** |  | QIL-4-2457 | 23.65 | 25 | 21.94 | 0.075 |
| **56** |  | QIL-4-2458 | 19.19 | 25 | 28.86 | 0.065 |
| **57** |  | QIL-4-2459 | 27.05 | 25 | 30.2 | 0.068 |
| **58** |  | QIL-4-2462 | 14.60 | 25 | 20.03 | 0.061 |
| **59** |  | QIL-4-2464 | 17.35 | 50 | 19.78 | 0.056 |
| **60** |  | QIL-4-2465 | 15.42 | 50 | 19.09 | 0.07 |
| **61** |  | QIL-4-2466 | 14.69 | 50 | 26.15 | 0.054 |
| **62** |  | QIL-4-2469 | 30.61 | 25 | 20.98 | 0.053 |
| **63** |  | QIL-4-2470 | 15.13 | 25 | 23.32 | 0.06 |
| **64** |  | QIL-4-2471 | 21.26 | 25 | 33.64 | 0.047 |
| **65** |  | QIL-4-2472 | 17.84 | 25 | 20.84 | 0.076 |
| **66** |  | QIL-4-2473 | 13.66 | 25 | 22.71 | 0.054 |
| **67** |  | QIL-4-2474 | 29.14 | 50 | 26.02 | 0.059 |
| **68** |  | QIL-4-2474-1 | 27.80 | 50 | 15.6 | 0.066 |
| **69** |  | QIL-4-2475 | 11.03 | 25 | 16.98 | 0.061 |
| **70** |  | QIL-4-2477 | 14.36 | 25 | 24.24 | 0.065 |
| **71** |  | QIL-4-2478 | 0.00 | 50 | 21.26 | 0.072 |
| **72** | **QIL-4- 2024 x QIL-4- 2208 (Group-A)** | QIL-4-2479 | 30.06 | 50 | 25.19 | 0.066 |
| **73** |  | QIL-4-2480 | 15.77 | 25 | 17.64 | 0.075 |
| **74** |  | QIL-4-2481 | 14.83 | 50 | 14.77 | 0.073 |
| **75** |  | QIL-4-2482 | 19.69 | 25 | 20.85 | 0.074 |
| **76** |  | QIL-4-2485 | 17.37 | 50 | 28.86 | 0.08 |
| **77** |  | QIL-4-2487 | 26.57 | 50 | 26.17 | 0.071 |
| **78** |  | QIL-4-2487-1 | 27.58 | 50 | 25.83 | 0.066 |
| **79** |  | QIL-4-2488 | 0.00 | 50 | 24.47 | 0.061 |
| **80** |  | QIL-4-2490 | 0.00 | 25-50 | 19.73 | 0.067 |
| **81** |  | QIL-4-2491 | 31.17 | 50 | 32.64 | 0.069 |
| **82** |  | QIL-4-2491-1 | 24.95 | 50 | 28.55 | 0.066 |
| **83** |  | QIL-4-2492 | 17.15 | 50 | 20.18 | 0.06 |
| **84** |  | QIL-4-2494 | 12.63 | 25 | 14.76 | 0.065 |
| **85** | **QIL-4- 2180 x QIL-4- 2274 (Group-B)** | QIL-4-2497 | 28.82 | 25 | 20 | 0.061 |
| **86** |  | QIL-4- 2497-1 | 0.00 | ­ | ­ | ­ |
| **87** |  | QIL-4-2498 | 19.21 | 25 | 28.95 | 0.06 |
| **88** |  | QIL-4-2500 | 15.25 | 25 | 24.35 | 0.072 |
| **89** |  | QIL-4-2501 | 13.63 | 25 | 20.06 | 0.067 |
| **90** |  | QIL-4-2502 | 12.14 | 25 | 27.25 | 0.073 |
| **91** |  | QIL-4-2504 | 15.23 | 50 | 21.73 | 0.06 |
| **92** |  | QIL-4-2507 | 11.72 | 25 | 27.55 | 0.071 |
| **93** |  | QIL-4-2507-1 | 15.43 | 25 | 23.06 | 0.065 |
| **94** |  | Check QIL-4-2192 | 20.27 | ­ | ­ | ­ |
| **95** |  | Check HKI-163 | 19.44 | ­ | ­ | ­ |

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