

Supplementary Table 1. List of genotypes

| Sr. No. | Name of genotype | Sr. No. | Name of genotype | Sr. No. | Name of genotype |
|---------|------------------|---------|------------------|---------|------------------|
| 1 | B-272 | 52 | IC-248736 | 103 | PBR-378 |
| 2 | Bio-209 | 53 | IC-331818 | 104 | PBR-422 |
| 3 | Bio-440 | 54 | IC-331819 | 105 | PBR-423 |
| 4 | Bio-467 | 55 | ISB-12 | 106 | PCR-10-3 |
| 5 | Bio-559 | 56 | ISB-2 | 107 | PCR-3 |
| 6 | Bio-QM-1 | 57 | ISB-66 | 108 | PCR-9604-2 |
| 7 | BLAZE | 58 | JLM-96 | 109 | PF-8 |
| 8 | BLM-2-5 | 59 | JM-0600-4 | 110 | PNB-PL-68 |
| 9 | BPR-55 | 60 | JMG-02-01 | 111 | PR-2009-11 |
| 10 | CCBJ-1 | 61 | JMWR-941-1-2 | 112 | PR-2009-6 |
| 11 | CM 101-213 | 62 | JS-29 | 113 | PRB-2004-06 |
| 12 | CM 21-16 | 63 | JWMR 946-1-3 | 114 | PRG-14 |
| 13 | CM-11-7 | 64 | JWMR-13 | 115 | PRG-2001-62 |
| 14 | CN-10-7719 | 65 | K-230-27 | 116 | PRL-2007-7 |
| 15 | CONSULT-1 | 66 | K-31-273 | 117 | PRO-9907 |
| 16 | CRL 1359-A-2-1-4 | 67 | KH-2099 | 118 | PTJ-2-85 |
| 17 | CRL-1359 BC4-4-1 | 68 | KLM-119 | 119 | PTJ-3-100 |
| 18 | CRL-1359-13-15 | 69 | KM-26 | 120 | PTJ-3-20 |
| 19 | CROSSER 7-1 | 70 | KM-555 | 121 | PTJ-3-79 |
| 20 | CROSSER 7-4 | 71 | KMR-11-1 | 122 | PTJ-3-90 |
| 21 | CSR-103 | 72 | Krishna | 123 | PTJ-3-94 |
| 22 | CSR-1034 | 73 | L-171-7 | 124 | Purvi Raya-1 |
| 23 | DAR-155 | 74 | LM-114-6 | 125 | Pusa Bold DT |
| 24 | DHR-9601 | 75 | MCP-12-211 | 126 | RB-50 |
| 25 | DHR-9701 | 76 | MCP-12-624 | 127 | RB-55 |
| 26 | Divya 33 | 77 | MNC-05-12 | 128 | RB-73 |
| 27 | Divya-22 | 78 | MRJ-15-6 | 129 | RGN-253 |
| 28 | DNA (WF) 8-22 | 79 | MSC-1 | 130 | RGN-282 |
| 29 | DNA (WF)-3 | 80 | NDR-05-1 | 131 | RGN-332 |
| 30 | DRMR 675-39 | 81 | NDR-08-1 DT-2 | 132 | RH 0749 |
| 31 | DRMRIJ-13-3 | 82 | NDR-190 | 133 | RH 0761 |
| 32 | DRMRIJ-31 | 83 | NDR-2017-2 | 134 | RK-06-2 |
| 33 | EC-392021 | 84 | NDRS-2001 | 135 | RK-08-1 |
| 34 | ELM-0-79 | 85 | NF-1 | 136 | RKM-5 |
| 35 | ELM-103 | 86 | NFJ-2 | 137 | RL-2106 |
| 36 | GLM-12 | 87 | NHO-2-1 | 138 | RMM-09-1 |
| 37 | GLM-21-1 | 88 | NJHO-7-20 | 139 | RMM-09-2 |
| 38 | GLM-3 | 89 | NML-64 | 140 | RMM-09-4 |
| 39 | GLM-4-2 | 90 | NPJ-134 | 141 | RRN-598 |
| 40 | GM-16 | 91 | NPJ-17 | 142 | RRN-604 |
| 41 | GM-1B | 92 | NPJ-2-9 | 143 | RRN-631 |
| 42 | GM-2 (LR) | 93 | NR-42 | 144 | RRN-772 |
| 43 | GMCN-10 | 94 | NRCDR-2 | 145 | RRN-778 |
| 44 | GMCN-146-13 | 95 | NRCDR-701 | 146 | SKM-425 |
| 45 | HD-2 | 96 | NRCHB-06-5912 | 147 | SKM-508 |
| 46 | HEB-3 | 97 | NRCHB-101-DT-2 | 148 | TM-106-1 |

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|-----------|-------------|------------|----------------|------------|---------|
| 47 | HES-17 | 98 | NRCHB-101-DT-3 | 149 | TM-151 |
| 48 | HLM 31-25-3 | 99 | NRCQR-837 | 150 | TNM-17 |
| 49 | HLM 39-21 | 100 | ORH-2-2 | C1 | Varuna |
| 50 | HUJM-07-01 | 101 | Pankhonali | C2 | PBR 357 |
| 51 | HYT-33 | 102 | Parasmani-2-10 | C3 | Kranti |

Supplementary Table 2. Layout augmented design

Genotypes (G): 150 + 3 Checks; Blocks (B): 10; Checks: C1, C2, C3

| SN | G | B | SN | G | B | S N | G | B | SN | G | B | SN | G | B |
|-----------|-----------|---|-----------|-----------|---|-----------|-----------|---|-----------------|-----------|---|------------|-----------|----|
| 1 | V1 | 1 | 33 | V3 1 | 3 | 65 | V6 1 | 5 | 97 | V91 | 7 | 129 | V121 | 9 |
| 2 | V2 | 1 | 34 | V3 2 | 3 | 66 | V6 2 | 5 | 98 | V92 | 7 | 130 | V122 | 9 |
| 3 | V3 | 1 | 35 | V3 3 | 3 | 67 | V6 3 | 5 | 99 | V93 | 7 | 131 | C3 | 9 |
| 4 | V4 | 1 | 36 | V3 4 | 3 | 68 | V6 4 | 5 | 10 0 | V94 | 7 | 132 | V123 | 9 |
| 5 | V5 | 1 | 37 | V3 5 | 3 | 69 | C2 | 5 | 10 1 | V95 | 7 | 133 | V124 | 9 |
| 6 | V6 | 1 | 38 | V3 6 | 3 | 70 | V6 5 | 5 | 10 2 | V96 | 7 | 134 | V125 | 9 |
| 7 | V7 | 1 | 39 | V3 7 | 3 | 71 | V6 6 | 5 | 10 3 | V97 | 7 | 135 | V126 | 9 |
| 8 | V8 | 1 | 40 | C3 | 3 | 72 | V6 7 | 5 | 10 4 | V98 | 7 | 136 | V127 | 9 |
| 9 | V9 | 1 | 41 | V3 8 | 3 | 73 | V6 8 | 5 | 10 5 | V99 | 7 | 137 | V128 | 9 |
| 10 | V10 | 1 | 42 | V3 9 | 3 | 74 | V6 9 | 5 | 10 6 | V100 | 7 | 138 | V129 | 9 |
| 11 | V11 | 1 | 43 | V4 0 | 3 | 75 | V7 0 | 5 | 10 7 | V101 | 7 | 139 | V130 | 9 |
| 12 | V12 | 1 | 44 | V4 1 | 3 | 76 | V7 1 | 5 | 10 8 | V102 | 7 | 140 | V131 | 9 |
| 13 | C1 | 1 | 45 | V4 2 | 3 | 77 | V7 2 | 5 | 10 9 | C1 | 7 | 141 | V132 | 9 |
| 14 | V13 | 1 | 46 | V4 3 | 3 | 78 | V7 3 | 5 | 11 0 | V103 | 7 | 142 | V133 | 9 |
| 15 | V14 | 1 | 47 | V4 4 | 3 | 79 | V7 4 | 5 | 11 1 | V104 | 7 | 143 | V134 | 9 |
| 16 | V15 | 1 | 48 | V4 5 | 3 | 80 | V7 5 | 5 | 11 2 | V105 | 7 | 144 | V135 | 9 |
| 17 | V16 | 2 | 49 | V4 6 | 4 | 81 | V7 6 | 6 | 11 3 | V106 | 8 | 145 | V136 | 10 |
| 18 | V17 | 2 | 50 | V4 7 | 4 | 82 | V7 7 | 6 | 11 4 | V107 | 8 | 146 | V137 | 10 |

| | | | | | | | | | | | | | | |
|-----------|-----------|---|-----------|-----------|---|-----------|-----------|---|-----------------------|-----------|---|------------|-----------|----|
| 19 | V18 | 2 | 51 | V4 8 | 4 | 83 | V7 8 | 6 | 11 5 | V108 | 8 | 147 | V138 | 10 |
| 20 | V19 | 2 | 52 | V4 9 | 4 | 84 | V7 9 | 6 | 11 6 | V109 | 8 | 148 | V139 | 10 |
| 21 | V20 | 2 | 53 | V5 0 | 4 | 85 | V8 0 | 6 | 11 7 | V110 | 8 | 149 | V140 | 10 |
| 22 | V21 | 2 | 54 | V5 1 | 4 | 86 | V8 1 | 6 | 11 8 | V111 | 8 | 150 | V141 | 10 |
| 23 | V22 | 2 | 55 | V5 2 | 4 | 87 | V8 2 | 6 | 11 9 | V112 | 8 | 151 | V142 | 10 |
| 24 | V23 | 2 | 56 | V5 3 | 4 | 88 | C3 | 6 | 12 0 | V113 | 8 | 152 | V143 | 10 |
| 25 | C2 | 2 | 57 | V5 4 | 4 | 89 | V8 3 | 6 | 12 1 | V114 | 8 | 153 | C1 | 10 |
| 26 | V24 | 2 | 58 | V5 5 | 4 | 90 | V8 4 | 6 | 12 2 | V115 | 8 | 154 | V144 | 10 |
| 27 | V25 | 2 | 59 | V5 6 | 4 | 91 | V8 5 | 6 | 12 3 | C2 | 8 | 155 | V145 | 10 |
| 28 | V26 | 2 | 60 | C1 | 4 | 92 | V8 6 | 6 | 12 4 | V116 | 8 | 156 | V146 | 10 |
| 29 | V27 | 2 | 61 | V5 7 | 4 | 93 | V8 7 | 6 | 12 5 | V117 | 8 | 157 | V147 | 10 |
| 30 | V28 | 2 | 62 | V5 8 | 4 | 94 | V8 8 | 6 | 12 6 | V118 | 8 | 158 | V148 | 10 |
| 31 | V29 | 2 | 63 | V5 9 | 4 | 95 | V8 9 | 6 | 12 7 | V119 | 8 | 159 | V149 | 10 |
| 32 | V30 | 2 | 64 | V6 0 | 4 | 96 | V9 0 | 6 | 12 8 | V120 | 8 | 160 | V150 | 10 |