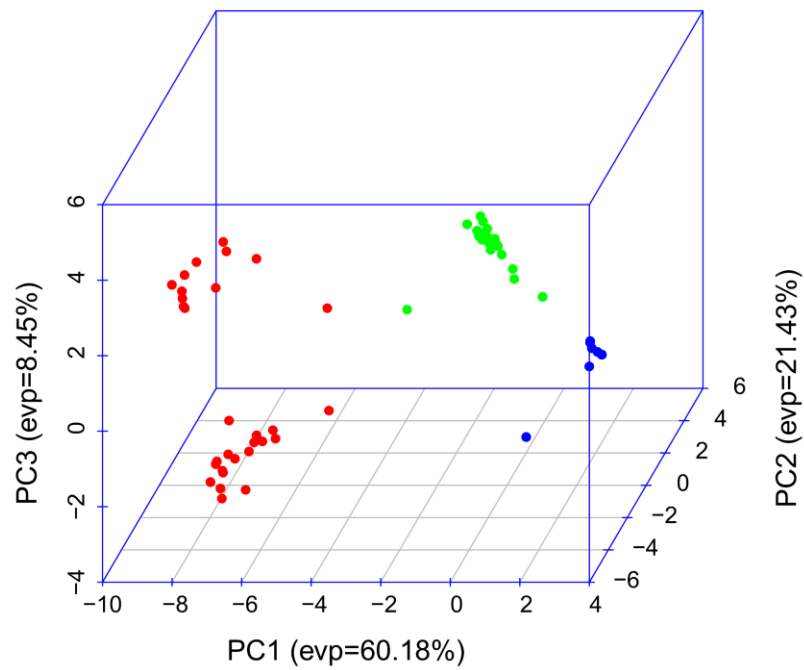


## Supplementary figures



**Fig. S1.** The 3-D plot of principal component analysis representing the three major components PCI, PCII and PCIII in three different colours.

## Supplementary tables

**Supplementary Table 1.** List of accession, subpopulation, origin and pericarp colour score used in this study

| Sl. No. | Accession ID | Subpopulation | Origin      | Pericarp colour scores (1 to 8)                                                                  | Pericarp colour score (0)                        | Pericarp colour score (1) | Pericarp colour score (9)          |
|---------|--------------|---------------|-------------|--------------------------------------------------------------------------------------------------|--------------------------------------------------|---------------------------|------------------------------------|
|         |              |               |             | Light green: 1, white: 2, off white: 3, light red: 4, red: 5, dark red: 6, brown: 7 and black: 8 | Green, brown, red, light red, dark red and black | White and off-white       | Light red, red, dark red and brown |
| 1       | IRGC 117442  | ind3          | Philippines | 5                                                                                                | 0                                                | -                         | 9                                  |
| 2       | IRGC 117454  | indx          | India       | 2                                                                                                | -                                                | 1                         | -                                  |

|    |             |       |                          |   |   |   |   |
|----|-------------|-------|--------------------------|---|---|---|---|
| 3  | IRGC 117474 | japx  | Iran                     | 6 | 0 | - | 9 |
| 4  | IRGC 117497 | aro   | India                    | 2 | - | 1 | - |
| 5  | IRGC 120921 | indx  | India                    | 3 | - | 1 | - |
| 6  | IRGC 120968 | aus   | Sri Lanka                | 6 | 0 | - | 9 |
| 7  | IRGC 121005 | aus   | Bangladesh               | 6 | 0 | - | 9 |
| 8  | IRGC 121036 | aus   | Bangladesh               | 6 | 0 | - | 9 |
| 9  | IRGC 121128 | aus   | Pakistan                 | 2 | - | 1 | - |
| 10 | IRGC 122089 | ind1B | Philippines              | 2 | - | 1 | - |
| 11 | IRGC 122165 | ind1B |                          | 5 | 0 | - | 9 |
| 12 | IRGC 122166 | japx  |                          | 6 | 0 | - | 9 |
| 13 | IRGC 124442 | indx  | Sri Lanka                | 1 | 0 | - | - |
| 14 | IRGC 125607 | ind2  | India                    | 2 | - | 1 | - |
| 15 | IRGC 125608 | ind2  | India                    | 6 | 0 | - | 9 |
| 16 | IRGC 125609 | indx  | China                    | 2 | - | 1 | - |
| 17 | IRGC 125629 | japx  | Turkey                   | 2 | - | 1 | - |
| 18 | IRGC 125645 | indx  | India                    | 2 | - | 1 | - |
| 19 | IRGC 125647 | indx  | India                    | 2 | - | 1 | - |
| 20 | IRGC 125654 | indx  | India                    | 2 | - | 1 | - |
| 21 | IRGC 125659 | ind1B | Bangladesh               | 2 | - | 1 | - |
| 22 | IRGC 125663 | indx  | China                    | 5 | 0 | - | 9 |
| 23 | IRGC 125690 | ind3  | Thailand                 | 2 | - | 1 | - |
| 24 | IRGC 125692 | ind1B | Taiwan                   | 2 | - | 1 | - |
| 25 | IRGC 125696 | ind2  | Bangladesh               | 2 | - | 1 | - |
| 26 | IRGC 125711 | indx  | United States of America | 2 | - | 1 | - |
| 27 | IRGC 125715 | indx  | India                    | 2 | - | 1 | - |
| 28 | IRGC 125738 | ind1A | China                    | 2 | - | 1 | - |
| 29 | IRGC 125754 | ind2  | Bangladesh               | 3 | - | 1 | - |
| 30 | IRGC 125789 | ind2  | Bangladesh               | 7 | 0 | - | 9 |
| 31 | IRGC 125801 | ind3  | Thailand                 | 2 | - | 1 | - |
| 32 | IRGC 125841 | ind1A | China                    | 2 | - | 1 | - |
| 33 | IRGC 125863 | indx  | Taiwan                   | 2 | - | 1 | - |
| 34 | IRGC 125866 | indx  | Myanmar                  | 2 | - | 1 | - |
| 35 | IRGC 125869 | ind2  | India                    | 2 | - | 1 | - |
| 36 | IRGC 125872 | indx  | Sri Lanka                | 7 | 0 | - | 9 |
| 37 | IRGC 125873 | ind1B | Philippines              | 2 | - | 1 | - |
| 38 | IRGC 125882 | ind3  | Indonesia                | 3 | - | 1 | - |
| 39 | IRGC 125890 | indx  | India                    | 2 | - | 1 | - |
| 40 | IRGC 125905 | admix | India                    | 3 | - | 1 | - |
| 41 | IRGC 125913 | ind1A | Taiwan                   | 8 | 0 | - | - |
| 42 | IRGC 125931 | ind2  | Madagascar               | 5 | 0 | - | 9 |
| 43 | IRGC 125933 | indx  | Viet Nam                 | 3 | - | 1 | - |
| 44 | IRGC 125955 | ind1B | Sri Lanka                | 2 | - | 1 | - |
| 45 | IRGC 125959 | indx  | India                    | 5 | 0 | - | 9 |

|    |             |         |             |   |   |   |   |
|----|-------------|---------|-------------|---|---|---|---|
| 46 | IRGC 125965 | ind3    | Thailand    | 7 | 0 | - | 9 |
| 47 | IRGC 125970 | ind1B   | Philippines | 2 | - | 1 | - |
| 48 | IRGC 125992 | subtrop | Viet Nam    | 2 | - | 1 | - |
| 49 | IRGC 126000 | ind2    | India       | 2 | - | 1 | - |
| 50 | IRGC 126007 | indx    | Viet Nam    | 2 | - | 1 | - |
| 51 | IRGC 126008 | ind2    | India       | 2 | - | 1 | - |
| 52 | IRGC 126080 | indx    | Ecuador     | 2 | - | 1 | - |
| 53 | IRGC 126129 | ind1A   | China       | 5 | 0 | - | 9 |
| 54 | IRGC 126140 | indx    | Thailand    | 2 | - | 1 | - |
| 55 | IRGC 126142 | ind3    | Indonesia   | 4 | 0 | - | 9 |
| 56 | IRGC 126148 | indx    | India       | 1 | 0 | - | - |
| 57 | IRGC 126153 | ind3    | Thailand    | 2 | - | 1 | - |
| 58 | IRGC 126156 | ind3    | Thailand    | 7 | 0 | - | 9 |
| 59 | IRGC 126159 | ind2    | Peru        | 2 | - | 1 | - |
| 60 | IRGC 126165 | ind3    | Indonesia   | 2 | - | 1 | - |
| 61 | IRGC 126170 | admix   | Sri Lanka   | 4 | 0 | - | 9 |
| 62 | IRGC 126173 | indx    | India       | 2 | - | 1 | - |
| 63 | IRGC 126174 | ind1B   | India       | 2 | - | 1 | - |
| 64 | IRGC 126175 | indx    | India       | 2 | - | 1 | - |
| 65 | IRGC 126199 | ind2    | India       | 2 | - | 1 | - |
| 66 | IRGC 126258 | ind3    | Thailand    | 2 | - | 1 | - |
| 67 | IRGC 126266 | ind3    | Indonesia   | 1 | 0 | - | - |
| 68 | IRGC 126270 | ind2    | Bangladesh  | 2 | - | 1 | - |
| 69 | IRGC 126288 | ind3    | Indonesia   | 2 | - | 1 | - |
| 70 | IRGC 126294 | ind2    | India       | 5 | 0 | - | 9 |
| 71 | IRGC 126346 | trop    | Malaysia    | 2 | - | 1 | - |
| 72 | IRGC 127034 | indx    | India       | 3 | - | 1 | - |
| 73 | IRGC 127053 | indx    | Philippines | 3 | - | 1 | - |
| 74 | IRGC 127095 | ind1A   | China       | 1 | 0 | - | - |
| 75 | IRGC 127100 | indx    | Philippines | 2 | - | 1 | - |
| 76 | IRGC 127101 | ind1A   | China       | 1 | 0 | - | - |
| 77 | IRGC 127113 | ind1A   | China       | 2 | - | 1 | - |
| 78 | IRGC 127121 | indx    | Cambodia    | 2 | - | 1 | - |
| 79 | IRGC 127156 | indx    | India       | 5 | 0 | - | 9 |
| 80 | IRGC 127165 | admix   | India       | 2 | - | 1 | - |
| 81 | IRGC 127166 | aus     | India       | 6 | 0 | - | 9 |
| 82 | IRGC 127209 | ind2    | India       | 2 | - | 1 | - |
| 83 | IRGC 127224 | aus     | India       | 7 | 0 | - | 9 |
| 84 | IRGC 127225 | trop    |             | 2 | - | 1 | - |
| 85 | IRGC 127226 | indx    | China       | 2 | - | 1 | - |
| 86 | IRGC 127227 | ind2    | Nepal       | 2 | - | 1 | - |
| 87 | IRGC 127230 | ind2    | India       | 2 | - | 1 | - |
| 88 | IRGC 127235 | ind3    | Viet Nam    | 2 | - | 1 | - |
| 89 | IRGC 127238 | ind3    | Indonesia   | 2 | - | 1 | - |
| 90 | IRGC 127241 | aus     | India       | 3 | - | 1 | - |

|     |             |       |                          |   |   |   |   |
|-----|-------------|-------|--------------------------|---|---|---|---|
| 91  | IRGC 127243 | indx  | Philippines              | 2 | - | 1 | - |
| 92  | IRGC 127294 | ind1A | China                    | 2 | - | 1 | - |
| 93  | IRGC 127339 | ind1A | China                    | 2 | - | 1 | - |
| 94  | IRGC 127344 | admix | Bangladesh               | 5 | 0 | - | 9 |
| 95  | IRGC 127365 | ind1B | China                    | 2 | - | 1 | - |
| 96  | IRGC 127370 | trop  | Colombia                 | 2 | - | 1 | - |
| 97  | IRGC 127411 | ind2  | India                    | 5 | 0 | - | 9 |
| 98  | IRGC 127417 | ind1A | China                    | 3 | - | 1 | - |
| 99  | IRGC 127438 | ind1B | Philippines              | 2 | - | 1 | - |
| 100 | IRGC 127441 | ind1B | Philippines              | 5 | 0 | - | 9 |
| 101 | IRGC 127442 | indx  | Philippines              | 2 | - | 1 | - |
| 102 | IRGC 127443 | admix | India                    | 2 | - | 1 | - |
| 103 | IRGC 127448 | aro   | Nepal                    | 3 | - | 1 | - |
| 104 | IRGC 127485 | aus   | Nepal                    | 2 | - | 1 | - |
| 105 | IRGC 127565 | ind1A | China                    | 7 | 0 | - | 9 |
| 106 | IRGC 127570 | ind1A | China                    | 6 | 0 | - | 9 |
| 107 | IRGC 127572 | ind2  | India                    | 2 | - | 1 | - |
| 108 | IRGC 127587 | ind3  | Thailand                 | 8 | 0 | - | - |
| 109 | IRGC 127591 | ind3  | Indonesia                | 2 | - | 1 | - |
| 110 | IRGC 127600 | ind3  | Indonesia                | 2 | - | 1 | - |
| 111 | IRGC 127614 | ind2  | Madagascar               | 2 | - | 1 | - |
| 112 | IRGC 127622 | indx  | China                    | 2 | - | 1 | - |
| 113 | IRGC 127630 | trop  | Philippines              | 2 | - | 1 | - |
| 114 | IRGC 127636 | ind3  | Malaysia                 | 2 | - | 1 | - |
| 115 | IRGC 127637 | ind3  | Thailand                 | 2 | - | 1 | - |
| 116 | IRGC 127643 | ind3  | Indonesia                | 2 | - | 1 | - |
| 117 | IRGC 127689 | indx  | United States of America | 2 | - | 1 | - |
| 118 | IRGC 127722 | ind3  | Thailand                 | 2 | - | 1 | - |
| 119 | IRGC 127729 | ind1A | Philippines              | 2 | - | 1 | - |
| 120 | IRGC 127735 | ind3  | Thailand                 | 2 | - | 1 | - |
| 121 | IRGC 127736 | ind1A | China                    | 2 | - | 1 | - |
| 122 | IRGC 127741 | trop  | Philippines              | 6 | 0 | - | 9 |
| 123 | IRGC 127745 | ind3  | Thailand                 | 2 | - | 1 | - |
| 124 | IRGC 127747 | ind3  | Indonesia                | 2 | - | 1 | - |
| 125 | IRGC 127750 | ind3  | Indonesia                | 1 | 0 | - | - |
| 126 | IRGC 127761 | aro   | Nepal                    | 2 | - | 1 | - |
| 127 | IRGC 127786 | aus   | Pakistan                 | 7 | 0 | - | 9 |
| 128 | IRGC 127802 | indx  | Myanmar                  | 7 | 0 | - | 9 |
| 129 | IRGC 127810 | ind3  | Indonesia                | 2 | - | 1 | - |
| 130 | IRGC 127812 | ind3  | Philippines              | 2 | - | 1 | - |
| 131 | IRGC 127814 | ind3  | Indonesia                | 2 | - | 1 | - |
| 132 | IRGC 127823 | ind1B | Thailand                 | 2 | - | 1 | - |
| 133 | IRGC 127829 | aus   | India                    | 2 | - | 1 | - |

|     |             |       |                                        |   |   |   |   |
|-----|-------------|-------|----------------------------------------|---|---|---|---|
| 134 | IRGC 127832 | aus   | India                                  | 2 | - | 1 | - |
| 135 | IRGC 127835 | ind1B | Taiwan                                 | 2 | - | 1 | - |
| 136 | IRGC 127839 | ind1B | Taiwan                                 | 1 | 0 | - | - |
| 137 | IRGC 127848 | ind1A | China                                  | 2 | - | 1 | - |
| 138 | IRGC 127870 | ind1B | Viet Nam                               | 2 | - | 1 | - |
| 139 | IRGC 127888 | ind2  | Bangladesh                             | 2 | - | 1 | - |
| 140 | IRGC 127890 | trop  | Philippines                            | 5 | 0 | - | 9 |
| 141 | IRGC 127908 | ind1A | China                                  | 6 | 0 | - | 9 |
| 142 | IRGC 127910 | ind1A | China                                  | 2 | - | 1 | - |
| 143 | IRGC 127917 | ind3  | Cote d'Ivoire                          | 2 | - | 1 | - |
| 144 | IRGC 127944 | indx  | India                                  | 6 | 0 | - | 9 |
| 145 | IRGC 127950 | indx  | India                                  | 6 | 0 | - | 9 |
| 146 | IRGC 127956 | ind2  | India                                  | 2 | - | 1 | - |
| 147 | IRGC 127966 | ind2  | India                                  | 2 | - | 1 | - |
| 148 | IRGC 127970 | indx  | India                                  | 2 | - | 1 | - |
| 149 | IRGC 127974 | indx  | India                                  | 2 | - | 1 | - |
| 150 | IRGC 127975 | ind3  | Cambodia                               | 2 | - | 1 | - |
| 151 | IRGC 128000 | indx  | Bangladesh                             | 2 | - | 1 | - |
| 152 | IRGC 128004 | aro   | India                                  | 1 | 0 | - | - |
| 153 | IRGC 128038 | ind3  | Myanmar                                | 2 | - | 1 | - |
| 154 | IRGC 128040 | ind3  | Thailand                               | 1 | 0 | - | - |
| 155 | IRGC 128046 | ind2  | India                                  | 2 | - | 1 | - |
| 156 | IRGC 128049 | indx  | Hong Kong                              | 6 | 0 | - | 9 |
| 157 | IRGC 128055 | indx  | Myanmar                                | 2 | - | 1 | - |
| 158 | IRGC 128057 | indx  | Indonesia                              | 2 | - | 1 | - |
| 159 | IRGC 128063 | ind2  | Bangladesh                             | 5 | 0 | - | 9 |
| 160 | IRGC 128067 | ind2  | India                                  | 2 | - | 1 | - |
| 161 | IRGC 128069 | ind2  | Bangladesh                             | 1 | 0 | - | - |
| 162 | IRGC 128070 | ind2  | Bangladesh                             | 3 | - | 1 | - |
| 163 | IRGC 128074 | indx  | Myanmar                                | 2 | - | 1 | - |
| 164 | IRGC 128085 | indx  | Myanmar                                | 8 | 0 | - | - |
| 165 | IRGC 128090 | ind2  | India                                  | 2 | - | 1 | - |
| 166 | IRGC 128092 | indx  | Bangladesh                             | 7 | 0 | - | 9 |
| 167 | IRGC 128094 | ind3  | Lao People's<br>Democratic<br>Republic | 5 | 0 | - | 9 |
| 168 | IRGC 128099 | ind3  | Indonesia                              | 2 | - | 1 | - |
| 169 | IRGC 128100 | ind2  | Bangladesh                             | 5 | 0 | - | 9 |
| 170 | IRGC 128103 | ind2  | India                                  | 2 | - | 1 | - |
| 171 | IRGC 128108 | ind3  | Myanmar                                | 2 | - | 1 | - |
| 172 | IRGC 128110 | ind3  | Philippines                            | 2 | - | 1 | - |
| 173 | IRGC 128116 | ind3  | Viet Nam                               | 2 | - | 1 | - |
| 174 | IRGC 128118 | indx  | Myanmar                                | 5 | 0 | - | 9 |
| 175 | IRGC 128121 | ind2  | India                                  | 2 | - | 1 | - |
| 176 | IRGC 128122 | aro   | Bangladesh                             | 3 | - | 1 | - |

|     |             |       |                                        |   |   |   |   |
|-----|-------------|-------|----------------------------------------|---|---|---|---|
| 177 | IRGC 128126 | ind2  | Bangladesh                             | 6 | 0 | - | 9 |
| 178 | IRGC 128128 | ind2  | India                                  | 5 | 0 | - | 9 |
| 179 | IRGC 128137 | indx  | Philippines                            | 2 | - | 1 | - |
| 180 | IRGC 128142 | trop  | Indonesia                              | 1 | 0 | - | - |
| 181 | IRGC 128152 | ind3  | Indonesia                              | 2 | - | 1 | - |
| 182 | IRGC 128154 | ind2  | Bangladesh                             | 2 | - | 1 | - |
| 183 | IRGC 128160 | indx  | Indonesia                              | 2 | - | 1 | - |
| 184 | IRGC 128181 | indx  | Myanmar                                | 2 | - | 1 | - |
| 185 | IRGC 128183 | ind3  | Myanmar                                | 2 | - | 1 | - |
| 186 | IRGC 128186 | ind3  | Viet Nam                               | 2 | - | 1 | - |
| 187 | IRGC 128189 | ind3  | Indonesia                              | 1 | 0 | - | - |
| 188 | IRGC 128247 | trop  | Indonesia                              | 3 | - | 1 | - |
| 189 | IRGC 128258 | indx  | Lao People's<br>Democratic<br>Republic | 2 | - | 1 | - |
| 190 | IRGC 128273 | aus   | Bangladesh                             | 4 | 0 | - | 9 |
| 191 | IRGC 128280 | trop  | Philippines                            | 1 | 0 | - | - |
| 192 | IRGC 128287 | indx  | Thailand                               | 2 | - | 1 | - |
| 193 | IRGC 128297 | aus   | Nepal                                  | 2 | - | 1 | - |
| 194 | IRGC 128310 | admix | India                                  | 2 | - | 1 | - |
| 195 | IRGC 128315 | temp  | Brazil                                 | 2 | - | 1 | - |
| 196 | IRGC 128338 | ind3  | Lao People's<br>Democratic<br>Republic | 2 | - | 1 | - |
| 197 | IRGC 128350 | ind2  | Madagascar                             | 2 | - | 1 | - |
| 198 | IRGC 128361 | indx  | Myanmar                                | 5 | 0 | - | 9 |
| 199 | IRGC 128372 | ind3  | Philippines                            | 2 | - | 1 | - |
| 200 | IRGC 128399 | trop  | Philippines                            | 2 | - | 1 | - |
| 201 | IRGC 128510 | indx  | China                                  | 2 | - | 1 | - |
| 202 | IRGC 128521 | ind3  | Indonesia                              | 2 | - | 1 | - |
| 203 | IRGC 131916 | ind3  | Thailand                               | 2 | - | 1 | - |
| 204 | IRGC 131928 | indx  | India                                  | 2 | - | 1 | - |
| 205 | IRGC 131937 | ind3  | Malaysia                               | 2 | - | 1 | - |
| 206 | IRGC 131940 | ind3  | Malaysia                               | 2 | - | 1 | - |
| 207 | IRGC 131946 | ind3  | Indonesia                              | 2 | - | 1 | - |
| 208 | IRGC 131962 | ind3  | Indonesia                              | 5 | 0 | - | 9 |
| 209 | IRGC 132013 | indx  | Madagascar                             | 2 | - | 1 | - |
| 210 | IRGC 132037 | ind3  | Malaysia                               | 8 | 0 | - | - |
| 211 | IRGC 132051 | ind3  | Sierra Leone                           | 2 | - | 1 | - |
| 212 | IRGC 132238 | ind3  | Myanmar                                | 2 | - | 1 | - |
| 213 | IRGC 132244 | admix | India                                  | 2 | - | 1 | - |
| 214 | IRGC 132269 | ind3  | Indonesia                              | 1 | 0 | - | - |
| 215 | IRGC 132277 | ind3  | Cambodia                               | 4 | 0 | - | 9 |
| 216 | IRGC 132285 | ind3  | Cambodia                               | 5 | 0 | - | 9 |
| 217 | IRGC 132300 | ind3  | Cambodia                               | 2 | - | 1 | - |
| 218 | IRGC 132309 | ind2  | Bangladesh                             | 7 | 0 | - | 9 |

|     |             |      |                                        |   |   |   |   |
|-----|-------------|------|----------------------------------------|---|---|---|---|
| 219 | IRGC 132310 | indx |                                        | 1 | 0 | - | - |
| 220 | IRGC 132321 | indx | India                                  | 3 | - | 1 | - |
| 221 | IRGC 132359 | indx | Lao People's<br>Democratic<br>Republic | 2 | - | 1 | - |
| 222 | IRGC 132364 | ind3 | Cambodia                               | 2 | - | 1 | - |
| 223 | IRGC 132367 | ind3 | Indonesia                              | 2 | - | 1 | - |
| 224 | IRGC 132387 | aro  | India                                  | 2 | - | 1 | - |
| 225 | IRGC 132395 | ind3 | Malaysia                               | 2 | - | 1 | - |
| 226 | IRGC 132413 | ind3 | Cambodia                               | 2 | - | 1 | - |
| 227 | IRGC 132423 | ind3 | Indonesia                              | 2 | - | 1 | - |
| 228 | IRGC 135538 | ind3 | Indonesia                              | 2 | - | 1 | - |
| 229 | IRGC 135572 | ind3 | Cambodia                               | 2 | - | 1 | - |
| 230 | IRGC 135582 | trop | Indonesia                              | 2 | - | 1 | - |
| 231 | IRGC 135638 | indx | India                                  | 5 | 0 | - | 9 |