Table S3 Haplotypes of 20 soybean *GmCOL* family genes in 128 varieties covering 14 maturity groups

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variety Name** | *GmCOL2* | *GmCOL4* | *GmCOL5* | *GmCOL6* | *GmCOL8* | *GmCOL9* | *GmCOL10* | *GmCOL13* | *GmCOL14* | *GmCOL15* | *GmCOL16* | *GmCOL19* | *GmCOL20* | *GmCOL22* | *GmCOL23* | *GmCOL24* | *GmCOL25* | *GmCOL26* | *GmCOL28* |
| Star4/750000 | *Hap3* | *Hap1* | ND | *Hap1* | ND | *Hap2* | *Hap1* | *Hap1* | ND | ND | ND | ND | *Hap2* | *Hap1* | *Hap8* | *Hap1* | *Hap1* | *Hap3* | ND |
| Hujiao07-24790000 | *Hap2* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap3* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | ND |
| Hujiao07-21230000 | *Hap2* | *Hap1* | ND | *Hap2* | ND | *Hap8* | ND | *Hap1* | *Hap1* | ND | *Hap3* | ND | *Hap3* | *Hap1* | ND | *Hap1* | ND | *Hap1* | *Hap1* |
| Dongnong360000 | *Hap5* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap2* | ND |
| Paula0000 | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | *Hap2* | *Hap2* |
| R-40000 | *Hap4* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | ND | *Hap1* | *Hap4* | *Hap1* | *Hap2* | *Hap5* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap2* |
| Dongnong410000 | *Hap2* | *Hap1* | *Hap1* | *Hap4* | ND | ND | ND | *Hap1* | *Hap1* | ND | ND | *Hap1* | *Hap3* | *Hap3* | ND | *Hap5* | ND | *Hap3* | *Hap2* |
| Lingbei80000 | *Hap2* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap3* |
| Dongnong 41-C0000 | *Hap2* | *Hap1* | ND | *Hap2* | ND | ND | ND | *Hap1* | *Hap1* | *Hap1* | *Hap2* | ND | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap3* |
| Maple-Presto000 | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap3* | *Hap1* | *Hap6* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap3* |
| OAC-Vision000 | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | ND |
| Rassvet000 | *Hap4* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap5* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | ND |
| Jug-30000 | *Hap5* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap7* | *Hap1* | *Hap2* | *Hap1* | *Hap3* | ND | *Hap1* | *Hap2* | *Hap2* |
| Mageva000 | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap3* | *Hap4* | *Hap2* | *Hap1* | *Hap2* | ND |
| R2000 | *Hap5* | *Hap1* | *Hap2* | *Hap1* | ND | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap4* | *Hap1* | *Hap3* | *Hap1* | *Hap2* | ND | *Hap1* | *Hap2* | *Hap2* |
| Heihe35000 | *Hap4* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap3* |

**ND: Not available dataTable** **S3** Continued

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variety Name | *GmCOL2* | *GmCOL4* | *GmCOL5* | *GmCOL6* | *GmCOL8* | *GmCOL9* | *GmCOL10* | *GmCOL13* | *GmCOL14* | *GmCOL15* | *GmCOL16* | *GmCOL19* | *GmCOL20* | *GmCOL22* | *GmCOL23* | *GmCOL24* | *GmCOL25* | *GmCOL26* | *GmCOL28* |
| Canatto00 | *Hap4* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap9* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* |
| Maple-Ridge00 | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap2* | ND |
| Daksoy00 | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND |
| McCall00 | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND |
| Agassiz00 | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | ND | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap4* | *Hap1* | ND | *Hap1* | ND | *Hap1* | *Hap3* |
| Mengdou3200 | *Hap3* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap4* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | *Hap3* | ND | *Hap1* | *Hap2* | *Hap3* |
| Beidou1600 | *Hap3* | ND | ND | *Hap2* | ND | *Hap10* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | ND | ND | *Hap1* | *Hap1* | *Hap1* |
| Dongnong4400 | *Hap6* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap7* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap3* |
| Mengdou1100 | *Hap2* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap4* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* |
| Traill0 | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap3* | *Hap10* | *Hap1* | ND | *Hap2* | ND |
| Chico0 | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap2* | *Hap1* | *Hap1* | ND | ND | *Hap1* | *Hap3* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap2* | ND |
| Barnes0 | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap5* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap2* |
| Norpro0 | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap5* | *Hap1* | *Hap1* |
| Dawson0 | *Hap2* | *Hap1* | ND | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* |
| Jiangmodou 10 | *Hap2* | ND | *Hap1* | *Hap2* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap3* | ND | *Hap1* | *Hap3* | *Hap1* |
| Heihe180 | *Hap4* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | *Hap4* | *Hap2* | *Hap1* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | *Hap4* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* |

**ND: Not available data**

**Table** **S3** Continued

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variety Name | *GmCOL2* | *GmCOL4* | *GmCOL5* | *GmCOL6* | *GmCOL8* | *GmCOL9* | *GmCOL10* | *GmCOL13* | *GmCOL14* | *GmCOL15* | *GmCOL16* | *GmCOL19* | *GmCOL20* | *GmCOL22* | *GmCOL23* | *GmCOL24* | *GmCOL25* | *GmCOL26* | *GmCOL28* |
| Heihe430 | *Hap4* | *Hap1* | ND | *Hap2* | ND | ND | *Hap2* | *Hap1* | ND | *Hap2* | *Hap3* | *Hap1* | *Hap5* | *Hap1* | *Hap5* | *Hap1* | *Hap1* | *Hap2* | *Hap3* |
| Heihe270 | *Hap4* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap4* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap4* | *Hap5* | *Hap6* | *Hap1* | *Hap1* | *Hap1* | *Hap1* |
| Beidou370 | *Hap2* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap5* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap2* | ND |
| Dengke10 | *Hap2* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap11* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap9* | *Hap1* | *Hap1* | *Hap3* | *Hap1* |
| Fengshou120 | *Hap2* | *Hap1* | ND | ND | ND | ND | ND | *Hap1* | *Hap1* | *Hap1* | *Hap4* | ND | *Hap2* | ND | ND | ND | ND | ND | *Hap3* |
| Dongnong-40 | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap7* | *Hap1* | *Hap1* | *Hap2* | *Hap3* |
| Hefeng250 | *Hap2* | ND | *Hap1* | *Hap2* | *Hap1* | *Hap5* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | ND | *Hap3* | ND | *Hap1* | *Hap1* | *Hap2* | *Hap1* |
| Haroson I | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* |
| Kato I | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* |
| Parker I | *Hap2* | *Hap1* | *Hap1* | *Hap5* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* |
| Granite I | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* |
| NE1900 I | *Hap2* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap2* | *Hap3* |
| Heinong16 I | *Hap3* | *Hap1* | *Hap2* | *Hap1* | ND | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap3* | *Hap3* |
| Taixingheidou I | *Hap3* | *Hap1* | ND | ND | ND | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap2* | *Hap1* |
| Heinong26 I | *Hap3* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap2* | *Hap1* |
| Suinong14 I | *Hap6* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap2* | *Hap1* |

**ND: Not available data**

**Table** **S3** Continued

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variety Name | *GmCOL2* | *GmCOL4* | *GmCOL5* | *GmCOL6* | *GmCOL8* | *GmCOL9* | *GmCOL10* | *GmCOL13* | *GmCOL14* | *GmCOL15* | *GmCOL16* | *GmCOL19* | *GmCOL20* | *GmCOL22* | *GmCOL23* | *GmCOL24* | *GmCOL25* | *GmCOL26* | *GmCOL28* |
| Holt II | *Hap4* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* |
| Olympus II | *Hap10* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* |
| Century-84 II | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap8* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* |
| IL1 II | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap8* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | ND | *Hap3* | *Hap2* | *Hap1* |
| LN92-7369 II | ND | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* |
| Jilin20 II | *Hap4* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | ND | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap4* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* |
| Yongchengzihuadou II | *Hap3* | *Hap2* | *Hap3* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap9* | *Hap2* | ND | ND | *Hap1* | *Hap2* | *Hap2* |
| Xiangchundou24 II | *Hap8* | *Hap4* | *Hap2* | *Hap2* | *Hap2* | ND | *Hap1* | *Hap1* | ND | *Hap1* | *Hap2* | ND | *Hap2* | *Hap2* | ND | *Hap2* | *Hap1* | *Hap3* | *Hap1* |
| Tiefeng19 II | ND | *Hap1* | ND | *Hap2* | *Hap1* | *Hap1* | ND | *Hap2* | *Hap1* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap4* | *Hap2* | *Hap1* |
| Athow III | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | ND | *Hap1* | ND | *Hap1* | *Hap3* | *Hap2* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap3* |
| Zhonghuang13 III | *Hap2* | *Hap3* | *Hap2* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* |
| Zhonghuang30 III | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* |
| LN89-5699 III | *Hap4* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap4* | *Hap8* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* |
| KS3494 III | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* |
| IL2 III | *Hap3* | *Hap2* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap4* | *Hap1* | *Hap2* | *Hap1* |
| Williams-82 III | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* |

**ND: Not available dataTable** **S3** Continued

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variety Name | *GmCOL2* | *GmCOL4* | *GmCOL5* | *GmCOL6* | *GmCOL8* | *GmCOL9* | *GmCOL10* | *GmCOL13* | *GmCOL14* | *GmCOL15* | *GmCOL16* | *GmCOL19* | *GmCOL20* | *GmCOL22* | *GmCOL23* | *GmCOL24* | *GmCOL25* | *GmCOL26* | *GmCOL28* |
| Tiefeng33 III | *Hap4* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap2* | *Hap4* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap3* | *Hap1* | *Hap4* | ND | *Hap1* | *Hap2* | *Hap3* |
| Zhongdou39 III | *Hap1* | *Hap4* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap3* | *Hap1* | *Hap3* | *Hap2* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* |
| Xudou9 III | *Hap9* | ND | ND | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | ND | *Hap1* | ND | ND | *Hap1* | *Hap2* | *Hap3* |
| Tiefeng31 III | ND | *Hap1* | *Hap2* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* |
| Jindou19 III | ND | *Hap1* | *Hap5* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* |
| Huachun6 III | ND | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap2* | *Hap3* |
| Huaidou9 III | ND | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap5* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* |
| Flyer IV | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* |
| Omaha IV | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap6* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap3* |
| Calhoun IV | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap7* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* |
| CF461 IV | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* |
| UA-4805 IV | *Hap4* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap7* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* |
| Zheng92116 IV | *Hap11* | *Hap1* | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap6* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap2* | *Hap1* |
| Guandou2 IV | *Hap8* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap6* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap2* |
| Jindou39 IV | ND | *Hap1* | *Hap2* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap2* | *Hap1* |
| Shanning16 IV | ND | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* |

**ND: Not available data**

**Table** **S3** Continued

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variety Name | *GmCOL2* | *GmCOL4* | *GmCOL5* | *GmCOL6* | *GmCOL8* | *GmCOL9* | *GmCOL10* | *GmCOL13* | *GmCOL14* | *GmCOL15* | *GmCOL16* | *GmCOL19* | *GmCOL20* | *GmCOL22* | *GmCOL23* | *GmCOL24* | *GmCOL25* | *GmCOL26* | *GmCOL28* |
| Houzimao IV | *Hap1* | *Hap5* | *Hap2* | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap6* | *Hap2* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap2* |
| Nathan V | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap10* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* |
| Holladay V | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap2* | *Hap2* |
| Hutcheson V | *Hap4* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* |
| R01-3474F V | *Hap4* | *Hap1* | *Hap2* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* |
| TN04-5321 V | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap2* | *Hap4* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND |
| Shangdou14 V | ND | *Hap3* | *Hap2* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap4* | *Hap4* | *Hap1* | *Hap1* | *Hap4* | *Hap2* | *Hap3* |
| Dian86-4 V | ND | *Hap1* | *Hap2* | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* |
| Diandou7 V | ND | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap2* | *Hap1* |
| Desha VI | *Hap4* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* |
| Musen VI | *Hap3* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* |
| D95-6271 VI | *Hap2* | *Hap1* | *Hap2* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap4* | *Hap2* | *Hap1* | ND | *Hap1* | ND | *Hap1* | ND |
| G01-PR16 VI | *Hap2* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | ND | *Hap3* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | ND |
| Boggs VI | *Hap2* | *Hap1* | ND | ND | ND | ND | ND | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap2* | *Hap1* | ND | ND | ND | *Hap2* | ND |
| Zhongdou38 VI | ND | ND | *Hap2* | *Hap2* | *Hap2* | *Hap1* | ND | *Hap2* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | ND | *Hap1* | ND | *Hap2* | *Hap1* | *Hap2* | *Hap1* |
| Wuhuasiyuehuang VI | ND | *Hap2* | *Hap2* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap4* | *Hap2* | *Hap3* | *Hap2* | *Hap1* | *Hap1* | *Hap3* | *Hap2* | *Hap3* |

**ND: Not available data**

**Table** **S3** Continued

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variety Name | *GmCOL2* | *GmCOL4* | *GmCOL5* | *GmCOL6* | *GmCOL8* | *GmCOL9* | *GmCOL10* | *GmCOL13* | *GmCOL14* | *GmCOL15* | *GmCOL16* | *GmCOL19* | *GmCOL20* | *GmCOL22* | *GmCOL23* | *GmCOL24* | *GmCOL25* | *GmCOL26* | *GmCOL28* |
| Suxiandou19 VI | ND | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap2* | *Hap1* | ND | ND | *Hap1* | *Hap2* | *Hap2* |
| NDnnong493/1 VI | *Hap2* | *Hap1* | *Hap4* | *Hap1* | *Hap2* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap4* | *Hap1* | ND | *Hap3* | ND | *Hap4* | *Hap1* |
| Stonewall VII | *Hap4* | *Hap1* | ND | *Hap1* | ND | ND | ND | *Hap1* | *Hap1* | *Hap1* | *Hap4* | *Hap1* | *Hap2* | *Hap1* | ND | ND | ND | *Hap1* | *Hap1* |
| Santee VII | *Hap2* | *Hap3* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | ND | *Hap6* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* |
| Hagood VII | *Hap2* | *Hap1* | ND | ND | ND | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | ND | *Hap2* | *Hap1* | ND | ND | *Hap1* | *Hap1* | *Hap1* |
| Benning VII | *Hap4* | *Hap1* | *Hap2* | *Hap1* | ND | *Hap1* | ND | *Hap1* | *Hap1* | ND | *Hap3* | *Hap1* | ND | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* |
| Hunagfengwu VII | ND | *Hap2* | ND | *Hap2* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap5* | *Hap1* | *Hap3* | *Hap1* | ND | *Hap1* | *Hap3* | *Hap1* | *Hap2* |
| Tongshanbopihuang VII | *Hap3* | *Hap4* | *Hap2* | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap2* |
| Motte VIII | *Hap2* | *Hap1* | *Hap2* | *Hap1* | ND | ND | ND | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* |
| Dowling VIII | *Hap2* | *Hap3* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap2* | *Hap4* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* |
| Crockett VIII | *Hap2* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* |
| Hengyangbayueqing VIII | *Hap3* | *Hap1* | *Hap2* | *Hap2* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* |
| NDnxiadou25 VIII? | *Hap7* | *Hap1* | ND | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | ND | ND | *Hap3* | *Hap1* | *Hap1* |
| Prichard VIII | *Hap2* | *Hap1* | ND | ND | ND | ND | *Hap1* | *Hap1* | *Hap1* | ND | *Hap9* | *Hap5* | *Hap2* | *Hap1* | *Hap1* | ND | ND | *Hap1* | *Hap2* |
| CIGRAS-51 VIII | *Hap2* | *Hap1* | ND | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap2* | *Hap1* |
| CIGRAS-06 VIII | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* |

**ND: Not available data**

**Table** **S3** Continued

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variety Name | *GmCOL2* | *GmCOL4* | *GmCOL5* | *GmCOL6* | *GmCOL8* | *GmCOL9* | *GmCOL10* | *GmCOL13* | *GmCOL14* | *GmCOL15* | *GmCOL16* | *GmCOL19* | *GmCOL20* | *GmCOL22* | *GmCOL23* | *GmCOL24* | *GmCOL25* | *GmCOL26* | *GmCOL28* |
| Aijiaoqing VIII | ND | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | ND | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap2* |
| Pingguohuangdou VIII | *Hap6* | ND | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap4* | *Hap2* | *Hap1* |
| Nandou12 VIII | *Hap3* | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap5* | *Hap1* | *Hap2* | *Hap1* | ND | *Hap3* | *Hap1* | *Hap2* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* |
| Shangraodaqingsi VIII | *Hap3* | ND | *Hap2* | *Hap2* | *Hap1* | *Hap6* | *Hap1* | *Hap2* | *Hap1* | *Hap3* | *Hap2* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap2* |
| Zigongdongdou VIII | *Hap8* | *Hap1* | *Hap2* | *Hap2* | *Hap2* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap3* | *Hap5* | *Hap1* | *Hap2* | *Hap2* | *Hap1* | ND | *Hap2* | *Hap1* | *Hap1* |
| Lanxidaqingdou VIII | *Hap7* | ND | *Hap1* | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | ND | *Hap1* | ND | *Hap1* | *Hap1* | ND | *Hap2* |
| Qiudou 1 VIII | *Hap3* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap4* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | ND | *Hap1* | *Hap4* | *Hap2* | *Hap2* |
| Nandou17 VIII | *Hap7* | *Hap4* | *Hap1* | *Hap2* | *Hap1* | *Hap2* | ND | *Hap1* | *Hap1* | *Hap1* | *Hap5* | *Hap1* | ND | *Hap1* | ND | *Hap1* | *Hap1* | *Hap1* | ND |
| Jiangledaqingdou VIII | *Hap3* | ND | *Hap1* | *Hap2* | *Hap1* | *Hap2* | ND | *Hap2* | *Hap1* | *Hap1* | *Hap3* | *Hap2* | ND | *Hap1* | ND | *Hap1* | *Hap4* | *Hap2* | *Hap3* |
| Guixia3 VIII | *Hap3* | *Hap1* | *Hap2* | *Hap2* | ND | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap3* | *Hap1* | *Hap2* | *Hap1* | ND | *Hap1* | *Hap4* | *Hap1* | *Hap2* |
| Jupiter IX | *Hap3* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* |
| Alamo IX | *Hap2* | *Hap1* | *Hap2* | *Hap1* | ND | ND | *Hap1* | *Hap1* | *Hap1* | ND | ND | *Hap1* | *Hap4* | *Hap2* | ND | *Hap1* | ND | *Hap2* | ND |
| FT-15 IX | *Hap3* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | ND | *Hap1* | *Hap2* | *Hap2* |
| UFV-3 IX | ND | ND | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | ND | *Hap3* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap2* | *Hap3* | *Hap2* | *Hap2* |
| IAC-8 IX | *Hap2* | *Hap1* | *Hap1* | *Hap1* | ND | ND | ND | *Hap1* | *Hap1* | *Hap1* | *Hap2* | *Hap2* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap1* | *Hap4* | *Hap1* |
| I.C.-192 X | *Hap3* | ND | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap6* | *Hap1* | *Hap4* | *Hap4* | *Hap2* | *Hap1* | *Hap1* | *Hap1* | *Hap2* |

**ND: Not available data**