**TABLE** **1** Information on the production and yield status of the major grain legume crops cultivated worldwide, along with their botanical names and chromosome numbers

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Crop** | **Botanical name** | **Chromosome number (n) and ploidy level (x)** | **Production: major producing countries (million tonnes)** | **Countries with highest yield (kg/ha)** | **Total world production (MT)** |
|  |  |  | 1st  | 2nd | 3rd | 1st  | 2nd | 3rd |  |
| Chickpea | *Cicer arietinum* | 2n = 2x = 16 | India (7.06) | Australia (1.32) | Myanmar (0.56) | China (5177) | Israel (4148) | Sudan (4048) | 14.6 |
| Green gram\* | *Vigna radiata* | 2n = 2x = 22 | India (2.45) | Myanmar (1.45) | Bangladesh (0.18) | Myanmar (1239) | Bangladesh (1030) | Pakistan (730) | ca. 6.0 |
| Black gram\* | *Vigna mungo* | 2n = 2x = 22 | India(3.06) | Myanmar (1.35) | - | Myanmar (1432) | India(546) | - | ca. 5.0 |
| Lentil | *Lens culinaris* | 2n = 2x = 14 | Canada(2.64) | India (1.24) | Australia (0.52) | Jordan (3480) | China (2476) | New Zealand (2452) | 6.54 |
| Pigeon pea | *Cajanus cajan* | 2n = 2x = 22 | India (3.78) | Myanmar (0.44) | Malawi (0.42) | Puerto Rico (1858) | Philippines (1821) | Thailand (1701) | 5.05 |
| Field pea | *Pisum sativum* | 2n = 2x = 14 | Canada (4.27) | Russia (2.58) | China (1.46) | Burundi (4809) | Lebanon (4547) | Denmark (3872) | 14.65 |
| Cowpea, dry | *Vigna unguiculata* | 2n = 2x = 22 | Nigeria (3.66) | Niger (2.27) | Burkina Faso (0.62) | Iraq (4083)  | North Macedonia(3766) | Egypt(3637) | 8.35 |
| Beans, dry | *Phaseolus* and *Vigna* spp. | - | India(5.84) | Myanmar (2.96) | Brazil (2.90) | Mali (10042) | Montenegro (6701) | Tajikistan (6451) | 27.46 |
| Broad bean | *Vicia faba* | 2n = 2x = 12 | China (1.74) | Ethiopia (0.98) | United Kingdom (0.58)  | Argentina (8917) | Guyana (8512) | Uzbekistan (5525) | 5.47 |
| Total pulses |  |  |  |  |  | 964.04 |  |  | 92.29 |

Source: FAOSTAT (<https://www.fao.org/faostat/en/>), as updated on December 19, 2022. Figures represent average yield and production for the period of 2016 - 2020.

\*Production and yield data for green gram and black gram are taken from two other studies (Schreinemachers et al., 2019; Khine et al., 2021).

**TABLE 2** Status of collections of grain legume crops and their wild relatives available in the Indian National Gene Bank

|  |  |  |  |
| --- | --- | --- | --- |
| **Crop/species name** | **Exotic** | **Indigenous** | **Total** |
| **Chickpea (*Cicer arietinum*)** | 2961 | 11452 | 14413 |
| ***Cicer* wild species***C. bijugum* (31), *C. chorassanicum* (2), *C. cuneatum* (6), *C. echinospermum* (18), *C. judaicum* (54), *C. microphyllum* (35), *C. pinnatifidum* (27), *C. reticulatum* (18), *C. yamashitae* (4), unknown species (9) | 148 | 56 | 204 |
| **Pigeon pea (*Cajanus cajan*)** | 306 | 10904 | 11210 |
| ***Cajanus* wild species** *C. cajanifolius* (2), *C. albicans* (2), *C. scarabaeoides* (*13*)*, C. volubilis* (1), *C. sp.* (59), *Atylosia* (13), *Rhynchosia aurea* (1), *R. bracteata* (1), *C. himalensis* (1), *C. minima* (1), *R. sublobata* (4), *R. sublobata* (4) | 57 | 47 | 104 |
| **Lentil (*Lens culinaris*)** | 556 | 1835 | 2391 |
| **Other *Lens* species***L. culinaris* subsp*. odemensis* (29), *L. culinaris* subsp*. orientalis* (63), *L. culinaris* subsp*. tomentosus* (6), *L. esculenta (15), L. lamottei* (3), *L. ervoides* (67), *L. nigricans* (21), *L. odemensis* (6) | 202 | 8 | 210 |
| **Pea (*Pisum sativum*)** | 1082 | 3075 | 4157 |
| **Other *Pisum* species***Pisum sativum* subsp*. hortense* (7), *Pisum sativum* var*. arvense* (260) | 25 | 242 | 267 |
| **Green gram (*Vigna radiata*)** | 535 | 3406 | 3941 |
| **Black gram (*Vigna mungo*)** | 5 | 2096 | 2097 |
| **Cowpea (*Vigna unguiculata*)** | 1063 | 2583 | 3646 |
| **Moth bean (*Vigna aconitifolia*)** | 37 | 1472 | 1509 |
| **Rice bean (*Vigna umbellata*)** | 144 | 1883 | 2027 |
| **Adzuki bean (*Vigna angularis*)** | 97 | 89 | 186 |
| **Yard-long bean (*Vigna unguiculata* subsp. *sesquipedalis*)** | 1 | 128 | 129 |
| ***Vigna* wild species***Vigna radiata* var*. sublobata* (228), *V. radiata* var*. setulosa* (3), *V. mungo* var*. silvestris* (17), *V. angularis* var*. nipponensis* (9), *V. bourneae* (4), *V. dalzelliana* (30), *V. hainiana* (6), *V. khandalensis* (1), *V. membranacea* (1), *V. minima* (1), *V. nepalensis* (3), *V. parkeri* (2), *V. pilosa* (4), *V. racemosa* (2), *V. reticulata* (1), *V. stipulacea (6), V. trilobata* (144), *V. trinervia* (2), *V. trinervia* var*. bourneae* (11), *V. vexillata* (109), *V. marina* (2), *V. wightii* (1), *Vigna sp.* (13) | 9 | 591 | 600 |
| **Common bean (*Phaseolus vulgaris*)** | 1669 | 2236 | 3905 |
| **Horse gram (*Macrotyloma uniflorum*)** | 11 | 3122 | 3133 |
| **Grass pea (*Lathyrus sativus*)** | 90 | 2524 | 2614 |
| **Fava bean (*Vicia faba*)** | 354 | 500 | 854 |
| **Total** | **9352** | **48429** | **57781** |

Source: Indian National Gene Bank database (<http://www.nbpgr.ernet.in:8080/PGRPortal>)

**TABLE 3** List of core collections developed for grain legume crops

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Crop** | **Core/mini-core collection size** | **Base accessions** | **Traits** | **References** |
| Chickpea | 1956 | 16,991 | 13 morphological quantitative traits; passport information | Upadhyaya et al., 2001 |
| 211\* | 1,956 | 22 morphological and agronomic traits | Upadhyaya and Ortiz, 2001 |
| 1,103 | 14,651 | Eight quantitative and 12 qualitative agro-morphological traits | Archak et al., 2016 |
| Pigeon pea | 1,290 | 12,153 | Geographic origin; 14 qualitative morphological traits | Reddy et al., 2005 |
| 146\* | 1,290 | 18 qualitative and16 quantitative traits | Upadhyaya et al., 2006 |
| Lentil | 287 | 2,390 | Documented diversity | Simon & Hannan, 1995 |
| 170 | 2,324 | 26 agro-morphological traits | Tripathi et al., 2021a |
| Green gram | 1,481 | 5,234 | Geographic origin; 8 quantitative traits | Schafleitner et al., 2015 |
| 152 | 1,532 | Geographical origin; 19 quantitative and 19 qualitative traits | Bisht et al., 1998 |
| 289\* | 1,481 | Phenotypic and SSR genotypic data | Schafleitner et al., 2015 |
| Adzuki bean | 96 | 616 | 13 SSR molecular markers | Xu et al., 2008 |
| Common bean | 171 | 423 | Seed coat traits; geographical information; 46 SSR markers | McClean et al., 2012 |
| 300 | 544 | Geographical information; morphological traits; phaseolin seed protein | Logozzo et al., 2007 |
| 52 | 388 | Agro-morphological traits; phaseolin seed protein | Rodiño et al., 2003 |
| Cowpea | 2062 | 12,000 | Geographical information; 28 agro-botanical traits | Mahalakshmi et al., 2007 |
| Pea | 48 | 731 | 21 SSR markers | Xu-Xiao et al., 2008 |
| Sem | 46 | 249 | 28 agro-morphological traits | Pengelly & Maass, 2001 |

\*mini-core

**TABLE 4** List of important resistance sources identified for various important biotic stresses in grain legume crops

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Crop** | **Trait** | **Screened germplasm** | **Screening method** | **Sources identified** | **Reference** |
| Chickpea | Fusarium wilt resistance | 13,500 | Field and pot conditions | 160 accessions | Haware et al., 1992 |
| 414 germplasm/varieties | Field conditions in sick plot | 35 accessions | Chaudhry et al., 2007 |
| 1,915 accessions of Kabuli type | Field sick plot and laboratory conditions | 110 accessions | Halila and Strange, 1997 |
| 5,174 | Screened at ICARDA | 110 accessions | Singh, 1997 |
| Ascochyta blight resistance | 1,970 diverse germplasm | Field conditions in sick plot, multiple seasons | IC275447, IC117744, EC267301, IC248147, and EC220109 | Gayacharan et al., 2020c |
| 19,375 germplasm | Screened at ICARDA | 32 accessions | Singh, 1997 |
| Collar rot resistance | 98 | Greenhouse conditions | FLIP 97-132C, FLIP 97-85C, FLIP 98-53C, ILC -5263, and NCS 9905 | Akram et al., 2008 |
| Green gram | MYMV resistance | 100 germplasm lines | Field conditions | 014043, 014133, 014249, 014250 | Iqbal et al., 2011 |
| 81 germplasm lines | Field conditions | IC76361, IC119020-1, PLM490, IC75200, IC119020-2, CO7, CO8 | Nainu and Murugan, 2020 |
| 120 germplasm lines | Field conditions | EC 398897, TM-11-07, TM-11-34, PDM-139, and 6 others | Mohan et al., 2014 |
| Bruchid beetle tolerance | 335 germplasm lines | ‘Free choice’ and ‘no choice’ test method | LM 131, V 1123, LM 371, and STY 2633 | Duraimurugan et al., 2014 |
| Spotted pod borer *(Maruca vitrata)* tolerance | 110 germplasm lines | Field conditions | KM-9-128, KM-9-136, RMG-492, LGG-527, and LGG-538 | Sandhya et al., 2014 |
| Bean fly (*Ophiomyia phaseoli*) tolerance | 3,713 germplasm lines | Field conditions | 28 accessions | Chiang and Talekar, 1980 |
| Black gram | MYMV resistance | 344 germplasm lines | Field conditions and artificial agro-inoculation | IC144901 and IC001572 | Bag et al., 2014 |
| 128 germplasm lines | Field conditions | KU 96-3, NDU 12-1, NIRB 002, NIRB 003, and NIRB 004 | Kumari et al., 2020 |
| ULCV resistance | 87 germplasm lines | Field conditions | 2cm-703, 90cm-015, 93cm-006, 94cm-019, 99cm-001, IAM 382-1, IAM382-9, IAM382-15, and IAM133 | Ashfaq et al., 2007 |
| Bruchid beetle tolerance | 140 germplasm lines | ‘Free choice’ and ‘no choice’ test method | UH 82-5, IC 8219, and SPS 143 | Duraimurugan et al., 2014 |
| Moth bean | MYMV resistance | 180 germplasm lines | Field conditions, multiple seasons | IC36522 and IC36217 | Singh et al., 2020 |
| 204 diverse germplasm lines | Field conditions | PLMO 12, IC 36096, IC 415152, IC 129177, IC 129177, and 9 others | Meghwal et al., 2015 |
| Leaf crinkle virus | 180 germplasm lines | Field conditions, multiple seasons | IC39786 and IC39822 | Singh et al., 2020 |
| 44 germplasm lines | Field conditions, multiple seasons | IC39786 | Vir and Singh, 2015 |
| *Cercospora* leaf spot resistance | 180 germplasm lines | Field conditions, multiple seasons | IC16218 | Singh et al., 2020 |
| Cowpea | Aphid (*Aphis craccivora*) resistance | 105 cultivated and 92 wild germplasm | Greenhouse conditions | TVNu 1158 | Souleymane et al., 2013 |
| Bacterial blight (*Xanthomonas axonopodis* pv. *vignicola*) resistance | 50 improved cultivars | Artificial inoculation | DANILA, IT00K-1263, IT03K-324-9, and 11 others | Boukar et al., 2019 |
| Cowpea Mosaic Virus (CMV) resistance | 225 germplasm lines | Field conditions, multiple seasons | IC202786, IC202809, and Bellary local | Deshpand et al., 2010 |
| *Cercospora* leaf spot resistance | 225 germplasm lines | Field conditions, multiple seasons | IC257420, IC27502, IC91556, IC198330, IC202797, IC219574, and IC202791 | Deshpand et al., 2010 |
| Cowpea rust (*Uromyces vignae*) resistance | 225 germplasm lines | Field conditions, multiple seasons | IC206240, IC214834, IC214835, IC219871, Guntur local, and Bellary local | Deshpand et al., 2010 |
| Bruchid (*Callosobruchus**maculatus*) resistance | 103 germplasm lines | No-choice test method | EC528425 and EC528387 | Tripathi et al., 2020 |
| Lentil | Wilt (*Fusarium oxysporum* f.sp. *lentis*) resistance | 196 landraces | Controlled and field conditions | BGE016363, BGE019696, BGE019698, BGE019708, and 8 others | Pouralibaba, 2015 |
| 93 diverse germplasm lines | Greenhouse and sick plot conditions | IG 69549 and IG 70238 | Meena et al., 2017 |
| Rust (*Uromyces fabae* (Pers.) de Bary) resistance | 321 germplasm lines | Glasshouse and field conditions, multiple locations | Precoz, L 1534, L 2991, L 178, L 2297, L 24123, and HPLC 8868 | Kumar et al., 1997 |
| 286 germplasm lines | Growth chamber conditions | RR-107, ILL7207, ILL7716, andILL7618 | Rubiales et al., 2013 |
| Blight (*Stemphylium botryosum* Wallr.) resistance | 70 germplasm lines including wild | Growth chamber, greenhouse, and field conditions | Various promising accessions identified | Podder et al., 2013 |
| Seed weevil (*Bruchus spp*.) resistance | 571 germplasm lines including wild | Field conditions with artificial release of insects | 32 accessions | Laserna-Ruiz et al., 2012 |
| Root-knot nematode (*Meloidogyne incognita*) resistance | 300 germplasm lines | Pot conditions, artificial inoculation | EC223269, EC076551-C, EC267577-D, EC267555, EC255504, and 4 others | Khan et al., 2017 |
| Pigeon pea | Fusarium wilt and sterility mosaic disease resistance | 146 germplasm accessions of a mini-core collection | Artificial field epiphytotic conditions, multiple seasons | ICP 6739, ICP 8860, ICP 11015, ICP 13304, and ICP 14819 have combined resistance | Sharma et al., 2012 |
| Fusarium wilt (*Fusarium udum*) resistance | 104 germplasm lines | Greenhouse and field conditions | VBG 42, VBG 52, and VBG 57 | Okiror, 1999 |
| Sterility mosaic disease resistance | 976 accessions | Artificial epiphytotic conditions, multiple seasons | ICPLs 20094, 20106, 20098, and 20115 | Sharma et al., 2015 |
| 88 germplasm lines | Field conditions at 10 locations | ICP 7867, ICP 10976, and ICP 10977 | Nene et al., 1989 |
| 60 accessions of *C. carabaeoides* | Leaf-stapling followed by petiole grafting | ICP15684, ICP15688, ICP15692, ICP15695 and others | Kulkarni et al., 2003 |
| Spotted pod borer *(Maruca vitrata)* tolerance | 271 germplasm lines | Open field screening nursery | Promising accessions from four determinate and 12 nondeterminate types | Saxena et al., 2002 |
| Field pea | Pea weevil (*Bruchus pisorum* L.) tolerance | 602 germplasm lines | Field conditions at three locations | Ethiopian gene bank acc. 32454, 235002, 226037, and 32410 | Teshome et al., 2015 |
| Powdery mildew (*Erysiphe pisi*) resistance | 701 germplasm lines | Natural epiphytotic conditions | EC598655, EC598878, EC598704, IC278261, and IC218988 | Rana et al., 2013 |
|  | Rust (*Uromyces viciae-fabae*) resistance | 250 lines consisting of released varieties, germplasm accessions, and advance breeding lines | Multilocation, field conditions, and further validation of 23 selected lines | IPF-2014-16, KPMR-936, and IPF-2014-13 | Das et al., 2019 |
| Common bean | Angular leaf spot (*Phaeoisariopsis griseola*) resistance | 1944 diverse germplasm lines including wild  | Field and screenhouse conditions | Various resistance sources identified | Mahuku et al., 2003 |
| 300 germplasm lines | Field conditions | 14 resistant accessions | Rezene and Mekonin, 2019 |
| Damping-off (*Rhizoctonia solani*) resistance | 274 germplasm lines | Artificial inoculation, pot conditions | PI 310668 and PI 533249 | Peña et al., 2013 |
| Fusarium root rot (*Fusarium cuneirostrum*) resistance | 248 wild germplasm | Greenhouse, small pots, and artificial inoculation | PI417775 highly resistant; 21 others resistant | Haus et al., 2021 |
| Fusarium wilt (*Fusarium oxysporum*) resistance | 248 wild germplasm | Greenhouse, small pots, and artificial inoculation | PI661845 and PI535441 highly resistant; 16 others resistant | Haus et al., 2021 |
| Bacterial wilt (*Curtobacterium flaccumfaciens* pv*. flaccumfaciens*) resistance | 467 diverse germplasm | Pot conditions, artificial inoculation | PI 325691 | Urrea & Harveson, 2014 |

# FIGS: Focused identification of germplasm strategy

**TABLE 5** List of important resistance sources identified for various important abiotic stresses in grain legume crops

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Crop** | **Trait** | **Germplasm screened** | **Screening method** | **Sources identified** | **Reference** |
| Chickpea | Salinity tolerance | 600 selected based on various strategies | Pot conditions | 33 lines | Maliro et al., 2008 |
| 211 acc. of chickpea mini-core collection & 41 popular varieties | Pot conditions with 100 mM NaCl solution to field capacity of the soil | ICC 10755, ICC 13124, ICC 13357, ICC 15406, ICC 15697, and 5 others  | Serraj et al., 2004 |
| 180 germplasm lines | Paper cup, greenhouse conditions, 8ds/m electricalconductivity | ICCV 00104, ICCV 06101, CSG8962, and JG62 | Kumar et al., 2016 |
| Heat stress tolerance | Reference set of 200 accessions having very long duration | Late-sown, field conditions | 18 lines | Krishnamurthy et al., 2011 |
| 167 accessions | Late- vs timely-sown, field conditions | ICCV 95311, ICCV 98902, ICCV 07109, ICCV 92944, ICC 6969, and 5 others | Devasirvatham et al., 2015 |
| 35 early-maturing lines | Late- vs timely-sown, field conditions | ICC 14346 | Upadhyaya et al., 2011a |
| Drought tolerance | 211 accessions of mini-core collection | Field conditions | ICC 867, ICC 1923, ICC 9586, ICC 12947, and ICC 14778 | Krishnamurthy et al., 2010 |
| 1,500 diverse germplasm | Field conditions | ICC4958 | Saxena et al., 1993 |
| 150 Kabuli type germplasm | Field conditions | MCC544, MCC696, and MCC693 | Ganjeali et al., 2011 |
| Cold tolerance | 14 accessions | Field and controlled environments | ICCV 88502 and ICCV 88503 | Srinivasan et al., 1998 |
| 3,276 germplasm and breeding lines | Field conditions | 21 lines | Singh et al., 1989 |
| Green gram | Heat stress tolerance | 41 elite lines | Late- vs timely-sown, field conditions | EC693357, EC693358, EC693369, Harsha, and ML1299 | Sharma et al., 2016 |
| Drought tolerance | 100 diverse germplasm | Hydroponics in controlled conditions | IC333090 and IC507340 | Meena et al., 2021 |
| Black gram | Salt tolerance | 48 genotypes | Various salinity levels at seedling stage  | VNBG 017, AUB 3, and AUB 20 | Priyadharshini et al., 2019 |
| Waterlogging tolerance | 290 germplasm lines | Pot conditions, 10 days of flooding 30 days after sowing | IC530491 and IC519330 | Bansal et al., 2019 |
| Moth bean | Drought tolerance | 32 diverse germplasm | Withdrawal of irrigation, field conditions | IC129177, IC103016, IC415139, IC 415155, IC36157, Maru moth, and Jadia | Malambane and Bhatt, 2014 |
| 15 diverse germplasm | Withdrawal of irrigation, field conditions | IC103016, IC36011, and IC36157 | Sachdeva et al., 2016 |
| Cowpea | Drought tolerance | 1,288 randomly selected lines | Withdrawal of irrigation, field conditions | TVu1436, TVu9693, TVu12115, TVu14632, and TVu15055 | Fatokun et al., 2012 |
| Salt tolerance | 151 germplasm lines | Artificial conditions with 150 mM NaCl application at germination stage | PI582422, 09–529, PI293584, and PI582570 | Ravelombola et al., 2017 |
| 155 germplasm lines | Artificial conditions with 200 mM NaCl application at seedling stage | PI354686, PI353270, PI354666, and PI354842 | Dong et al., 2019 |
| 116 acc. at germination stage and 155 acc. at seedling stage | Artificial conditions with 150 and 200 mM NaCl application at germination and seedling stage screening, respectively | Trait-specific promising genotypes | Ravelombola et al., 2018 |
| Heat tolerance | 130 germplasm lines | Field conditions, multiple seasons | EC472250, EC472267, EC$&2285, EC472286, EC472289, and Pusa Komal | Mishra et al., 2005 |
| Lentil | Combined terminal heat and drought stress tolerance | 166 selected through FIGS# | Field conditions at two contrasting locations | ILL 7835, ILL 6075, ILL 6362, ILL 7814, ILL 7835, and ILL 7804 | Rajendran et al., 2020 |
| Boron tolerance | 310 germplasm lines | Field conditions at seedling stage | ILL213A and ILL2024 | Hobson et al., 2006 |
| Salt tolerance | 133 germplasm lines | Germination and seedling stage, NaCl application | ILL 5845, ILL 6451, ILL 6788, ILL 6793, and ILL 6796 | Ashraf and Waheed, 1990 |
| Pigeon pea | Waterlogging tolerance | 272 diverse accessions | In vitro laboratory conditions and natural field conditions | ICPH 2431, ICPH 2740, ICPH 2671, and 9 others | Sultana et al., 2013 |
| 146 accessions of mini-core collection | Pots placed in water tanks, multiple durations and seasons | 24 accessions | Krishnamurthy et al., 2012 |
| Adzuki bean | Drought tolerance | 80 germplasm lines | Mannitol-induced drought stress | - | Zhu et al., 2019 |
| Field pea | Cold tolerance | 3,672 germplasm lines | Field conditions | 214 accessions | Zhang et al., 2016 |
| Frost tolerance | 83 accessions collected from 34 countries | Controlled environmental chamber | ATC 104, ATC 377, ATC 968, ATC 3992, and ATC 4204 | Shafiq et al., 2012 |
| Salinity tolerance | 780 globally distributed germplasm | Artificial conditions, using NaCl | ATC1836 | Leonforte et al., 2013 |
| High temperature tolerance | 150 genotypes | Field conditions; timely, moderately late, and very late sowing | IPFD 11-5, Pant P-72, P-1544-1, and HUDP 11 | Lamichaney et al., 2021 |

**TABLE 6** Whole genome sequence information available for grain legume crops

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Crop** | **Project ID** | **Cultivar** | **Assembly level** | **Assembly size (Mb)** | **Scaffold N50 (Mb)** | **Sequencing chemistry** | **Genome coverage %** | **No. of predicted protein-coding genes** | **Reference** |
| Chickpea (*Cicer arietinum*) | ASM33114v1 | CDC Frontier | Chromosome | 532.29 | 39.99 | Illumina Hiseq 2000 | 73.8 | 28,269 | Varshney et al., 2013 |
| Chickpea (*Cicer arietinum*) | ASM34727v4 | ICC4958 | Chromosome | 511.02 | 39.90 | 454; Illumina GAIIx | 94 | 30,257 | Parween et al., 2015 |
| Chickpea (*Cicer reticulatum*) | ASM368901v2 | PI489777 | Chromosome | 416.9 | 39.84 | Illumina HiSeq | 78 | 25,680 | Gupta et al., 2017 |
| Cowpea (*Vigna unguiculata*) | ASM411807v1 | IT97K-499-35 | Chromosome | 519.43 | 1.64 | PacBio; Bionano | 91 | 29,773 | Lonardi et al., 2019 |
| Asparagus bean (*Vigna unguiculata* ssp. *sesquipedialis*) | ASM395868v2 | Xiabao II | Chromosome | 632.8 | 2.7 | Illumina HiSeq4000 | 342 | 42,609 | Xia et al., 2019 |
| Green gram (*Vigna radiata*) | Vradiata\_ver6 | VC1973A | Chromosome | 431 | 1.52 | Illumina HiSeq2000 | 80 | 22,427 | Kang et al., 2014 |
| Green gram (*Vigna radiata*) | SRRS9994113 | VC1973A | Chromosome | 476 | 5.2 | PacBio RS II | 87.1 | 30,958 | Ha et al., 2021 |
| Black gram (*Vigna mungo*) | ASM1909614v1 | Pant U-31 | Scaffold | 474 | 1.42 | Illumina HiSeq; Oxford Nanopore GridION | 82 | 42,115 | Jegadeesan et al., 2021 |
| Black gram (*Vigna mungo*) | ASM1342719v1 | Chai Nat 80 | Chromosome | 499 | 43.17 | Illumina HiSeq | 92 | 29,411 | Pootakham et al., 2021 |
| Rice bean (*Vigna umbellata*) | ASM1883591v1 | Himshakti | Scaffold | 414 | 0.08 | Illumina; PacBio | - | 31,276 | Kaul et al., 2019 |
| Pigeon pea (*Cajanus cajan*) | PRJNA72815 | ICPL 87119 (Asha) | Chromosome | 605.78 | 0.52 | Illumina Hiseq2000; Sanger sequencing | 72.7 | 46,750 | Varshney et al., 2011 |
| Pigeon pea (*Cajanus cajan*) | PRJNA68667 | ICPL 87119 (Asha) | Contig | 510.8 | - | FLX 454; Illumina HiSeq | 75.6 | 47,004 | Singh et al., 2012 |
| Adzuki bean (*Vigna angularis*) | PRJNA261643 | Jingnong 6 | Chromosome | 450 | 1.29 | Illumina HiSeq 2000 | 83 | 34,183 | Yang et al., 2015 |
| Adzuki bean (*Vigna angularis*) | PRJDB3778 | Shumari | Chromosome | 462 | 3.0 | PacBio RSII; Illumina HiSeq2500 | 85.6 | 30,507 | Sakai et al., 2015 |
| Adzuki bean (*Vigna angularis*) | PRJNA253346 | Kyungwonpat | Chromosome | 443 | 0.7 | Illumina Roche | 75 | 26,857 | Kang et al., 2015  |
| Pea (*Pisum sativum*) | PRJEB31320 | Caméor | Chromosome | 3920 | 0.41 | Illumina | 88 | 44,756 | Kreplak et al., 2019 |
| Common bean (*Phaseolus vulgaris*) | PRJNA41439 | G19833 | Chromosome | 472.5 | 50.3 | ABI 3730; 454 FLX; Illumina GAII | 98 | 27,197 | Schmutz et al., 2014 |
| Common bean (*Phaseolus vulgaris*) | PRJNA221782 | BAT93 | Chromosome | 458.2 | 0.43 | 454; SOLiD; Sanger | 81 | 30,491 | Vlasova et al., 2016 |
| Lima bean (*Phaseolus lunatus*) | PRJNA596114 | G27455 | Chromosome | 541.5 | 47.8 | PacBio Sequel; Illumina HiSeq |  | 28,326 | Garcia et al., 2021 |
| Lima bean (*Phaseolus lunatus*) | PRJNA647124 | Bridgeton-DES4 | Scaffold | 597.4 | 2.9 | Illumina HiSeq | 91 | 64,541 | Wisser et al., 2021 |
|  Grass pea *(Lathyrus sativus*) | PRJEB33571 | LS007 | Scaffold | 6200.8 | 0.06 | Illumina; Oxford Nanopore | 89.8 | 33,819 | Emmrich et al., 2020 |
| Horse gram (*Macrotyloma uniflorum*) | PRJDB5374 | HPK4 | Scaffold | 259.2 | 2.8 | Illumina HiSeq2000; Illumina MiSeq | 89 | 36,105 | Shirasawa et al., 2021 |
| Horse gram (*Macrotyloma uniflorum*) | PRJNA400556 | PHG-9 | Scaffold | 279.12 | 1.1 | Illumina HiSeq; PacBio | 83.53 | 24,521 | Mahesh et al., 2021 |

Source: NCBI database (<https://www.ncbi.nlm.nih.gov/>)