

Genus Datasheet

CalU+SUK-Phase I

DatasheetNo. A-074.005
(Family.Genus)

DBT- Network Programme

1. Genus:*Agave* L.

2. Systematic Position:

APG IV (2016)

- Kingdom: Plantae
- Clade: Angiosperms
- Clade: Monocots
- Order: Asparagales Link
- Family: Asparagaceae Juss.
- Subfamily: Agavoideae
- Genus: *Agave* L.

Bentham and Hooker(1862)

Kingdom: Plantae
Division: Phanerogamia
Class: Monocotyledones
Series: Epigynae
Ordo: Amaryllideae
Tribus: Agaveae
Genus: *Agave* L.

3. Species:

Global:273

India:7

4. Taxonomic riddles:

5. Distribution:

Global: Mexico, Florida, Arizona, California, Nevada, Utah, Aruba, Bahamas, Cayman Is., Cuba, Dominican Republic, Haiti, Jamaica, Leeward Is., Netherlands Antilles, Puerto Rico, Trinidad-Tobago, Turks-Caicos Is., Venezuelan Antilles, Windward Is., Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panamá, Bolivia, Colombia, Macaronesia Azores, Canary Is., Cape Verde, Madeira, St.Helena, Eritrea, Ethiopia, Somalia, Algeria, Libya, Morocco, Tunisia, Angola, Mozambique, Botswana, Cape Provinces, Free State, Kwa,Zulu-Natal, Lesotho, Swaziland, Benin, Gambia, TheGuinea, Senegal, Burundi, Gulf of Guinea Is., Rwanda, Aldabra, Madagascar, Mauritius, Mozambique, Channel Is., Réunion, Seychelles, Amsterdam-St.Paul Is., China, Korea, Nansei-shoto, Ogasawara-shoto, Aegean Is., Turkey, Bangladesh, East Himalaya, India, Nepal, Pakistan, Sri Lanka, West Himalaya, Andaman Is., Cambodia, Myanmar, Thailand, Papuasias, Solomon Is., Wales, Norfolk Is., Queensland, New Zealand Albania, GreeceItaly, Kriti, Sicilia, Yugoslavia, Baleares, Corse. France, Portugal, Sardegna, Spain, Hawaii, Caroline Is., Marianas, Marshall Is., Line Is., Fiji, Gilbert Is., Nauru, Brazil, Bermuda, Argentina, NortheastJuan Fernández Is., Ecuador, Peru

India: Himalayas

6. Habit and Habitat:Stoloniferous herb, small to gigantic; grows in arid and semi-arid regions

7.Economic Importance:Steroidal sapogenin and fiber yielding plant

8. DNA content range:

Methodology:

4C (0.0843-0.1945au)¹

Feulgen microspectrophotometry¹

2C (7.6-25.5pg)³

Flow Cytometry^{3,21,23,35,38}

4C (15.2-51.0pg)³

4C (12.9-35.1pg)²²

Feulgen microdensitometry²²

2C (8477pg; 12420pg)²³

2C (8.3-20.11pg)³⁵

2C (7.4-19.5pg)³⁶

Feulgen Cytophotometry³⁶

2C (7.85-23.92pg)³⁸

9. Basic chromosome number(s): $x=30$ ^{12,16,24,28,34,37}

10. Zygotic chromosome number(s): $2n=20$ ⁵; $2n=30$ ^{6,31}; $2n=50$ ^{29,30,32}; $2n=58$ ¹³; $2n=60$ ^{1,2,3,4,6,7,8,10,11,12,13,15,17,19,20,21,22,23,24,25,26,27,28,29,30,34,35,36,38}; $2n=45-62$ ¹⁹; $2n=54-65$ ¹⁹; $2n=77-99$ ¹⁹; $2n=90$ ^{1,10,14,16,21,24,26,30}; $2n=81-104$ ¹⁹; $2n=106-120$ ¹⁹; $2n=110$ ²⁴; $2n=118$ ¹²; $2n=120$ ^{1,2,3,7,9,10,11,12,13,16,18,21,24,26,29,30,38}; $2n=118-128$ ¹⁹; $2n=136$ ¹³; $2n=c138$ ²⁴; $2n=c140$ ²; $2n=151$ ¹⁹; $2n=149$ ¹²; $2n=150$ ^{1,2,3,7,9,10,11,16,21,22,27,29,36,38}; $2n=144-158$ ¹⁹; $2n=180$ ^{1,2,10,12,13,16,21}; $2n=240$ ^{7,10,11}

11. Gametic chromosome number(s): $n=30$ ^{6,24,33,34}; $n=55-60$ ³³; $n=59$ ³³; $n=87$ ³³; $n=74-93$ ³³

12. Specialized chromosomes (B chromosomes/Sex chromosomes/Polytene chromosomes/ N chromosomes):

13. Ploidy level: Diploid^{1, 2,3,4,7,10,12,19,20,21,22,23,24,27,28,33,34,35,36,38}; triploid^{1,10,16,19,21,23,24}; tetraploid^{1,2,3,7,10,12,16,19,21,24,35,38}; pentaploid^{1,2,3,7,10,16,19,21,22,24,27,35,36,38}; hexaploid^{1,2,10}; octaploid^{7,10}; polyploid³³

14. Nature of polyploidy (auto, segmental, allo, autoallo): Allopolyploid¹⁶; autopolyploid²⁴

15. Aberrant chromosome number(s) (aneuploidy, aneusomy, polysomy): Variant somatic cells with $2n=26, 36, 40, 45, 48, 58, 65, 120$ ⁴, variant metaphase plates with $2n=226, 236$ ^{7,10}, variant metaphase plates with $2n=147, 167$ ¹⁰, variant metaphase plate with $2n=14, 24, 28, 30, 38, 42, 44, 50, 52, 58, 60, 96, 100, 104, 108, 110, 114, 115, 124, 125, 134$ ¹³, Variant somatic cells with $2n=24, 36, 60, 65, 72, 96, 150, 160, 190$ ¹⁶, variant root tip cells with $2n=24, 30, 36, 45, 60$ ³¹

16. Karyograms: 1,4,13,16,20,28,38

Meiosis: 6,24,33,34

17. Banding pattern(s):

18. 50 21 29

karyotype of the polyploids shows that none of them represents exact multiples of the chromosome number indicated by the degree of polyploidy^{1,16}. Thus, authors suggested allopolyploidy might have been a major factor in the evolution of the genus^{1,16}. In spite of the same chromosome number in all the diploids, the alteration in karyotype formula at interspecific level indicates the role of structural alteration in chromosome evolution.

21. Linkage map:

22. Any other information: