

Database on chromosome counts of plants of Acharya Jagadish Chandra Bose Indian Botanic Garden, Howrah, India

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आचार्य जगदीश चन्द्र बोस, भारतीय वनस्पति उद्यान, हावड़ा के पौधों के गुणसूत्र संख्या का आकड़ान्यास

आशुतोष कुमार वर्मा, मोनिका मिश्रा, लिजा मल्लिक, कुमार अविनाश भारती,
एस. एस. दाश, हरीश सिंह एवं परमजीत सिंह

सारांश

पादपों के विभिन्न समूहों में जातिवृत्तीय संबंधों के निर्धारण में उपलब्ध एवं विलुप्त पौधों की गुणसूत्र संख्या का विशेष महत्व है। वर्गीकरण प्रणालियों जो 'आवृत्तबीजीय जातिवृत्त वर्गीकरण प्रणाली' के उत्तरार्ध में आईं उनमें उत्पत्ति, अन्तर्जातीय संबंधों, आणविक अध्ययनों, पादप प्रजनन व वर्गीकरण से प्राप्त साक्ष्यों पर अधिकाधिक ध्यान दिया जा रहा है। उपरोक्त तथ्य व असंख्य आवृत्तबीजीय पौधों के गुणसूत्र संख्या संबंधित आंकड़ों की अनुपलब्धता 'साइटोटैक्सोमिकल' अध्ययनों की महत्ता को दर्शाता है। प्रस्तुत संग्रहण में केन्द्रीय वनस्पति प्रयोगशाला, हावड़ा में उपलब्ध 519 'साइटोलॉजिकल वाउचर नमूनों' जो आचार्य जगदीश चन्द्र बोस भारतीय वनस्पति उद्यान, हावड़ा में उपलब्ध आवृत्तबीजी पौधों की 343 जातियों, 265 वंश, एवं 85 कुलों से संबंधित हैं, में उपलब्ध सूचनाओं को सारगृहित किया गया है। प्रस्तुत शोध-पत्र में 60 पादप जातियों में नई गुणसूत्र संख्या को चिह्नित किया गया है, जिनकी सूचना न तो क्रोमोसोम काउन्ट्स डाटाबेस (सीसीडीबी) में और न ही क्रोमोसोम एटलस ऑफ प्लावरिंग प्लान्ट्स ऑफ द इंडियन सब कंटीनेंट में उपलब्ध है।

Abstract

The chromosome numbers of the extant and extinct plants play a significant role in determining the phylogenetic interrelation of different groups. In the post *Angiosperm Phylogeny Group system* of plant classification era more and more attentions were given in molecular based studies, evidences on plant breeding, intraspecific variation, origin and taxonomic relationship studies of diverse plant group. Exhaustive online database on chromosomal counts have already been developed from various sources. Still, there are many species and genera of plants for which no chromosome count is known. There are countries from which very few counts have been reported. Therefore, there is still a great deal of traditional cytotaxonomic work to be done. The present communication presents 519 records belonging to 343 species, 265 genera and 85 families of Angiosperms of Acharya Jagadish Chandra Bose Indian Botanic Garden, Howrah. The paper also reports 60 plant species with new chromosome counts, which were hitherto not reported either in the Chromosome Counts Database (CCDB) or Chromosome Atlas of Flowering Plants of the Indian Subcontinent.

Keywords: Chromosome Number, Chromosome Count, Cytology, Plant Taxa

INTRODUCTION

In the post *Angiosperm Phylogeny Group system* of plant classification scenario, plant systematics became more persuaded by molecular based evidences particularly on cladistic analysis of the DNA sequences of genes (Chase & Reveal, 2009). The widely use of these vital information on chromosomal variations including numbers remains a valuable evidence to evaluate the evolutionary pattern, numerical change in chromosome and to estimate the basic chromosome number of clades of interest (Góralski & al., 2009). This also helps in evaluating the genetic relationship among species, populations and the way the taxon diverged from each other (Guerra, 2008, 2012). Researchers have proven that, variation in chromosome numbers within a taxon at different ploidy levels, viz. polyploidy, dysploidy etc., helps in understanding of dominance pattern, endemism, intraspecific variation and invasive nature of a particular species in a region or other. (Sharma & Sharma, 1956; Leser & al., 1998; Simon & al., 2001; Stebbins, 1938; Grant, 1963; Goldblatt & Lowery, 2011). Besides, they also act most extensively and consistently recorded cytological property in many plant families and genera (Guerra, 2008). Interrelationship among taxa in Rannunculaceae, Cruciferae and Graminae (Gregory, 1941; Kurita, 1958; Tamura, 1993); monophyletic origin of Amentiferae, phylogenetic relationships in the Euphorbiaceae and tribe level classification in Dipterocarpaceae, etc have been resolved by use of chromosome data (Perry, 1943; Davis & Heywood, 1973).

A gigantic data on chromosome number for a specific geographical region or to a particular group were documented along the years of investigations throughout the world (Darlington & Wylie, 1955; Chatterjee & Sharma, 1969; Fedorov, 1969; Sharma & Gupta, 1982; Pellicer & al., 2007; Chehregani & Hajisadeghian, 2009; Al-Saghir & al., 2014). On the revolution of digital world, more and more data from reliable sources (Goldblatt & Johnson, 1979; Pogan, 1991; Watanabe, 2002; Bennett & Leitch, 2011) were also incorporated in series of online data bases such as the Index to Plant Chromosome Numbers (IPCN) (Goldblatt, 1980, 1981; Goldblatt & Lowry, 2011). However, the amount of data on the chromosomal counts on plants of India are very scanty, particularly when the indigenous species are taken into consideration. Therefore, any count on the missing information on chromosomal counts would be a great value to the botanical fraternity

of this subcontinent not only in adding the new counts but also to study the range of variations. In the present communication chromosomal counts of 519 records of 343 taxa including 60 new chromosome counts are documented from Acharya Jagadish Chandra Bose Indian Botanic Garden (AJCBIBG).

Acharya Jagadish Chandra Bose Indian Botanic Garden, erstwhile Indian Botanic Garden, has a long history of contributing to the development of scientific knowledge and plant conservation framework, protocols and actions. The AJCBIBG spreads over an area of 273 acres and grows 14,122 live plant collections of trees, shrubs and climbers belonging to 1377 species (Debnath & al., 2014). Since the colonial era, it has played a significant role in introducing, multiplying and conserving many commercially, rare and interesting important plants from various parts of the world. For more than two centuries AJCBIBG has protected itself the memories of Indian landscapes, waterbodies and its transitions, preserving the plants introduced during colonial period, while at the same time investing in scientific advances for the challenge of plant diversity conservation in its designated to 25 divisions for different group of plants.

The cytology and cytogenetic section attached to the Central Botanical Laboratory is involved in active research since its inception during 1955. Cytotaxonomic studies of many genera and their taxa collected from cultivated and wild sources from various parts of the country have been carried out viz. *Dioscoria*, *Commelina* and its wild relatives (Raghavan & al, 1958 b, 1960, 1961a, 1961b, 1965a), some plants from south India and medicinal plants occurring in the Ganga Plains (Raghavan & al., 1958 ; Gajapathy, 1961) as well as the range of chromosomal number in different geographical races studied by Janaki Ammal (1958, 1959a,b, 1960a,b). The chromosome numbers of spontaneous grasses, selected members from family Cyperaceae & Euphorbiaceae and minor economic plants were studied by Mitra (1964, 1966 a,b) and Datta & Mitra (1968). Further cytological observations on some common weeds of West Bengal were also worked out by earlier workers of same lab (Datta, 1965, 1966 a, b, 1967, 1968 a, b; Datta & Chatterjee, 1969; Chatterjee, 1969; Mallick & Ghosh, 1968; Mallick, 1968, 1969).

During those investigations, chromosome counts of more than 500 plants grown in AJCBIBG were also prepared and voucher specimens were deposited in herbarium of CBL. These voucher specimens hold significant information on genetic makeup, in relations to its

phenotype; geographic location and ecology which can be used for correct determination, clarifying for unexpected results arise due to convergence and misinterpretation of morphology (Funk & al., 2005). However, most of these results were either published in sporadically or yet to publish. Hence, in the present communication, an attempt was made to compile in a comprehensive manner to showcase chromosome count of plants of AJCBIBG.

DATA COLLECTION

With the initiation of the study, all cytological voucher specimens preserved in CBL were studied carefully and documented alphabetically in a tabular form (Table 1). An array of published papers, scientific manuscripts on chromosome counts was also consulted to complete the information. The correct accepted name of the taxon was appended alphabetically followed by the family name.

Table 1. Chromosome database of Acharya Jagadish Chandra Bose Indian Botanic Garden, Howrah.

S.N.	Name of Taxon; Family	Haploid Chromosome count	Date of collection	Counted by and field no. (no. of specimens)
1.	Abelmoschus esculentus (L.) Moench; Malvaceae	60	23.09.1970	<i>s.coll.</i> 10493 (3)
2.	Abelmoschus esculentus (L.) Moench; Malvaceae	60	03.09.1970	<i>s.coll.</i> 10496 (2)
3.	Abelmoschus esculentus (Linn.) Moench; Malvaceae	60	22.10.1970	<i>s.coll.</i> 10498 (2)
4.	Abelmoschus manihot var. tetraphyllus (Roxb. ex Hornem.) Hochr.; Malvaceae	25	17.09.1970	<i>s.coll.</i> 2333 (2)
5.	Abroma augusta (L.) L. f.; Malvaceae	11	04.07.1969	<i>s.coll.</i> 10900
6.	Abroma augusta (L.) L. f.; Malvaceae	10	04.07.1968	<i>s.coll.</i> 10653
7.	Abrus precatorius L.; Fabaceae	11	25.07.2015	A.K. Verma 38103 (3)
8.	Abutilon grandifolium (Willd.) Sweet; Malvaceae	21	17.09.1970	<i>s.coll.</i> 2332 (3)
9.	Abutilon grandifolium (Willd.) Sweet; Malvaceae	21	28.01.1965	<i>s.coll.</i> 9860
10.	Abutilon grandifolium (Willd.) Sweet; Malvaceae	21	20.09.1969	<i>s.coll.</i> 10442 (2)
11.	Abutilon grandifolium (Willd.) Sweet; Malvaceae	21	21.01.1967	<i>s.coll.</i> 21577 (2)
12.	Acoelorrhaphe wrightii (Griseb. & H.Wendl.) H.Wendl. ex Becc.; Arecaceae	18	21.12.1976	N. Dutta 12690
13.	Aerides odoratum Lour.; Orchidaceae	19	05.06.1975	U. Chatterjee 12870 (2)
14.	Alisma plantago R.Br.; Alismataceae	8	12.03.1986	<i>s.coll.</i> 14999
15.	Allamanda cathartica L.; Apocynaceae	9	10.05.1977	U. Chatterjee 13758
16.	Allamanda cathartica L.; Apocynaceae	9	28.07.1978	N. C. Saha 14120
17.	Alternanthera paronychioides A.St.-Hil. ; Amaranthaceae	48	20.02.1968	<i>s.coll.</i> 10558
18.	Ammannia multiflora Roxb.; Lythraceae	9	08.12.1970	<i>s.coll.</i> 12088
19.	Andrographis paniculata (Burm.f.) Nees; Acanthaceae	25	<i>s.d.</i>	S. K. Das 14728 (2)
20.	Anisomeles indica (L.) Kuntze [= <i>Anisomeles ovata</i> R. Br.]; Labiateae;	20	06.11.1979	D. Hazra 14056 (2)
21.	Annona purpurea Moc. & Sessé ex Dunal [= <i>Anona purpurea</i> Dunal]; Annonaceae	7	09.08.1978	N. Dutta 21079
22.	Annona muricata L.; Annonaceae	7	22.06.1978	N. Dutta 21063
23.	Annona muricata L.; Annonaceae	8	10.05.1978	S.K. Das 11459 (2)
24.	Annona muricata L.; Annonaceae	7	27.05.1978	N. Dutta 21058 (2)
25.	Antidesma ghaesembilla Gaertn.; Phyllanthaceae	13	04.07.1966	<i>s.coll.</i> 1743
26.	Aporuella sumatrensis C.B.Clarke; Acanthaceae	11*	<i>s.d.</i>	S. K. Das 14809 (2)

(Continued)

S.N.	Name of Taxon; Family	Haploid Chromosome count	Date of collection	Counted by and field no. (no. of specimens)
27.	<i>Ardisia humilis</i> Vahl.; Primulaceae	24*	21.07.1978	N. Dutta 21071 (2)
28.	<i>Aristolochia indica</i> L.; Aristolochiaceae	6	01.08.1974	N. Dutta 12360 (2)
29.	<i>Aristolochia indica</i> L.; Aristolochiaceae	6	29.07.1979	N. Dutta 14466
30.	<i>Artabotrys odoratissimus</i> Blume.; Annonaceae	8	11.05.1978	S. K. Das 11466
31.	<i>Asclepias curassavica</i> L.; Asclepiadaceae	11	06.08.1986	N. Dutta 14800
32.	<i>Aspidistra lurida</i> Ker-Gawl; Asparagaceae	19*	10.02.1976	N. Dutta & U. Chatterjee 12610 (2)
33.	<i>Asystasia gangetica</i> (L.) T.Anderson [= <i>Asystesia intrusa</i> Bl.]; Acanthaceae	13	s.d.	S. K. Das 14073 (2)
34.	<i>Asystasia gangetica</i> (L.) T.Anderson [= <i>Asystesia intrusa</i> Bl.]; Acanthaceae	13	s.d.	S. K. Das 11840
35.	<i>Asystasia gangetica</i> (L.) T.Anderson [= <i>Asystesia intrusa</i> Bl.]; Acanthaceae	13	s.d.	S. K. Das 14384
36.	<i>Asystasia chelonoides</i> Nees; Acanthaceae	13	s.d.	S. K. Das 14054 (2)
37.	<i>Asystasia chelonoides</i> Nees; Acanthaceae	13	s.d.	S. K. Das 14189 (2)
38.	<i>Asystasia gangetica</i> (L.) T.Anderson; Acanthaceae	26	s.d.	S. K. Das 14256 (2)
39.	<i>Asystasia gangetica</i> (L.) T.Anderson; Acanthaceae	25	s.d.	S. K. Das 13946
40.	<i>Asystasia gangetica</i> (L.) T.Anderson; Acanthaceae	25	08.12.1978	S. K. Das 571
41.	<i>Bactris major</i> Jacq.; Arecaceae	15*	02.10.1975	N. Dutta 12604
42.	<i>Balanites aegyptiaca</i> (L.) Delile; Zygophyllaceae	9	11.01.1979	N. Dutta 14418 (3)
43.	<i>Baliospermum micranthum</i> Muell-Arg.; Euphorbiaceae	11	14.09.1976	R. Mallick 13600 (2)
44.	<i>Bambusa amahussana</i> Lindl.; Poaceae	36	04.07.1976	N.Dutta 12674 (2)
45.	<i>Bambusa vulgaris</i> Schrad.; Poaceae	36	18.06.1976	N.Dutta 12673 (2)
46.	<i>Barleria cristata</i> L.; Acanthaceae	20	22.11.1978	S. K. Das 14259 (3)
47.	<i>Barleria cristata</i> L.; Acanthaceae	20	22.11.1978	S. K. Das 14262 (2)
48.	<i>Barleria lupulina</i> Lindl.; Acanthaceae	20	s.d.	S. K. Das 14814 (2)
49.	<i>Barleria prionitis</i> L.; Acanthaceae	20	s.d.	S. K. Das 14084
50.	<i>Barleria strigosa</i> Willd.; Acanthaceae	21	s.d.	S. K. Das 14060 (2)
51.	<i>Barleria strigosa</i> Willd.; Acanthaceae	21	s.d.	S. K. Das 20082 (2)
52.	<i>Barleria strigosa</i> Willd.; Acanthaceae	21	s.d.	S. K. Das 11453
53.	<i>Barleria cristata</i> L. [= <i>Barleria cristata</i> L. var. <i>dichotoma</i> (Roxb.) Prain]; Acanthaceae	20	22.11.1978	S. K. Das 14260 (2)
54.	<i>Barleria terminalis</i> Nees [= <i>Barleria strigosa</i> Willd. var. <i>polystachya</i> (Hook. ex Nees) C.B.Clarke]; Acanthaceae	20	s.d.	S. K. Das 14190 (2)
55.	<i>Barringtonia acutangula</i> (L.) Gaertn.; Lecythidaceae	13	22.10.1977	U. Chatterjee 13854
56.	<i>Barringtonia acutangula</i> (L.) Gaertn.; Lecythidaceae	13	08-09-1978	N. Dutta 21078 (2)
57.	<i>Barringtonia racemosa</i> (L.) Spreng.; Lecythidaceae	4n=26*	08.11.1978	N. Dutta 21080 (2)
58.	<i>Barringtonia racemosa</i> (L.) Spreng.; Lecythidaceae	13	20.07.1978	C. Paul 14114
59.	<i>Bauhinia acuminata</i> L.; Fabaceae	14	05.07.1967	N. P. Kamble 4512 (2)
60.	<i>Beilschmiedia roxburghiana</i> Nees; Lauraceae	12	21.07.1978	N. Dutta 21070 (2)
61.	<i>Beilschmiedia oppositifolia</i> (Meisn.) Hook.f.; Lauraceae	12*	25.05.1978	N. Dutta 21076 (3)

(Continued)

S.N.	Name of Taxon; Family	Haploid Chromosome count	Date of collection	Counted by and field no. (no. of specimens)
62.	Biophytum sensitivum (L.) DC.; Oxalidaceae	10	04.07.1969	U.Chatterjee 10701
63.	Blighia sapida K.D.Koenig; Sapindaceae	16	21.08.1978	N. Dutta 21083 (3)
64.	Breynia retusa (Dennst.) Alston [= <i>Breynia patens</i> Benth.]; Phyllanthaceae	13	10.05.1977	s.coll. 13763
65.	Breynia vitis-idaea (Burm.f.) C.E.C.Fisch. [= <i>Breynia ramnoides</i> Muell. Arg.]; Phyllanthaceae	26	s.d.	s.coll. 9621
66.	Brunfelsia uniflora (Pohl) D.Don [= <i>Brunfelsia hopeana</i> Benth.]; Solanaceae	10*	22.02.1979	M. Chakraaborty 14290 (2)
67.	Brya ebenus (L.) DC.; Fabaceae	10	18.08.1987	S. C. Roy 743(2)
68.	Bryophyllum pinnatum (Lam.) Oken [= <i>Kalanchoe pinnata</i> (Lamk.) Pers.]; Crassulaceae	20	01.08.1969	s.coll. 10820
69.	Bryophyllum pinnatum (Lam.) Oken [= <i>Kalanchoe pinnata</i> (Lamk.) Pers.]; Crassulaceae	20	20.12.1970	s.coll. 11401
70.	Caesalpinia cacalaco Humb. & Bonpl.; Fabaceae	12	15.01.1980	N. Dutta 14479
71.	Calamus arborescens Griff.; Arecaceae	13	21.04.1975	N. Dutta 12387
72.	Calamus longisetus Griff.; Arecaceae	12*	16.08.1976	N. Dutta 12680
73.	Calamus longisetus Griff.; Arecaceae	13	16.04.1975	N. Dutta 12386
74.	Calamus rotang L.; Arecaceae	13	23.04.1975	N. Dutta 12391
75.	Calamus viminalis Willd.; Arecaceae	13	26.04.1975	N. Dutta 12395 (2)
76.	Calamus viminalis Willd.; Arecaceae	13	23.04.1975	N. Dutta 12390
77.	Calamus guruba Buch.-Ham. ex Mart.; Arecaceae	13	15.04.1975	N. Dutta 12384
78.	Cananga odorata (Lam.) Hook.f. & Thomson [= <i>Cananga odorata</i> Hook.f. et Thomson]; Annonaceae	8	14.12.1978	N. Dutta 14414
79.	Canna indica L. var. I; Cannaceae	9	Feb., 1978	U. Chatterjee s.n.
80.	Canna indica L. var. II; Cannaceae	9	Feb., 1978	U. Chatterjee s.n.
81.	Canna indica L. var. III; Cannaceae	9	Feb., 1978	U. Chatterjee s.n.
82.	Canna indica L. var. IV; Cannaceae	9	Feb., 1978	U. Chatterjee s.n.
83.	Canna indica L. var. no. 9; Cannaceae	9	April, 1978	U. Chatterjee s.n.
84.	Canna indica L. var. XXVI; Cannaceae	3n=27*	Feb., 1978	U. Chatterjee s.n.
85.	Canna indica L.; Cannaceae	9	May, 1978	U. Chatterjee s.n.
86.	Canscora alata (Roth) Wall. [= <i>Canscora decussata</i> R. & S.]; Gentianaceae	34*	6.11.1979	D. Hazra 14057 (2)
87.	Capsicum annuum L.; Solanaceae	12	16.11.1964	s.coll. 9581 (2)
88.	Carica papaya L.; Caricaceae	9	23.09.1963	N Dutta & M Manna 9474
89.	Carissa bispinosa (L.) Desf. ex Brenan; Apocynaceae	11	08.03.1979	N. Dutta 14431
90.	Carissa spinarum L. [= <i>Carissa congesta</i> Wight.]; Apocynaceae	11	18.01.1979	N. Dutta 14420
91.	Carissa spinarum L. [= <i>Carissa macrophylla</i> Wall.]; Apocynaceae	11	12.03.1979	N. Dutta 14436 (2)
92.	Caryota mitis Lour.; Arecaceae	16	25.01.1977	s.coll. 12695
93.	Cassia fistula L.; Fabaceae	14	25.04.1970	U Chatterjee 21130
94.	Cassia roxburghii DC. [= <i>Cassia marginata</i> Roxb.]; Fabaceae	14	27.05.1970	U Chatterjee 21149
95.	Catesbaea spinosa L.; Rubiaceae	12	18.08.1987	N. Dutta 744 (3)
96.	Catesbaea spinosa L.; Rubiaceae	12	06.04.1995	D. Hazra 18663

(Continued)

S.N.	Name of Taxon; Family	Haploid Chromosome count	Date of collection	Counted by and field no. (no. of specimens)
97.	<i>Catesbaea spinosa</i> L.; Rubiaceae	12	01.06.1978	D. Sarkar 11476 (2)
98.	<i>Catharanthus roseus</i> (L.) G. Don.; Apocynaceae	8	17.11.1969	s.coll. 12028
99.	<i>Celtis timorensis</i> Span [= <i>Celtis cinnamomea</i> Lindl.]; Cannabaceae	10	05.03.1974	N.Dutta 12335
100.	<i>Cephalostachyum pergracile</i> Munro.; Poaceae	36	18.06.1976	N.Dutta 12671
101.	<i>Cereus pterogonus</i> Lem.; Cactaceae	11	14.06.1973	U Chatterjee 12303 (3)
102.	<i>Cereus pterogonus</i> Lem.; Cactaceae	11	14.06.1973	U Chatterjee 12304
103.	<i>Cheilocostus speciosus</i> (J.Koenig) C.D.Specht [= <i>Costus speciosus</i> Sm.]; Costaceae	18	27.10.1975	N. Dutta 12621 (2)
104.	<i>Chlorophytum heynei</i> Baker. Asparagaceae	7	03.12.1975	U. Chatterjee 13318 (2)
105.	<i>Chydenanthus excelsa</i> Mier.; Lecythidaceae	13	24.04.1978	U. Chatterjee 11457 (2)
106.	<i>Cipura paludosa</i> Aubl [= <i>Marica paludosa</i> Willd.]; Irideae	7	05.07.1974	N. Dutta 12352 (2)
107.	<i>Cissus quadrangularis</i> L.; Vitaceae	10	01.03.1967	N. Dutta 338
108.	<i>Clavija macrophylla</i> (Link ex Roem. & Schult.) Miq. [= <i>Clavija macrophylla</i> (Link ex Roem. & Schult.) Miq.]; Primulaceae	19*	07.12.1971	N. Dutta 11701
109.	<i>Cleistanthus collinus</i> (Roxb.) Benth. ex Hook.f.; Phyllanthaceae	10	15.03.1980	N. Dutta 14488 (5)
110.	<i>Cleome rutidosperma</i> DC.; Cleomaceae	10	20.07.1978	C. Paul 14112
111.	<i>Cleome rutidosperma</i> DC.; Cleomaceae	15	28.08.1975	U Chatterjee 13134
112.	<i>Cleome rutidosperma</i> DC.; Cleomaceae	15	29.12.1978	N Dutta 14415 (6)
113.	<i>Cleome viscosa</i> L.; Cleomaceae	10	08.09.1986	N Dutta 14846
114.	<i>Clerodendrum indicum</i> (L.) Kuntze [= <i>Clerodendron siphonanthus</i> Ait.]; Lamiaceae	26	20.08.1979	s.coll. 14472
115.	<i>Coccinia grandis</i> (L.) Voigt [= <i>Cephalandra indica</i> Nand.]; Cucurbitaceae	12	11.10.1974	U. Chatterjee & Dankuni 12915 (2)
116.	<i>Coccinia grandis</i> (L.) Voigt [= <i>Cephalandra indica</i> Nand.]; Cucurbitaceae	12	05.05.1978	D Sarkar & Dankuni 11448
117.	<i>Coccinia grandis</i> (L.) Voigt [= <i>Coccinia indica</i> Wight et. Arn.]; Cucurbitaceae	12	23.09.1963	N Dutta & M Manna 9465
118.	<i>Cocculus hirsutus</i> (L.) W.Theob.; Menispermaceae	13	30.01.1969	U Chatterjee 10830
119.	<i>Codiaeum variegatum</i> (L.) Rumph. ex A.Juss.; Euphorbiaceae	56	21.05.1975	S.K. Das 12866
120.	<i>Codiaeum variegatum</i> (L.) Rumph. ex A.Juss.; Euphorbiaceae	60	07.02.1966	s.coll. 2793
121.	<i>Combretum contractum</i> Engl. & Diels [= <i>Combretum multiflorum</i> Pamp.]; Combretaceae	12	04.04.1973	R. Dutta 12133 (2)
122.	<i>Commelina undulata</i> R. Br.; Commelinaceae	60	28.11.1967	N.P. Kamble 4527 (2)
123.	<i>Congea tomentosa</i> Roxb.; Lamiaceae	17	19.01.1977	M. Chakraborty 20081 (2)
124.	<i>Cordia tomentosa</i> (Lam.) Schult. [= <i>Cordia aubletii</i> DC.]; Boraginaceae	18	13.12.1968	s.coll. 10808
125.	<i>Couroupita guianensis</i> Aubl.; Lecythidaceae	18	03.12.1979	N. Dutta 14435 (3)
126.	<i>Crescentia cujete</i> L.; Bignoniaceae	18	27.04.1977	M.Chakravarty 13748
127.	<i>Crotalaria retusa</i> L.; Fabaceae	8	23.08.1969	s.coll. 10722
128.	<i>Crotalaria retusa</i> L.; Fabaceae	8	08.01.1969	s.coll. 10821

(Continued)

S.N.	Name of Taxon; Family	Haploid Chromosome count	Date of collection	Counted by and field no. (no. of specimens)
129.	Crotalaria retusa L.; Fabaceae	8	03.09.1966	<i>s.coll.</i> 1752 (2)
130.	Crotalaria spectabilis Roth.; Fabaceae	8	15.01.1980	A. Sinha 14481 (2)
131.	Crotalaria prostrata Willd. [= <i>Crotalaria prostrata</i> Roxb.]; Fabaceae	8	16.11.1979	D. Hazra 14075 (2)
132.	Crotalaria spectabilis Roth [= <i>Crotalaria sericea</i> Retz.]; Fabaceae	8	25.09.1974	R. Dutta 12929
133.	Crotalaria spectabilis Roth; Fabaceae	8	27.11.2015	A.K. Verma& M Mishra 38105(2)
134.	Crotalaria spectabilis Roth; Fabaceae	8	27.11.2015	A.K. Verma& M Mishra 38106 (2)
135.	Crotalaria spectabilis Roth; Fabaceae	8	27.11.2015	A.K. Verma& M Mishra 38107(2)
136.	Croton klotzschianus (Wight) Thwaites; Euphorbiaceae	10	25.09.1966	<i>s.coll.</i> 2329
137.	Cryptocoryne ciliata (Roxb.) Fisch. ex Wydler; Araceae	11	21.08.1974	U. Chatterjee 12903 (4)
138.	Cryptocoryne spiralis (Retz.) Fisch. ex Wydler; Araceae	42*	07.12.1971	<i>s.coll.</i> 11705
139.	Cryptostegia grandiflora Roxb. ex R.Br. [= <i>Cryptostegia grandiflora</i> Br.]; Asclepiadaceae	12	28.05.1969	<i>s.coll.</i> 10880
140.	Cullen corylifolium (L.) Medik. [= <i>Psoralea corylifolia</i> L.]; Fabaceae	22	15.01.1980	A. Sinha 14480 (2)
141.	Curculigo orchioidea Gaertn; Hypoxidaceae	18	30.08.1974	U. Chatterjee 12362 (2)
142.	Cyanthillium cinereum (L.) H.Rob. [= <i>Vernonia cinerea</i> (L.) Less.]; Asteraceae	9	25.10.1978	D. Hazra 14232 (2)
143.	Cyanthillium cinereum (L.) H.Rob. [= <i>Vernonia cinerea</i> (L.) Less.]; Asteraceae	9	20.11.1984	D. Hazra 411 (2)
144.	Cyanthillium cinereum (L.) H.Rob. [= <i>Vernonia cinerea</i> (L.) Less.]; Asteraceae	9	20.01.1978	<i>s.coll.</i> 13888
145.	Cyanthillium cinereum (L.) H.Rob. [= <i>Vernonia cinerea</i> (L.) Less.]; Asteraceae	9	17.02.1978	<i>s.coll.</i> 13935
146.	Cyanthillium cinereum (L.) H.Rob. [= <i>Vernonia cinerea</i> (L.) Less.]; Asteraceae	9	13.02.1968	<i>s.coll.</i> 4529 (2)
147.	Cymbidium aloifolium (L.) Sw.; Orchidaceae	20	11.04.1978	N. Dutta 21037
148.	Cymbidium aloifolium (L.) Sw.; Orchidaceae	20	24.05.1975	N. Dutta 12398
149.	Cynodon dactylon (L.) Pers.; Poaceae	18	20.07.1978	<i>s.coll.</i> 14108
150.	Cyperus flabelliformis Rottb.; Cyperaceae	16*	24.12.1975	U. Chatterjee 13341 (2)
151.	Cyperus haspan L.; Cyperaceae	8	28.11.1976	S. K. Das 13710
152.	Cyperus rotundus L.; Cyperaceae	13	05.07.1975	S. Das 13023
153.	Datura suaveolens (Humb. & Bonpl. Ex Willd) Bercht. & J.Presl; Solanaceae	12	30.3.1974	N. Dutta 12347
154.	Dendrobium aphyllum (Roxb.) C.E.C.Fisch. [= <i>Dendrobium pierardii</i> Roxb. ex Hook.]; Orchidaceae	19	30.04.1978	N. Dutta 21046
155.	Dendrophthoe falcata (L. f.) Ettingsh; Loranthaceae	9	11.04.1978	N. Dutta 21036
156.	Dendrophthoe falcata (L. f.) Ettingsh; Loranthaceae	9	17.01.1976	U. Chatterjee 13344 (2)
157.	Derris scandens (Roxb.) Benth; Leguminosae	11	27.07.1979	N Dutta 14464
158.	Desmodium gangeticum (L.) DC.; Fabaceae	11	<i>s.d.</i>	N. Dutta 10577 (Continued)

S.N.	Name of Taxon; Family	Haploid Chromosome count	Date of collection	Counted by and field no. (no. of specimens)
159.	<i>Desmodium gangeticum</i> (L.) DC.; Fabaceae	11	04.11.1969	C. Paul 10756
160.	<i>Desmodium gangeticum</i> (L.) DC.; Fabaceae	11	28.12.1967	U. Chatterjee 10611
161.	<i>Desmodium gangeticum</i> (L.) DC.; Fabaceae	11	07.11.1978	C. Paul 14302 (2)
162.	<i>Desmos chinensis</i> Lour.; Annonaceae	8*	26.03.1976	S. K. Das 20010 (2)
163.	<i>Dichanthium annulatum</i> (Forssk) Stapf.; Poaceae	10	20.03.1975	s.coll. 12947
164.	<i>Dicliptera burmanni</i> Nees; Acanthaceae	27* (2n+1)	25.10.1978	S. K. Das 14233 (3)
165.	<i>Digitaria ciliaris</i> (Retz.) Koeler [= <i>Digitaria adscendens</i> (HBK) Henr.]; Poaceae	27	11.07.1975	s.coll. 13061
166.	<i>Dimocarpus longan</i> Lour. [= <i>Euphoria longaua</i> Lamk.]; Sapindaceae	15	09.03.1970	s.coll. 21116
167.	<i>Dodonaea viscosa</i> (L.) Jacq.; Sapindaceae	14	01.03.1974	N. Dutta 12332
168.	<i>Dracaena angustifolia</i> (Medik.) Roxb.; Asparagaceae	20	22.02.1979	D. Hazra 14282
169.	<i>Ecbolium ligustrinum</i> (Vahl) Vollesen [= <i>Ecbolium linneanum</i> Kurz]; Acanthaceae	18	s.d.	S. K. Das 14098 (3)
170.	<i>Ecbolium ligustrinum</i> (Vahl) Vollesen [= <i>Ecbolium linneanum</i> Kurz]; Acanthaceae	18	s.d.	S. K. Das 14051 (2)
171.	<i>Eclipta prostrata</i> (L.) L. [= <i>Eclipta alba</i> (L.) Hassk.]; Asteraceae	11	13.07.1978	s.coll. 14106
172.	<i>Eclipta prostrata</i> (L.) L. [= <i>Eclipta alba</i> (L.) Hassk.]; Asteraceae	11	19.04.1978	M. Chakraborty 567
173.	<i>Ehretia acuminata</i> R. Br.; Boraginaceae	12	26.02.1976	S. K. Das 21029
174.	<i>Ehretia acuminata</i> R. Br.; Boraginaceae	18*	04.03.1975	s.coll. 12936
175.	<i>Eichhornia crassipes</i> (Mart.) Solms; Pontaderiaceae	16	16.01.1974	M.C. 12191
176.	<i>Elephantopus scaber</i> L.; Asteraceae	11	10.07.1978	U. Chatterjee 14007 (2)
177.	<i>Elephantopus scaber</i> L.; Asteraceae	11	10.09.1978	U. Chatterjee 14015 (2)
178.	<i>Elephantopus scaber</i> L.; Asteraceae	11	28.10.1975	U. Chatterjee 12625
179.	<i>Eleusine indica</i> (L.) Gaertn.; Poaceae	9	18.07.1975	s.coll. 13096
180.	<i>Eleusine indica</i> (L.) Gaertn.; Poaceae	9	13.07.1978	s.coll. 14104 (2)
181.	<i>Emilia sonchifolia</i> (L.) DC.; Asteraceae	5	18.06.1976	N. Dutta 12670
182.	<i>Eranthemum pulchellum</i> Andrews [= <i>Pseuderanthemum bicolor</i> (Schrunk) Radlk. ex Lindau]; Acanthaceae	21	s.d.	S. K. Das 14813 (2)
183.	<i>Eranthemum pulchellum</i> Andrews [= <i>Daidalocanthus nervosum</i> (Vahl) T. Andr.]; Acanthaceae	21	s.d.	S. K. Das 14098 (3)
184.	<i>Eranthemum pulchellum</i> Andrews [= <i>Daidalocanthus purpurecence</i> (Wall ex. Nees) T. Anderson]; Acanthaceae	21	s.d.	S. K. Das 14087 (2)
185.	<i>Eulophia graminea</i> Lindl.; Orchidaceae	22*	11.04.1978	N. Dutta 21038
186.	<i>Euphorbia antiquorum</i> L.; Euphorbiaceae	20	12.02.1966	s.coll. 1777
187.	<i>Euphorbia splendens</i> Boj ex Hook. var. <i>prostrata</i> Euphorbiaceae	20 *	14.01.1971	s.coll. 11408
188.	<i>Euphorbia pulcherrima</i> Willd. ex Klotzsch [= <i>Poinsettia pulcherrima</i> R. Grah.]; Euphorbiaceae	14	16.11.1964	N. Dutta 9582 (2)
189.	<i>Excoecaria cochinchinensis</i> Lour. [= <i>Excoecaria bicolor</i> (Hassk.) Zoll. ex Hassk.]; Euphorbiaceae	11	s.d.	s.coll. 9590 (2)

(Continued)

S.N.	Name of Taxon; Family	Haploid Chromosome count	Date of collection	Counted by and field no. (no. of specimens)
190.	Ficus drupacea Thunb [= <i>Ficus mysorensis</i> Heyne var. Subrepanda]; Moraceae	13	01.12.1978	N. Dutta 14411 (2)
191.	Filicium decipiens (Wight & Arn.) Thwaites ; Sapindaceae	16	24.09.1978	N. Dutta 21095 (2)
192.	Fimbristylis complanata Link.; Cyperaceae ;	10	04.10.1976	s.coll. 11619 (2)
193.	Fimbristylis ferruginea (L.) Vahl; Cyperaceae	10	24.08.1977	s.coll. 13851
194.	Fimbristylis dichotoma (L.) Vahl [= <i>Fimbristylis diphylla</i> Vahl]; Cyperaceae	10	02.09.1977	S. K. Das 13852
195.	Fimbristylis ovata (Burm.f.) J.Kern [= <i>Fimbristylis monostachya</i> Hassk.]; Cyperaceae	10	s.d.	S. K. Das 11620 (2)
196.	Flueggea virosa (Roxb. ex Willd.) Royle [= <i>Flueggia microcarpa</i> Bl.]; Phyllanthaceae	13	03.06.1964	s.coll. 9622
197.	Flueggea virosa (Roxb. ex Willd.) Royle [= <i>Securinea virosa</i> (Willd.) Pax and Hoffm.]; Phyllanthaceae	12*	27.05.1970	s.coll. 21150
198.	Gigantochloa macrostachya Kurz.; Poaceae	18*	24.12.1975	s.coll. 13342 (3)
199.	Glinus lotoides L. [= <i>Mollugo hirta</i> Thunb.]; Molluginaceae	18	07.05.1975	S. K. Das 12839
200.	Glinus oppositifolius (L.) Aug.DC. [= <i>Mollugo spergula</i> L.]; Molluginaceae	18	06.04.1963	K. Ghosh 4637 (2)
201.	Gliricidia sepium (Jacq.) Walp. [= <i>Gliricidia sepium</i> (Jacq) Stend]; Fabaceae	11	21.03.1978	N. Dutta 13959
202.	Gliricidia sepium (Jacq.) Walp. [= <i>Gliricidia sepium</i> (Jacq) Stend]; Fabaceae	11	09.03.1978	N. Dutta 13937
203.	Gloriosa superba L.; Colchicaceae	11	s.d.	s.coll. 12355
204.	Gmelina philippensis Cham. [= <i>Gmelina hystrix</i> Kurz.]; Lamiaceae	19	10.05.1977	U. Chatterjee 13760
205.	Goniothalamus macranthus (Kurz) Boerl.; Annonaceae	8*	28.03.77	S. K. Das 13723
206.	Grangea maderaspatana (L.) Poir.; Asteraceae	9	30.01.1980	D. Hazra 14096 (2)
207.	Grewia abutilifolia Vent. ex Juss; Malvaceae	9	11.01.1980	N.Dutta 11476
208.	Grewia abutilifolia Vent. ex Juss; Malvaceae	9	28.04.1969	N.Dutta 10861
209.	Habranthus robustus Herb. ex Sweet [= <i>Zeyphyranthus robusta</i> Herb.]; Amaryllidaceae	12	29.03.1974	N.Dutta 12346
210.	Habranthus tubispathus (L'Hér.) Traub [= <i>Zeyphyranthus tubispatha</i> Herb.]; Amaryllidaceae	17*	10.07.1964	N. Dutta 12368
211.	Haematoxylon compachianum L.; Fabaceae	11*	24.01.1973	R.Dutta 11984
212.	Hamelia patens Jacq.; Rubiaceae	12	08.05.1969	U. Chatterjee 10868
213.	Harpullia cupanoides Roxb.; Sapindaceae	15	07.11.1978	N. Dutta 21097 (2)
214.	Heliconia caribaea Lam.; Heliconiaceae	11	01.03.1964	s.coll. 9841
215.	Heliconia psittacorum L.f. ; Heliconiaceae	12	09.04.1975	U. Chatterjee 12970
216.	Helicteres hirsuta Lour.; Malvaceae	10	11.06.1968	s.coll. 10648
217.	Helicteres hirsuta Lour.; Malvaceae	10	05.09.1968	s.coll. 10675
218.	Helicteres isora L.; Malvaceae	9	25.04.1975	S.K.Das 12831
219.	Hemigraphis hirta (Vahl) T. Anderson; Acanthaceae	15	s.d.	S. K. Das 14230 (2)
220.	Hemigraphis alternata (Burm.f.) T.Anderson [= <i>Ruellia colorata</i> Bl.]; Acanthaceae	17*	s.d.	S. K. Das 14366 (2)

(Continued)

S.N.	Name of Taxon; Family	Haploid Chromosome count	Date of collection	Counted by and field no. (no. of specimens)
221.	<i>Hibiscus cannabinus</i> L.; Malvaceae	18	18.09.1970	s.coll. 10490 (3)
222.	<i>Hibiscus cannabinus</i> L.; Malvaceae	18	06.10.1970	s.coll. 10497 (3)
223.	<i>Hibiscus cannabinus</i> L.; Malvaceae	18	31.10.1970	s.coll. 10499
224.	<i>Hibiscus ludwigii</i> Eckl. & Zeyh.; Malvaceae	4n=40*	28.11.1967	s.coll. 4544 (4)
225.	<i>Hibiscus ludwigii</i> Eckl. & Zeyh.; Malvaceae	40	04.11.1968	s.coll. 10488 (3)
226.	<i>Hibiscus mutabilis</i> L.; Malvaceae	46	04.11.1969	s.coll. 10452
227.	<i>Hibiscus radiatus</i> Cav.; Malvaceae	36	15.10.1968	s.coll. 4565 (4)
228.	<i>Hibiscus radiatus</i> Cav.; Malvaceae	36	25.10.1969	s.coll. 10447 (2)
229.	<i>Hibiscus sabdariffa</i> L.; Malvaceae	36	07.11.1966	s.coll. 21562
230.	<i>Hibiscus tiliaceus</i> L. var. <i>tiliaceus</i> L.; Malvaceae	46	20.05.1966	s.coll. 9987
231.	<i>Hibiscus tiliaceus</i> L. var. <i>tiliaceus</i> L.; Malvaceae	46	15.05.1965	s.coll. 9877 (2)
232.	<i>Hibiscus tiliaceus</i> L. var. <i>tiliaceus</i> L.; Malvaceae	46	20.05.1966	s.coll. 9982 (3)
233.	<i>Hibiscus tiliaceus</i> L. var. <i>tiliaceus</i> L.; Malvaceae	46	23.06.1970	s.coll. 10480 (2)
234.	<i>Hibiscus tiliaceus</i> L. var. <i>tiliaceus</i> L.; Malvaceae	46*	23.06.1970	s.coll. 10478
235.	<i>Hibiscus tiliaceus</i> L. var. <i>tiliaceus</i> L.; Malvaceae	46	26.11.1969	s.coll. 10456 (2)
236.	<i>Hibiscus tiliaceus</i> L. var. <i>tiliaceus</i> L.; Malvaceae	46	07.05.1965	s.coll. 9871 (2)
237.	<i>Hibiscus vitifolius</i> L.; Malvaceae	17	17.03.1966	s.coll. 9973
238.	<i>Hibiscus vitifolius</i> L.; Malvaceae	17	20.05.1966	s.coll. 9985 (2)
239.	<i>Hibiscus vitifolius</i> L.; Malvaceae	17	30.03.1978	s.coll. 13986
240.	<i>Hopea odorata</i> Roxb.; Dipterocarpaceae	7	15.01.1980	N. Dutta 14478
241.	<i>Hoya parasitica</i> Wall. ex Traill [= <i>Hoya parasitica</i> Wall.]; Apocynaceae	11	08.05.1973	s.coll. 12301
242.	<i>Hydrilla verticillata</i> (L.f.) Royle [= <i>Hydrilla verticillata</i> Casp.]; Hydrocharitaceae	12	18.04.1968	N. Dutta 10564
243.	<i>Hygrophila auriculata</i> (Schumach.) Heine [= <i>Hygrophila spinosa</i> T. And.]; Acanthaceae	16	s.d.	S. K. Das 14061(4)
244.	<i>Hygrophila polysperma</i> (Roxb.) T.Anderson [= <i>Hygrophila polysperma</i> T. Anderson.]; Acanthaceae	16	s.d.	S. K. Das 14062 (2)
245.	<i>Hylocereus lemairei</i> (Hook.) Britton and Ross; Cactaceae	11	14.06.1973	U Chatterjee 12302
246.	<i>Hyptianthera stricta</i> (Roxb. ex Schult.) Wight & Arn.; Rubiaceae	24*	16.11.1973	U. Chatterjee 12305 (2)
247.	<i>Hyptis aristata</i> Benth.; Lamiaceae	9*	s.d.	S. K. Das 14362
248.	<i>Iberis odorata</i> L. [= <i>Iberis odorata</i> Hort.]; Brassicaceae	9*	08.02.1979	M. Chkarobarty 14570 (2)
249.	<i>Indigofera tinctoria</i> L.; Fabaceae	8	20.11.1974	U. Chatterjee 12371
250.	<i>Iris domestica</i> (L.) Goldblatt & Mabb. [= <i>Belamcanda chinensis</i> DC.]; Iridaceae	16	02.07.1970	U. Chatterjee 21161
251.	<i>Isodon coetsa</i> (Buch.-Ham. ex D.Don) Kudô [= <i>Plectranthus coetsa</i> Ham.]; Lamiaceae	12	08.02.1979	C. R. Paul 14565 (2)
252.	<i>Ixora nigricans</i> R.Br. ex Wight & Arn.; Rubiaceae	11	03.06.1964	s.coll. 9625
253.	<i>Ixora undulata</i> Roxb.; Rubiaceae	11	14.06.1966	s.coll. 2489

(Continued)

S.N.	Name of Taxon; Family	Haploid Chromosome count	Date of collection	Counted by and field no. (no. of specimens)
254.	Jasminum laurifolium var. laurifolium [= <i>Jasminum nitidum</i> S. Kan.]; Oleaceae	3n=39*	23.11.1978	N. Dutta 21100 (2)
255.	Jatropha multifida L.; Euphorbiaceae	11	02.06.1966	s.coll. 1742
256.	Jatropha integerrima Jacq. [= <i>Jatropha pandurifolia</i> Andrews]; Euphorbiaceae	11	07.11.1975	D. Sarkar 13316
257.	Jatropha integerrima Jacq. [= <i>Jatropha pandurifolia</i> Andrews]; Euphorbiaceae	11	06.05.1964	s.coll. 9779
258.	Joannesia princeps Vell.; Euphorbiaceae	11	s.d.	N. Dutta 21055
259.	Justicia betonica L.; Acanthaceae	17	s.d.	S. K. Das 14819 (2)
260.	Justicia betonica L.; Acanthaceae	17	s.d.	S. K. Das 14700 (3)
261.	Justicia brandegeana Wassh. & L.B.Sm. [= <i>Belperone guttata</i> Brand.]; Acanthaceae	14	s.d.	S. K. Das 14053 (2)
262.	Justicia brandegeana Wassh. & L.B.Sm. [= <i>Belperone guttata</i> Brand.]; Acanthaceae	14	s.d.	S. K. Das 14213 (2)
263.	Justicia brasiliana Roth [= <i>Dianthera nodosa</i> Benth. & Hook.]; Acanthaceae	16	13.2.1968	s.coll. 4528
264.	Justicia brasiliana Roth [= <i>Dianthera nodosa</i> Benth. & Hook.]; Acanthaceae	18*	s.d.	S. K. Das 14097
265.	Justicia gendarussa Burm.f. [= <i>Justicia gendarussa</i> Linn. f.]; Acanthaceae	15	s.d.	S. K. Das 14805 (2)
266.	Justicia gendarussa Burm.f. [= <i>Justicia gendarussa</i> Linn. f.]; Acanthaceae	15	s.d.	S. K. Das 14215 (3)
267.	Justicia japonica Thunb. [= <i>Justicia simplex</i> Don.]; Acanthaceae	9	s.d.	S. K. Das 13952
268.	Justicia japonica Thunb. [= <i>Justicia simplex</i> Don.]; Acanthaceae	9	06.07.1967	s.coll. 4513 (2)
269.	Justicia japonica Thunb. [= <i>Justicia simplex</i> Don.]; Acanthaceae	9	16.06.1975	S. K. Das 12894
270.	Justicia japonica Thunb. [= <i>Justicia simplex</i> Don.]; Acanthaceae	9	s.d.	S. K. Das 13917
271.	Justicia prostrata Gamble [= <i>Justicia prostrata</i> (Clarke) Gamble]; Acanthaceae	9	06.02.1978	S. K. Das 13920
272.	Justicia tinctoriella Bennet & Raizada [= <i>Jacobinaia tinctoria</i> Hensl.] Acanthaceae	16*	s.d.	S. K. Das 14697 (3)
273.	Justicia ventricosa Wall. ex Hook. f. [= <i>Justicia ventricosa</i> Wall.]; Acanthaceae	16*	s.d.	S. K. Das 14095 (2)
274.	Justicia ventricosa Wall. ex Hook. f. [= <i>Justicia ventricosa</i> Wall.]; Acanthaceae	16	s.d.	S. K. Das 14278 (3)
275.	Kyllinga brevifolia Rottb.; Cyperaceae	48*	15.09.1975	s.coll. 13165
276.	Launaea aspleniifolia (Willd.) Hook.f.; Asteraceae	6	21.03.1972	s.coll. 11743
277.	Leea rubra Blume ex Spreng; Vitaceae	12	19.07.1978	N. Dutta 21039
278.	Leea macrophylla Roxb. ex Hornem. [= <i>Leea robusta</i> Roxb.]; Vitaceae	12	09.08.1979	N. Dutta 14584 (2)
279.	Leucaena leucocephala (Lam.) de Wit [= <i>Leucaena glauca</i> Benth.]; Fabaceae	56*	13.02.1968	N P Kamble 4530 (3)
280.	Licuala spinosa Wurmbe.; Arecaceae	14	25.01.1977	N. Dutta 12698 (2)
281.	Lindernia multiflora (Roxb.) Mukherjee; Linderniaceae	10	27.07.1968	s.coll. 10664

(Continued)

S.N.	Name of Taxon; Family	Haploid Chromosome count	Date of collection	Counted by and field no. (no. of specimens)
282.	Lindernia multiflora (Roxb.) Mukherjee; Linderniaceae	10	14.08.1970	<i>s.coll.</i> 21191
283.	Lindernia crustacea (L.) F.Muell. [= <i>Vandellia crustacea</i> Benth.]; Linderniaceae	21	27.07.1968	<i>s.coll.</i> 10660
284.	Litsea monopetala (Roxb.) Pers.; Lauraceae	12	22.09.1978	N. Dutta 21094 (2)
285.	Ludwigia octovalvis (Jacq.) P.H. Raven; Onagraceae	16	03.07.1979	<i>s.coll.</i> 14433 (2)
286.	Ludwigia octovalvis (Jacq.) P.H. Raven; Onagraceae	16	04.07.1979	<i>s.coll.</i> 14455
287.	Lupinus elegans Kunth; Fabaceae	24	06.02.1978	N. C. Saha 13915
288.	Macadamia ternifolia F.Muell. ; Proteaceae	18	<i>s.d.</i>	N. Dutta 12342
289.	Macrosolen cochinchinensis (Lour.) Tiegh. [= <i>Macrosolen cochinchinensis</i> (Lour.) var. <i>tiaga</i>], Host- <i>Ardisia solanacea</i> (Poir) Roxb.]; Loranthaceae	12	07.03.1979	N. Dutta 14430 (2)
290.	Macrosolen cochinchinensis (Lour.) Tiegh. [= <i>Macrosolen cochinchinensis</i> (Lour.) var. <i>tiaga</i>], Host- <i>Chrysophyllum cainito</i> L.]; Loranthaceae	12	29.01.1979	N. Dutta 14422
291.	Macrosolen cochinchinensis (Lour.) Tiegh. [= <i>Macrosolen cochinchinensis</i> (Lour.) var. <i>tiaga</i>], Host- <i>Mimusops elengi</i> L.]; Loranthaceae	12	11.02.1979	N. Dutta 14425
292.	Macrosolen cochinchinensis (Lour.) Tiegh. [= <i>Macrosolen cochinchinensis</i> (Lour.) var. <i>tiaga</i>], Host- <i>Memecylon edule</i> L.]; Loranthaceae	12	07.02.1979	N. Dutta 14424
293.	Macrosolen cochinchinensis (Lour.) Tiegh. [= <i>Macrosolen cochinchinensis</i> (Lour.) var. <i>tiaga</i>], Host- <i>Ropalocarpus lucidus</i> Bojer; Loranthaceae	12	06.03.1979	N. Dutta 14429
294.	Macrosolen cochinchinensis (Lour.) Tiegh.; Loranthaceae	12	21.04.1978	N. Dutta 21043 (2)
295.	Macrosolen cochinchinensis (Lour.) Tiegh.; Loranthaceae	12	11.04.1978	N. Dutta 21039
296.	Macrosolen cochinchinensis (Lour.) Tiegh.; Loranthaceae	12	21.04.1978	N. Dutta 21044
297.	Macrosolen cochinchinensis (Lour.) Tiegh.; Loranthaceae	12	21.04.1978	N. Dutta 21042
298.	Macrosolen cochinchinensis (Lour.) Tiegh.; Loranthaceae ;	12	21.04.1978	N. Dutta 21043(2)
299.	Magnolia figo (Lour.) DC. [= <i>Michelia fuseata</i> Bl.]; Magnoliaceae	19	24.08.1978	N. Dutta 21086
300.	Magnolia hodgsonii (Hook.f. & Thomson) H.Keng [= <i>Talauma hodgsoni</i> Hk. F.]; Magnoliaceae	19	09.07.1973	N. Dutta 21067
301.	Mallotus philippensis (Lam.) Muell. Arg.; Euphorbiaceae	11	16.11.1964	N. Dutta 9588 (2)
302.	Malvaviscus arboreus Cav. var. <i>arboreus</i> ; Malvaceae	28	28.11.1967	<i>s.coll.</i> 4526 (4)
303.	Malvaviscus arboreus Cav. var. <i>arboreus</i> ; Malvaceae	28	17.03.1966	<i>s.coll.</i> 9988 (3)
304.	Malvaviscus arboreus Cav. var. <i>arboreus</i> ; Malvaceae	28	07.05.1965	<i>s.coll.</i> 9870 (2)
305.	Malvaviscus arboreus Cav. var. <i>arboreus</i> ; Malvaceae	28	07.05.1965	<i>s.coll.</i> 9870
306.	Marsdenia floribunda (Brongn.) Schltr. [= <i>Stephanotis floribunda</i> R. Br.]; Asclepiadaceae	11	20.07.1978	U. Chatterjee 14010
307.	Mazus pumilus (Burm.f.) Steenis [= <i>Mazus japonicus</i> (Thunb.) Kuntze.]; Phrymaceae	20	28.12.1967	<i>s.coll.</i> 10612

(Continued)

S.N.	Name of Taxon; Family	Haploid Chromosome count	Date of collection	Counted by and field no. (no. of specimens)
308.	Mecardonia procumbens (Mill.) Small [= <i>Macardonia dianthera</i> (SW.) Pennell.]; Plantaginaceae	11	22.10.1967	<i>s.coll.</i> 10394
309.	Melochia corchorifolia L.; Malvaceae	14*	19.10.1987	N. Dutta 547 (2)
310.	Memecylon edule Roxb.; Melastomataceae	7	16.03.1972	<i>s.coll.</i> 14293
311.	Mikania scandens (L.) Willd.; Asteraceae	19	20.11.1984	<i>s.coll.</i> 408 (2)
312.	Miliusa longiflora (Hk.f. et Thoms) J Sinclair; Annonaceae	9*	17.03.1979	N. Dutta 14445 (2)
313.	Millettia thonningii (Schum. & Thonn.); Fabaceae	11	16.04.1977	U Chatterjee 13742
314.	Mimosa pudica L.; Fabaceae	26	04.07.1968	U Chatterjee 10656
315.	Mnesithea laevis (Retz.) Kunth ; Poaceae	9	12.09.1975	<i>s.coll.</i> 13161
316.	Molineria capitulata (Lour.) Herb [= <i>Curculigo recurvata</i> Dryand.]; Hypoxidaceae	9	19.01.1977	D. Sarkar 20084
317.	Molineria capitulata (Lour.) Herb. [= <i>Molineria recurvata</i> (Dryand) Nel.]; Hypoxidaceae	9	21.08.1979	U. Chatterjee 12910
318.	Monochoria hastata (L.) Solms [= <i>Monochoria hastaefolia</i> Persl.]; Pontaderiaceae	14	16.08.1965	K. Mitra 9687 (2)
319.	Monochoria hastata (L.) Solms [= <i>Monochoria hastaefolia</i> Persl.]; Pontaderiaceae	14	28.05.1969	U. Chatterjee 10877
320.	Monochoria hastata (L.) Solms [= <i>Monochoria hastaefolia</i> Persl.]; Pontaderiaceae	14	05.09.1968	U. Chatterjee 10676
321.	Monochoria hastata (L.) Solms [= <i>Monochoria hastaefolia</i> Persl.]; Pontaderiaceae	14	15.09.1966	U. Chatterjee 1756 (2)
322.	Morinda citrifolia L.; Rubiaceae	22	29.05.1973	R. Dutta 12161
323.	Morinda citrifolia L.; Rubiaceae	22	21.05.1975	C. R. Paul 12857
324.	Morus indica L.; Moraceae	16*	28.02.1974	U. Chatterjee 12320 (2)
325.	Mukia maderaspatana (L.) M.Roem. [= <i>Mukia scabrella</i> Arn.]; Cucurbitaceae	12	29.05.1973	R. Dutta 12163 (2)
326.	Muntingia calabura L.; Muntingiaceae	15	15.01.1980	N.Dutta 14477 (2)
327.	Murdannia nudiflora (L.) Brenan [= <i>Murdania malabaricum</i> (L.) Santapau]; Commelinaceae	10	23.08.1969	<i>s.coll.</i> 10721
328.	Mussaenda frondosa L.; Rubiaceae	11	04.07.1968	U. Chatterjee 10650
329.	Mussaenda frondosa L.; Rubiaceae	11	28.04.1969	U. Chatterjee 10860
330.	Mussaenda frondosa L.; Rubiaceae	11	14.07.1967	U. Chatterjee 10367
331.	Mussaenda frondosa L.; Rubiaceae	11	17.07.1970	U. Chatterjee 21176
332.	Myriophyllum indicum Wight ex C.B.Clarke; Haloragaceae	7	25.11.1976	N. Dutta 13703
333.	Najas maritima Pall.; Hydrocharitaceae	24*	16.01.1974	R. Dutta 12188 (2)
334.	Najas minor All.; Hydrocharitaceae	28*	18.04.1968	<i>s.coll.</i> 10563 (2)
335.	Nelsonia canescens (Lam.) Spreng. (= <i>Nelsonia campestris</i> Br.); Acanthaceae	18*	<i>s.d.</i>	S. K. Das 14274 (2)
336.	Nelsonia canescens (Lam.) Spreng. [= <i>Nelsonia campestris</i> Br.]; Acanthaceae	14*	<i>s.d.</i>	S. K. Das 13930
337.	Nelsonia canescens (Lam.) Spreng. [= <i>Nelsonia campestris</i> Br.]; Acanthaceae	18	<i>s.d.</i>	S. K. Das 14229

(Continued)

S.N.	Name of Taxon; Family	Haploid Chromosome count	Date of collection	Counted by and field no. (no. of specimens)
338.	Nelumbo nucifera Gaertn.; Nelumbonaceae	8	15.05.1965	N. P. Kamble 9876
339.	Nelumbo nucifera Gaertn.; Nelumbonaceae	8	15.05.1965	N.P. Kamble 9896 (3)
340.	Neolamarckia cadamba (Roxb.) Bosser [= <i>Anthocephalus cadamba</i> Miq.]; Rubiaceae	22	09.06.1976	N Dutta 12669
341.	Nicotiana plumbaginifolia Viv.; Solanaceae	10	06.04.1963	s.coll. 4636 (2)
342.	Nicotiana plumbaginifolia Viv.; Solanaceae	12	22.03.1973	R. Dutta 12120 (3)
343.	Nymphoides indica (L.) R. Kuntz.; Menyanthaceae	9	27.04.1977	C. Pal 13747 (2)
344.	Oldenlandia biflora L. [= <i>Oldenlandia paniculata</i> L.]; Rubiaceae	18	05.07.1976	N.P. Kamble 4514 (2)
345.	Oldenlandia biflora L. [= <i>Oldenlandia paniculata</i> L.]; Rubiaceae	18	05.12.1967	U. Chatterjee 10606
346.	Oldenlandia biflora L. [= <i>Oldenlandia paniculata</i> L.]; Rubiaceae	18	04.04.1968	U. Chatterjee 10628 (2)
347.	Oldenlandia biflora L. [= <i>Oldenlandia paniculata</i> L.]; Rubiaceae	18	29.10.1979	D. Hazara 14046
348.	Oplismenus burmannii (Retz.) P.Beauv.; Poaceae	9	24.11.1978	s.coll. 14265 (2)
349.	Ottelia alismoides (L.) Pers.; Hydrocharitaceae	22	07.06.1965	N. P. Kamble 9864
350.	Paspalidium flavidum (Retz.) A. Camus; Poaceae	27	21.05.1975	s.coll. 12862
351.	Pedilanthus tithymaloides L.; Euphorbiaceae	18	16.11.1964	s.coll. 9592 (3)
352.	Peliosanthes griffithii Baker; Asparagaceae	18	s.d.	s.coll. 12638 (2)
353.	Peliosanthes teta subsp. humilis (Andrews) Jessoph ex Gandhi [= <i>Peliosanthes violacea</i> Wall.]; Asparagaceae	18	20.01.1976	s.coll. 12639
354.	Pentas lanceolata subsp. cymosa (Klotzsch) Verdc. [= <i>Pentas carnea</i> Benth]; Rubiaceae	10	27.07.1968	U. Chatterjee 10659 (2)
355.	Pentas lanceolata subsp. cymosa (Klotzsch) Verdc. [= <i>Pentas carnea</i> Benth]; Rubiaceae	10	23.05.1978	M. Chkrabarty 11475
356..	Pereskia sacharosa Griseb.; Cactaceae	11	02.06.1978	N Dutta 21062
357.	Petrea volubilis L.; Verbenaceae	17	12.02.1976	D. Sarkar 13360
358.	Phaulopsis dorsiflora (Retz.) Santapau; Acanthaceae	32*	s.d.	S. K. Das 14811 (2)
359.	Phoenix peludosa Roxb.; Arecaceae	18	21.12.1976	N. Dutta 12692
360.	Phoenix reclinata Jacq.; Arecaceae	18	21.12.1976	s.coll. 12691
361.	Phyllanthus urinaria L.; Phyllanthaceae	26	03.06.1964	s.coll. 9630 (2)
362.	Phyllanthus urinaria L.; Phyllanthaceae	26	23.07.1963	s.coll. 9458
363.	Phyllanthus acidus (L.) Skeels [= <i>Cicca acida</i> (L.) Merr.]; Phyllanthaceae	13	04.02.1972	U. Chatterjee 11730
364.	Phyllanthus reticulatus Poir. [= <i>Kirganelia reticulata</i> (Poir.) Baill.= <i>Phyllanthus reticulatus</i> Poir.]; Phyllanthaceae	11*	03.06.1964	s.coll. 9619 (2)
365.	Phyllarthron comorense DC.; Bignoniaceae	18*	20.03.1974	U. Chatterjee 12340
366.	Physalis minima L.; Solanaceae	24	03.06.1964	s.coll. 9623
367.	Pistia stratiotes L.; Aroideae;	14	07.06.1969	U. Chatterjee 10883 (2)
368.	Polyalthia suberosa (Roxb.) Thwaites [= <i>Polyalthia suberosa</i> Benth. & Hk.f. ex Hk. F.]; Annonaceae	9	20.03.1977	S. K. Das 13387
369.	Portlandia grandiflora L.; Rubiaceae	11	08.06.1978	C. Paul 11477

(Continued)

S.N.	Name of Taxon; Family	Haploid Chromosome count	Date of collection	Counted by and field no. (no. of specimens)
370.	Potamogeton crispus L.; Potamogetonaceae	22*	01.03.1974	U. Chatterjee 12333 (3)
371	Prosopis juliflora (Sw.) Dc.; Fabaceae	14	10.10.1984	S. Roy 401
372.	Pseudo-elephantopus spicatus (Juss ex. Aubl.) Rohr.; Asteraceae	13	10.07.1978	U. Chatterjee 14008 (2)
373.	Pterocarpus indicus Willd.; Fabaceae	10	21.05.1975	R Dutta 12859
374.	Ptychosperma macarthurii (H. Wendl. ex H.J. Veitch) H. Wendl. ex Hook. f.; Arecaceae	16	27.11.1978	N. Dutta 14404 (2)
375.	Putranjiva roxburghii Wall.; Putranjivaceae	20	14.11.1964	s.coll. 9597 (2)
376.	Pycreus flavescens (L.) P. Beauv. ex Rchb. [= <i>Cyperus flavescens</i> L.]; Cyperaceae	35	02.09.1975	S. Das 13159
377.	Pycreus polystachyos (Rottb.) P. Beauv. [= <i>Cyperus polystachyus</i> Jungh.]; Cyperaceae	54	07.11.1975	S. Das 13317 (2)
378.	Rauvolfia sumatrana Jack [= <i>Rauvolfia reflexa</i> T. & B.]; Apocynaceae	88	17.11.1969	s.coll. 12030
379.	Rauvolfia serpentina (L.) Benth. ex Kurz.; Apocynaceae	11	17.11.1969	s.coll. 12026
380.	Reutealis trisperma (Blanco) Airy Shaw [= <i>Aleurites trispermus</i> Blanco]; Euphorbiaceae	11	16.11.1964	s.coll. 9587 (2)
381.	Rhapis humilis Blume; Arecaceae	18	10.09.1977	s.coll. 21033
382.	Rhopaloblaste agusta (Kurz.) Moore; Arecaceae	16*	20.11.1978	N. Dutta 21098 (2)
383.	Riedlea borbonica (Cav.) DC. [= <i>Melochia borbonica</i> Cav.]; Malvaceae	9	26.11.1969	s.coll. 10766
384.	Riedlea borbonica (Cav.) DC. [= <i>Melochia borbonica</i> Cav.]; Malvaceae	9	30.1.1969	s.coll. 10829
385.	Rivina humilis L.; Phytolacaceae	54	06.05.1964	s.coll. 9784
386.	Rivina humilis L.; Phytolacaceae	54	06.04.1963	s.coll. 4638 (4)
387.	Rivina humilis L.; Phytolacaceae	54	11.06.1968	s.coll. 10647
388.	Rivina humilis L.; Phytolacaceae	54	04.07.1969	s.coll. 10703
389.	Rivina humilis L.; Phytolacaceae	54	04.04.1973	R. Dutta 12146 (2)
390.	Rivina humilis L.; Phytolacaceae	54	16.10.1979	s.coll. 14385 (2)
391.	Rivina humilis L.; Phytolacaceae	54	16.10.1979	s.coll. 14387 (2)
392.	Rondeletia odorata Jacq.; Rubiaceae	11*	18.07.1966	U. Chatterjee 1716
393.	Rhopalocarpus lucidus Bojer; Sphaerosepalaceae	19	29.6.1978	N. Dutta 21064 (2)
394.	Ruellia gracilis Rusby; Acanthaceae	17*	s.d.	S. K. Das 13943 (2)
395.	Ruellia tuberosa L.; Acanthaceae	17	s.d.	S. K. Das 11454
396.	Ruellia tuberosa L.; Acanthaceae	17	s.d.	S. K. Das 11460
397.	Ruellia tuberosa L.; Acanthaceae	17	May, 1995	S. C. Roy 18739 (2)
398.	Ruellia elegans Poir. [= <i>Ruellia formosa</i> Andr.]; Acanthaceae	17	s.d.	S. K. Das 14801(5)
399.	Ruellia elegans Poir. [= <i>Ruellia formosa</i> Andr.]; Acanthaceae	17	s.d.	S. K. Das 14365 (2)
400.	Ruellia prostrata Poir. [= <i>Ruellia prostrata</i> Poir.]; Acanthaceae	34	s.d.	S. K. Das 11461
401.	Ruellia prostrata Poir. [= <i>Ruellia prostrata</i> Lamk.]; Acanthaceae	20	21.10.1978	s.coll. 14231
402.	Ruellia prostrata Poir. [= <i>Ruellia prostrata</i> Lamk.]; Acanthaceae	22	s.d.	S. K. Das 11444

(Continued)

S.N.	Name of Taxon; Family	Haploid Chromosome count	Date of collection	Counted by and field no. (no. of specimens)
403.	Ruellia tuberosa L.; Acanthaceae	17	<i>s.d.</i>	S. K. Das 11458 (2)
404.	Rumex dentatus L.; Polygonaceae	20*	20.03.1975	R. Dutta 12948 (2)
405.	Rumex dentatus L.; Polygonaceae	26	03.03.1972	N. Dutta 11737
406.	Rungia pectinata (L.) Nees; Acanthaceae	9*	01.04.2016	A.K. Verma 38108(3)
407.	Rungia pectinata (L.) Nees; Acanthaceae	9	01.04.2016	A.K. Verma 38109(4)
408.	Rungia pectinata (L.) Nees; Acanthaceae	26	<i>s.d.</i>	S. K. Das 14217 (3)
409.	Russelia sarmentosa Jacq.; Plantaginaceae	10	04.12.1969	<i>s.coll.</i> 10772
410.	Sabal minor (Jacq.) Pers. [= <i>Sabal adansonii</i> Guerns.]; Arecaceae	18	20.04.1968	<i>s.coll.</i> 10637
411.	Sagittaria sagittifolia L.; Alismataceae	11	23.08.1969	<i>s.coll.</i> 10725
412.	Sagittaria sagittifolia L.; Alismataceae	11	16.08.1965	N. Dutta 9686 (2)
413.	Salvadora persica L.; Salvadoraceae	13	20.01.1976	U. Chatterjee 12631 (2)
414.	Sanchezia nobilis Hook. f.; Acanthaceae	68	<i>s.d.</i>	S. K. Das 14351
415.	Santalum album L.; Santalaceae	10	11.07.1978	N. Dutta 21068
416.	Sapindus attenuatus Wall.; Sapindaceae	15	22.11.1978	N. Dutta 14403 (2)
417.	Sapindus emarginatus Vahl.; Sapindaceae	15	29.12.1978	N. Dutta 14416 (3)
418.	Sapindus trifolius L.; Sapindaceae	18	27.02.1974	N. Dutta 12309
419.	Sapindus mukorossi Gaertn.; Sapindaceae	18	28.02.1974	N. Dutta 12321
420.	Saraca indica L.; Fabaceae	12	25.02.1970	U Chatterjee 21102
421.	Scaevola taccada (Gaertn.) Roxb. [= <i>Scaevola koenigii</i> Vahl.]; Goodneriaceae	8	19.08.1976	U. Chatterjee 20059
422.	Schinus terebinthifolius Raddi; Anacardiaceae	14*	18.4.1978	N. C. Saha 13999
423.	Schinus terebinthifolius Raddi; Anacardiaceae	8*	25.04.1975	S. K. Das 12830
424.	Schleichera oleosa (Lour.) Merr.; Sapindaceae	15	22.07.1978	N. Dutta 21072
425.	Schoenoplectus litoralis subsp. <i>thermalis</i> (Trab.) S.S.Hooper [= <i>Scirpus subulatus</i> Vahl.]; Cyperaceae ;	10	16.07.1975	S. K. Das 13092 (2)
426.	Selenicereus grandiflorus (L.) Britton & Rose [= <i>Cereus grandiflorus</i> (L.) Mill.]; Cactaceae	11	18.02.1976	N. Dutta 12644
427.	Selenicereus grandiflorus (L.) Britton & Rose [= <i>Cereus grandiflora</i> Mill.]; Cactaceae	11	01.04.1974	N. Dutta 12348 (2)
428.	Selenicereus grandiflorus (L.) Britton & Rose [= <i>Cereus grandiflora</i> Mill.]; Cactaceae	11	25.05.1975	N. Dutta 12400 (2)
434.	Setaria barbata (Lam.) Kunth; Poaceae	28	07.12.1976	<i>s.coll.</i> 13716
435.	Shirakiopsis indica (Willd.) Esser [= <i>Sapium indicum</i> Willd.]; Euphorbiaceae	32	14.2.1966	<i>s.coll.</i> 2791 (2)
436.	Sida acuta Burm. f. [= <i>Sida acuta</i> Burm. f. subsp. <i>carpinifolia</i> (L.f.) Borss. Waalk.]; Malvaceae	14	16.06.1969	<i>s.coll.</i> 10431 (3)
437.	Sida acuta Burm. f. [= <i>Sida acuta</i> Burm. f. subsp. <i>carpinifolia</i> (L.f.) Borss. Waalk.]; Malvaceae	14	03.06.1967	<i>s.coll.</i> 4509 (3)
438.	Sida acuta Burm. f. [= <i>Sida acuta</i> Burm. f. subsp. <i>carpinifolia</i> (L.f.) Borss. Waalk.]; Malvaceae	14	03.06.1967	<i>s.coll.</i> 4506 (2)

(Continued)

S.N.	Name of Taxon; Family	Haploid Chromosome count	Date of collection	Counted by and field no. (no. of specimens)
439.	Sida acuta Burm. f. [= <i>Sida acuta</i> Burm. f. subsp. <i>carpinifolia</i> (L.f.) Borss. Waalk.]; Malvaceae	14	28.01.1965	s.coll. 9859 (2)
440.	Sida acuta Burm. f. [= <i>Sida acuta</i> Burm. f. subsp. <i>carpinifolia</i> (L.f.) Borss. Waalk.]; Malvaceae	14	20.05.1966	s.coll. 9886 (3)
441.	Sida acuta Burm. f. [= <i>Sida acuta</i> Burm. f. subsp. <i>carpinifolia</i> (L.f.) Borss. Waalk.]; Malvaceae	14	20.08.1968	s.coll. 4550 (3)
442.	Sida acuta Burm. f. [= <i>Sida acuta</i> Burm. f. subsp. <i>carpinifolia</i> (L.f.) Borss. Waalk.]; Malvaceae	14	18.09.1967	s.coll. 9579
443.	Sida acuta Burm. f. [= <i>Sida acuta</i> Burm. f. subsp. <i>carpinifolia</i> (L.f.) Borss. Waalk.]; Malvaceae	14	03.06.1967	s.coll. 4509
444.	Sida acuta Burm. f. [= <i>Sida acuta</i> Burm. f. subsp. <i>carpinifolia</i> (L.f.) Borss. Waalk.]; Malvaceae ver	14	27.08.1970	s.coll. 10485
445.	Sida acuta Burm. f. [= <i>Sida acuta</i> Burm. f. subsp. <i>carpinifolia</i> (L.f.) Borss. Waalk.]; Malvaceae	14	16.06.1969	s.coll. 10431
446.	Sida cordata (Burm.f.) Borss. Waalk.; Malvaceae	16	27.09.1969	s.coll. 10445 (4)
447.	Sida rhombifolia L.; Malvaceae	14	27.08.1970	s.coll. 10484 (2)
448.	Sida rhombifolia L.; Malvaceae	14	27.08.1970	s.coll. 10484
449.	Sida rhombifolia L.; Malvaceae	14	30.06.1969	s.coll. 10436 (3)
450.	Sida rhombifolia L.; Malvaceae	14	28.02.1967	s.coll. 21578 (2)
451.	Solanum diphyllum L.; Solanaceae	8	24.06.2015	A.K. Verma & M. Mishra 38101(2)
452.	Solanum diphyllum L.; Solanaceae	8	24.06.2015	A.K. Verma & M. Mishra 38102(2)
453.	Solanum grandiflorum Ruiz. et Pav; Solanaceae	12	08.08.1967	s.coll. 10377
454.	Solanum macranthum Dunal; Solanaceae	12	11.06.1968	s.coll. 10645
455.	Solanum seaforthianum Anderson.; Solanaceae	12	05.09.1968	s.coll. 10674
456.	Solanum seaforthianum Anderson.; Solanaceae	12	23.09.1963	s.coll. 9479
457.	Solanum seaforthianum Anderson.; Solanaceae	12	13.05.1968	s.coll. 10641
458.	Solanum torvum Sw.; Solanaceae	12	05.07.1979	D. Hazra 14369 (2)
459.	Solanum torvum Sw.; Solanaceae	12	05.07.1979	D. Hazra 14369
460.	Solanum torvum Sw.; Solanaceae	14*	04.04.1973	R. Dutta 12134 (2)
461.	Solanum aculeatissimum Jacq. [= <i>Solanum khasianum</i> Clarke]; Solanaceae	12	s.d.	s.coll. 9799 (2)
462.	Solanum americanum Mill. [= <i>Solanum nigrum</i> L.]; Solanaceae	12	21.03.1978	D. Sarkar 13956
463.	Solidago canadensis L.; Asteraceae	27*	28.08.1978	D. Hazra 14180 (2)
464.	Sonchus arvensis L.; Asteraceae	9	08.02.1979	D. Hazra 14567 (2)
465.	Sophora tomentosa L.; Fabaceae	9	10.07.1975	R. Dutta 13100
466.	Sphagneticola calendulacea (L.) Pruski [= <i>Wedalia calandulacea</i> Less.]; Asteraceae	25	20.7.1978	s.coll. 14115
467.	Sphagneticola calendulacea (L.) Pruski [= <i>Wedalia calandulacea</i> Less.]; Asteraceae	24*	29.05.1973	R. Dutta 12162

(Continued)

S.N.	Name of Taxon; Family	Haploid Chromosome count	Date of collection	Counted by and field no. (no. of specimens)
468.	Sphagneticola calendulacea (L.) Pruski [= <i>Wedalia chinensis</i> (Osbeck) Merr]; Asteraceae	15*	15.05.1965	<i>s.coll.</i> 9875 (4)
469.	Spiranthes sinensis (Pers.) Ames; Orchidaceae	15	01.03.1974	U. Chatterjee 12334
470.	Spondias pinnata (L. f.) Kurz [= <i>Spondias mangifera</i> Willd.]; Anacardaceae	16	27.02.1974	U. Chatterjee 12314 (2)
471.	Stenotaphrum dimidiatum (L.) Brongn.; Poaceae	28	02.08.1978	<i>s.coll.</i> 14124 (3)
472.	Stephania hermandifolia (Willd.) Walp.; Menispermaceae	11	17.07.1987	SC Roy 742 (2)
473.	Stereospermum chelonoides (L.f.) DC. [= <i>Stereospermum suaveolens</i> DC.]; Bignoniaceae	20	17.03.1980	N. Dutta 14490
474.	Streblus asper Lour.; Moraceae	13	12.02.1976	D. Sarkar 13361
475.	Streblus asper Lour.; Moraceae	13	24.02.1968	U. Chatterjee 10621
476.	Strobilanthes scaber Nees; Acanthaceae	16	<i>s.d.</i>	S. K. Das 14698 (3)
477.	Suregada multiflora (A.Juss.) Baill [= <i>Gelonium multiflorum</i> A. Juss.]; Euphorbiaceae	11	16.11.1964	N. Dutta 9595 (2)
478.	Suregada multiflora (A.Juss.) Baill [= <i>Gelonium multiflorum</i> A. Juss.]; Euphorbiaceae	11	16.11.1979	D. Hazra 14067 (2)
479.	Swietenia mahagoni Jacq (L.) Jacq; Meliaceae	27	29.05.1953	M. Chakraborty 12173 (2)
480.	Synedrella nodiflora (L.) Gaertn.; Asteraceae	20	25.10.1978	S. K. Das 14242 (2)
481.	Synedrella nodiflora (L.) Gaertn.; Asteraceae	20	20.07.1978	<i>s.coll.</i> 14123
482.	Syzygium formosum (Wall.) Masam. [= <i>Eugenia formosa</i> Wall.]; Myrtaceae	11	24.08.1978	N. Dutta 21085
483.	Tarlmounia elliptica (DC.) «H.Rob., S.C.Keeley, Skvarla & R.Chan» [= <i>Vernonia elaeagnifolia</i> DC.]; Asteraceae	20	08.02.1979	D. Hazra 14561 (2)
484.	Telosma pallida (Roxb.) Craib; Asclepiadaceae	11	19.10.1987	N. Dutta 546 (2)
485.	Teramnus labialis (L. F.) Spring; Fabaceae	14	19.10.1987	N. Dutta 548
486.	Thunbergia erecta (Benth.) T. Anderson; Acanthaceae	32	<i>s.d.</i>	S. K. Das 14099 (3)
487.	Thunbergia erecta (Benth.) T. Anderson; Acanthaceae	32	<i>s.d.</i>	S. K. Das 14361 (3)
488.	Thunbergia erecta (Benth.) T. Anderson; Acanthaceae	28	<i>s.d.</i>	S. K. Das 14395 (2)
489.	Thunbergia grandiflora (Roxb. ex. Rottl.) Roxb.; Acanthaceae	11	27.6.1973	R. Dutta 12180
490.	Thysanolaena latifolia (Roxb. ex Hornem.) Honda [= <i>Thysanolaena maxima</i> (Roxb.) Kuntze]; Poaceae	24	June, 1974	N. Dutta 12358
491.	Tiliacora racemosa Colebr.; Menispermaceae	13	23.07.1987	S.C. Roy 741 (2)
492.	Tiliacora racemosa Colebr.; Menispermaceae	13	17.04.1970	N. Dutta 12064
493.	Trema orientalis (L.) Blume; Cannabaceae	18*	21.03.1979	D. Hazra 14341 (2)
494.	Tridax procumbens (L.) L.; Asteraceae	18	20.11.1984	D. Hazra 410 (2)
495.	Tridax procumbens (L.) L.; Asteraceae	18	03.06.1967	<i>s.coll.</i> 4508 (2)
496.	Tridax procumbens (L.) L.; Asteraceae	18	21.03.1978	<i>s.coll.</i> 13953
497.	Triplaris americana L.; Polygonaceae	11	27.03.1978	<i>s.coll.</i> 13994 (2)
498.	Triplaris americana L.; Polygonaceae	11	<i>s.d.</i>	<i>s.coll.</i> 21051
499.	Typhonium trilobatum (L.) Schott.; Araceae	9	07.10.1974	U. Chatterjee 12369

(Continued)

S.N.	Name of Taxon; Family	Haploid Chromosome count	Date of collection	Counted by and field no. (no. of specimens)
500.	Typhonium trilobatum (L.) Schott.; Araceae	9	27.07.1966	N. P. Kamble 21563
501.	Typhonium flagelliforme (Lodd.) Blume; Araceae	8	11.09.1974	U. Chatterjee 12363 (2)
502.	Typhonium flagelliforme (Lodd.) Blume; Araceae	8	31.07.1975	U. Chatterjee 13106
503.	Uria lagopus DC.; Fabaceae	10	13.09.1976	R. Mallick 13578 (2)
504.	Urena lobata L. subsp. <i>sinuata</i> (Linn.) Borss.; Malvaceae	14	20.04.1966	<i>s.coll.</i> 9974 (2)
505.	Urena lobata L.; Malvaceae	14	16.10.1979	C. R. Pal 14391
506.	Urena lobata L.; Malvaceae	14	20.04.1966	<i>s.coll.</i> 9975 (3)
507.	Urena lobata L.; Malvaceae	14	19.10.1987	<i>s.coll.</i> 545 (2)
508.	Urena lobata L.; Malvaceae	14	16.10.1979	C. R. Pal 14391
509.	Urochloa panicoides P. Beauv.; Poaceae	27	23.09.1963	M. Manna 9475
510.	Utricularia stellaris L. f.; Lentibulariaceae	20	18.11.1974	N. Dutta 12370
511.	Vallisneria spiralis L.; Hydrocharitaceae	20	26.09.1979	N. Dutta 14473 (2)
512.	Vanda tessellata (Roxb.) Hook. ex G.Don [= <i>Vanda roxburghii</i> Br.]; Orchidaceae	19	25.08.1976	N. Dutta 12628
513.	Vitex leucoxylo L. f.; Lamiaceae	17	28.05.1978	N. Dutta 21059
514.	Vitex heterophylla A.Juss.; Lamiaceae	16*	02.05.1974	S. K. Das 12818
515.	Volkameria inermis L. [= <i>Clerodendron inerme</i> (L.) Gaertn.]; Lamiaceae	23	20.8.1979	<i>s.coll.</i> 14471 (2)
516.	Wallichia oblongifolia Griff. [= <i>Wallichia densiflora</i> Roxb.]; Arecaceae	16	<i>s.d.</i>	<i>s.coll.</i> 12693
517.	Yucca aloifolia L.; Liliaceae	21	27.05.1978	N. Dutta 21056 (2)
518.	Yucca gloriosa L.; Liliaceae;	25	05.07.1979	D. Hazra 14373
519.	Ziziphus glabrata B.Heyne ex Roth (= <i>Zizyphus glabrata</i> B.Heyne ex Benth.); Rhamnaceae	24*	30.11.1978	N. Dutta 14407

The chromosome count, voucher specimen number with collector name and date of collection are appended in subsequent columns.

RESULTS AND ANALYSIS

The present database encompasses published and unpublished records of the Cytological Voucher Specimens (CVS) preserved in the herbarium of Central Botanical Laboratory (CBL), Botanical Survey of India, Howrah. The database contains 519 records for 343 species belonging to 265 genera and 85 families of Angiosperm (65 dicotyledons and 20 monocotyledons). Maximum count of chromosome was observed in family Acanthaceae (16 genera and 36 species), followed by Leguminosae (21 genera and 24 species), Malvaceae (11 genera and 21 species), Arecaceae (12 genera and 17 species), Poaceae (15 genera and 16 species), Euphorbiaceae (12 genera and 15 species). The high percentage of

these observations may be due to the abundance of different species found in the garden from these particular families. (Fig. 1; Table 1). Considering the individual genus, chromosome count of nine species from genus *Solanum*, were investigated which varies from 8 to 14. Four species i.e., *S. grandiflorum*, *S. seafortianum*, *S. macranthum* and *S. torvum* are having equal number of 12 chromosomes, while *S. diphyllum* showing lowest number 8.

Highest number ($n = 88$) of chromosomes was found in *Rauvolfia sumatrana* while lowest number ($n = 5$) observed in *Emilia sonchifolia*. It is interesting to note that *Canna indica* was studied at variety level in great detail by U. Chatterjee (Table 1). Such investigations are always helpful in the study of evolutionary relationship among the taxa. Another interesting result was chromosomes number of *Macrosolen cochinchinensis* collected from different host-species were equal.

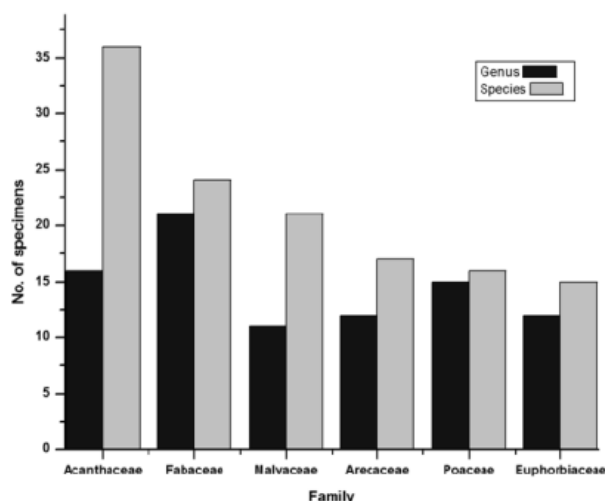


Fig. -1: Most explored families of the database along with genus and species content.

An intraspecific variation in chromosome number was observed in 15 species; *Anona muricata* ($n = 7$ and 8), *Asystesia gangetica* ($n = 25$ and 26), *Cleome rutidosperma* ($n = 10$ and 15), *Coedium variegatum* ($n = 56$ and 60), *Ehretia acuminata* ($n = 12$ and 18), *Flueggea virosa* ($n = 12$ and 13), *Nelsonia canescens* ($n = 14$ and 18), *Nicotiana plumbaginifolia* ($n = 10$ and 12), *Ruellia prostrata* ($n = 20, 22, 34$), *Rumex dentatus* ($n = 20$ and 26), *Schinus terebinthifolius* ($n = 8$ and 14), *Senna occidentalis* ($n = 13$ and 14), *Solanum torvum* ($n = 12$ and 14), *Sphagnetica calendulacea* ($n = 15, 24$ and 25) and *Thunbergia erecta* ($n = 28$ and 32). The intraspecific variation in chromosome number in the same species may lead to speciation. This phenomenon is significant where sexual reproduction is ineffective (Dobzhansky, 1941; Epling & Dobzhansky, 1942).

Some of the introduced plants in AJCBIBG show trisomic (*Dicliptera burmanii*), triploid (*Solidago canadensis* and *Jasminum laurifolium*) and tetraploid (*Barringtonia racemosa* and *Hibiscus ludwigii*) chromosome number. Plants with new chromosome count and variable ploidy level are possibly natural indicator of the high interference or disturbance. There is great scope for cytological and molecular studies of such individual/population.

Here, in the present communication, we report 60 new additions of chromosome count to the Chromosome Counts Database (CCDB); and Chromosome Atlas of Flowering Plants of the Indian Subcontinent (Kumar & Subramaniam, 1988). An analysis of our data shows, 60

plant species have new chromosome count which were hitherto not reported. All these plant species with novel chromosome count marked with star (*) in Table -1.

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REFERENCES

- AL-SAGHIR, M., S. ABU BAKER AND R. PUSOK. 2014. Effective method to resolve the chromosome numbers in *Pistacia* species (Anacardiaceae). *Am. J. Plant Sci.* 5: 2913–2916.
- BENNETT M. D AND I. J. LEITCH. 2012. Plant DNA C-values database (release 6.0, Dec. 2012) <http://www.kew.org/cvalues/> [accessed 21 August 2016*].
- CHASE, M., AND J. L. REVEAL. 2009. A phylogenetic classification of the land plants to accompany APG III. *Bot. J. Linn. Soc.* 161(2):122–127.
- CHATTERJEE, T AND A. K. SHARMA. 1969. Cytotaxonomy of cichorieae. *Genetica* 40: 577–590.
- CHATTERJEE, U. 1969. New chromosome reports in Angiosperms. *Bull. Bot. Surv. India* 11: 454.
- CHEHREGANI, A. AND S. HAJISADEGHIAN. 2009. New chromosome counts in some species of Asteraceae from Iran. *Nordic J. Bot.* 27: 247–250.
- DARLINGTON, C. D. AND A. P. WYLIE. 1955. Chromosome atlas of flowering plants. London, UK: George Allen and Unwin Ltd.
- DATTA, N. 1966b. Cytology of *Urginea coromandeliana* Hook. f. *Sci. & Cult.* 32: 97–99.
- DATTA, N. 1968b. Cytological investigations on *Kallstroemia pubescens* (Don) Dandy. *Curr. Sci.* 37: 477.
- DATTA, N. 1965. Cytology of *Caldesia parnassifolia* (Bassi ex L.) Parl. *Sci. & Cult.* 31: 579–580.
- DATTA, N. 1967. IOPB Chromosome number reports XII. *Taxon* 16: 344–349.
- DATTA, N. 1968a. Chromosome numbers of some Dicotyledons. *Sci. & Cult.* 34: 398.
- DATTA, N. 1966a. Cytological effects of garmoxane on somatic chromosome of *Urginea coromandeliana* Hook. f. *Curr. Sci* 35: 75–76.
- DATTA, N. AND K. MITRA. 1968. Karyotype analysis *Chlorophytum tuberosum* Baker and *C. laxum* R. Br. *Bull. Bot. Surv. India* 10: 228.
- DATTA, N. AND U. CHATTERJEE. 1969. Cytological studies on three species of *Alternanthera*. *Bull. Bot. Soc. Bengal* 23: 27–29.

- DAVIS, P. H. AND V. H. HEYWOOD. 1973. Principles of angiosperm Taxonomy, R.E. Publishing Company, New York.
- DEBNATH, H. S., H. S. MAHAPATRA, S. S. HAMEED AND P. V. SREEKUMAR. 2014. Census of plants in AJC Bose Indian Botanic Garden: A report Botanical Survey of India, Kolkata.
- DOBZHANSKY, T. 1941. Genetics and Origin of Species. Columbia University Press.
- EPLING, C. AND T. DOBZHANSKY. 1942. Genetics of natural populations. VI. Micro-geographic races in *Linanthus parryae*. *Genetics* 27(3): 317–332.
- FEDOROV, A. A. 1969. Chromosome numbers of flowering plants. Leningrad, USSR: Academy of Natural Sciences of the USSR.
- FUNK, V. A., P. C. HOCH, L. A. PRATHER, AND W. L. WAGNER. 2015. The importance of vouchers. *Taxon* 54 (1): 127–129.
- GAJAPATHY, C. 1961 (1962). Cytological studies on some Indian medicinal plant. *Bull. Bot. Surv. India* 3: 49–51.
- GOLDBLATT, P. AND P. P. LOWRY. 2011. The Index to Plant Chromosome Numbers (IPCN): three decades of publication by the Missouri Botanical Garden come to an end. *Ann. Mo. Bot. Gard.* 98: 226–227.
- GOLDBLATT, P. 1980. Polyploidy in angiosperms: monocotyledons. In: Lewis WH, ed. *Polyploidy – biological relevance*. New York, NY, USA: Springer/Plenum, 219–239.
- GOLDBLATT, P. 1981. Index to plant chromosome numbers 1975–1978. *Monographs in systematic botany from the Missouri Botanical Garden* 6: 1–553.
- GOLDBLATT, P. AND D. JOHNSON. 1979. Index to plant chromosome numbers. St Louis, MO, USA: Missouri Botanical Garden.
- GÓRALSKI, G., P. LUBCZYŃSKA AND A. J. JOACHIMIĄK. (2009 onwards) Chromosome Number Database. <http://chromosomes.binoz.uj.edu.pl> [accessed 21 August 2016*].
- GRANT, V. 1963. The origin of adaptations. New York, NY, USA: Columbia University Press.
- GREGORY, W. C. 1941. Phylogenetic and cytological studies in the Ranunculaceae Juss. *Trans. Am. Phil. Soc.* 31 (5): 443–521.
- GUERRA, M. 2008. Chromosome numbers in plant cytotoxicity: concepts and implications. *Cytogenet. Genome Res.* 120: 339–350.
- GUERRA, M. 2012. Cytotaxonomy: the end of childhood. *Pl. Bios.* 146: 703–710.
- JANAKI AMMAL, E. K. 1959a. Central Botanical Laboratory. *Bull. Bot. Surv. India* 1: 33–37.
- JANAKI AMMAL, E. K. 1958. Iso-chromosomes and the origin of triploidy in hybrids between old and new world species of *Philadelphus*. *Proc. Indian Acad. Sci* 48: 251–258.
- JANAKI AMMAL, E. K. 1959b. A cyto-systematic survey of Bambusae I. The slender bamboos of Asia and S. America, *Proc. Indian Acad. Sci.* 48: 78–84.
- JANAKI AMMAL, E. K. 1960a. The effect of the Himalayan uplift on the genetic composition of flora of Asia. *J. Indian Bot. Soc.* 39: 327–334.
- JANAKI AMMAL, E. K. 1960b (1961). The genetic pattern in the distribution of Indian plants. *Mem. Indian Bot. Soc* 3: 1–4.
- KUMAR, V. AND B. SUBRAMANIAM. 1987 Chromosome atlas of flowering plants of the Indian subcontinent. Vol. 1. Dicotyledons. Botanical Survey of India, Calcutta:
- KURITA, M. 1958a. Chromosome studies in Ranunculaceae. VIII. Karyotype and phylogeny. *Rep. Biol. Inst. Ehime Univ.* 5: 1–14.
- LESER, U., R. WAGNER, A. GRIGORIEV, H. LEHRACH, AND H. R. CROLLIUS 1998. IXDB, and X chromosome integrated database. *Nucleic Acids Research* 26 (1):108–111.
- MALLICK, R. 1968. Cytotaxonomy of some Indian Polygonaceae. *Nucleus (Suppl.)* 36–38.
- MALLICK, R. 1969. Chromosome studies on some Indian Polygonaceae. *Sci. & Cult.* 35: 157–158.
- MALLICK, R. AND M. K. GHOSH. 1968. Chromosome studies of 7 species of estuarine plants. *Taxon* 17: 573–575.
- MITRA, K. 1964. Chromosome number in some plants. *Sci. & Cult.* 30: 344–345s
- MITRA, K. 1966a. The chromosomes in *Solanum khasianum* var. *chatterjeeanum* Sen Gupta, *Sci. & Cult.* 32: 142–143.
- MITRA, K. 1966b. Karyological studies in *Curculigo orchoides* Gaertn. *Sci. & Cult.* 32: 201–202.
- PELLICER, J., S. GARCIA, T. GARNATJE, S. DARIIMAA, A. A. KOROBYOV AND J. VALLÈS. 2007. Chromosome numbers in some *Artemisia* (Asteraceae, Anthemideae) species and genome size variation in its subgenus *Dracunculus*: Karyological, systematic and phylogenetic implications. *Chromosome Botany* 2: 45–53.
- PERRY, B. 1943. Chromosome number and phylogenetic relationships in the Euphorbiaceae. *Am. J. Bot* 30: 527–543.
- POGAN, E. AND H. WCISŁO. 1991. Chromosome numbers of Polish Angiosperms. *Acta Biol. Cracov. Ser. Bot* 32: 1–188.
- RAGHAVAN, R. SUNDARA AND C. M. ARORA. 1958. Chromosome numbers in Indian Medicinal plants II. *Proc. Indian Acad. Sci. B* 47: 352–358.
- RAGHAVAN, R. SUNDARA AND C. M. ARORA. 1960. Morphological and cytological studies in the genus *Lantana* L. *Bull. Bot. Surv. India* 2: 299–303.
- RAGHAVAN, R. SUNDARA AND R. S. RAO. 1961a. Cytological observations on Indian species of Commelinaceae. *Curr. Sci.* 30: 310–311.
- RAGHAVAN, R. SUNDARA AND R. S. RAO. 1961b. Fodder resources of Agumbe range (Mysore state). in *Proc. Second Ann. Ser. Acad. Agric. Sci.* 101–105. Coimbatore.

- RAGHAVAN, R. SUNDARA and R. S. RAO. 1965a. Notes on Indian Commelinaceae VI. Cytological observations. *Nucleus* 8: 39–44.
- SHARMA, A. K. AND A. SHARMA. 1956 Fixity in chromosome number of plants. *Nature* 17: 335–336.
- SHARMA, P. C. AND P. K. GUPTA. 1982. Karyotypes in some pulse crops. *Nucleus* 25: 181–185.
- SIMON, J., M. MARGELI, AND C. BLANCHE. 2001. CROMOCAT: The chromosome database of the Catalan countries. *Bocconeia* 13: 281–297.
- STEBBINS, G.L. 1938. Cytological characteristics associated with the different growth habits in the dicotyledons. *Am. J. of Bot.* 25: 189–198.
- TAMURA, M. 1993. Ranunculaceae Flowering Plants Dicotyledons. Springer. Berlin Heidelberg. pp 563–583.
- WATANABE, K. 2002. Index to chromosome numbers in Asteraceae. http://www.lib.kobe-u.ac.jp/infolib/meta_pub/ [accessed 21 August 2016].