

NOTES ON INDIAN COMMELINACEAE—II: CYTOLOGICAL OBSERVATION

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ABSTRACT

Chromosome numbers of 12 species of *Commelina* have been worked out of which the chromosome numbers of 6 species and one variety are reported for the first time. In view of the misidentification of many species by earlier workers, reinvestigation of the chromosome numbers of some of the species has been suggested to confirm their earlier reports. A few new combinations are also added.

In connection with the cyto-taxonomic revision of Indian Commelinaceae the chromosome numbers of a few more species of *Commelina* Linn. from different populations have been studied following the usual aceto-carminic squash technique. The result of the various species investigated is presented in Table I.

The present report together with our records of other

species worked out in this connection reveals that species of *Commelina* in India are characterised by polyploid forms with different basic numbers namely, $X=11$, 12 and 15. However, Deodikar¹ considers that there are two polyploid series in primary and secondary chromosomal balance with 8 and 16 as their respective monoploid numbers in various species of *Commelina*;

TABLE I

Results of *Commelina* species investigated

Sl. No.	Name of species	Locality and Field Numbers	Present observations	Remarks and Previous observations
1*	<i>Commelina attenuata</i> Koen.	Shertallai (Kerala), 73927; Tumkur (Mysore), 73248	n=24	
2	<i>C. benghalensis</i> Linn.	Poona, 39490; Shertallai (Kerala), 73920	n=11	$2n=22^{4,7,8,12}$, 28^4 , 48^{11} , 56^4 , 68^{10}
3*	<i>C. clavata</i> Cl.	Naduvattum (Nilgiri Dt.), 73909	n=45	
4	<i>C. diffusa</i> Burm. f. (= <i>C. nudiflora</i> auct. non L.)	Poona, 65945	$2n=30$ n=15	$2n=28^{4,4}$, $30^{4,7,8,12}$, $56^{2,11}$
5*	<i>C. ensifolia</i> Br.	Devarayadurga (Mysore), 73302; Lalbag, Bangalore, 73480; Tenmalai (Kerala), 70965.	n=45	
6	<i>C. forskalaei</i> Vahl	Anantapur (Andhra), 73954; Khed (near Poona), 71884	n=15 $2n=30$ n=15	$2n=28^{4,4}$, $30^{5,6}$
7*	<i>C. jacobii</i> Fischer	Coimbatore, 39492	$2n=30$ n=15	
8*	<i>C. kurzii</i> Cl.	@ Jogeshwari (near Bombay), 32769; @@ Gajanoor (Mysore), 74035; @@ Hastinapur (near Meerut), 785; @@ Purandhar (near Poona), 32645; @@ Khed (near Poona), 72304; @@ Sibpur (W. Bengal), 39494	n=60	n=60 ⁵ (under <i>C. paludosa</i>) @ Capsule with an indehiscent posterior cell.
		@@ Katraj ghat (near Poona), 71251; @ Anamalais, 73938; @ Tenmalai (Kerala), 71541	n=45 n=45	@@ Capsule 3 equal celled.
9*	<i>C. paleata</i> Hassk.	Kanheri caves (near Bombay), 32737	n=45	
10	<i>C. paludosa</i> Bl. (= <i>C. obliqua</i> Ham.)	Tenmalai (Kerala), 71210; Garsappa (Mysore), 78697	n=30	$2n=45^3$, $60^{3,3,8}$, 100^7 , 120^3 , 150^7 .
11*	<i>C. paludosa</i> Bl. var. <i>mathewii</i> (Cl.) Rolla et Kammathy Comb. nov.	Purandhar (near Poona), 32627	n=30	
12	<i>C. subulata</i> Roth	Hyderabad, 73965	n=30	n=30 ⁵
13	<i>C. suffruticosa</i> Bl.	Aarey Milk Colony (near Bombay), 32761; Gajanoor (Mysore), 74035A	n=30	n=30 ⁵

* Chromosome numbers recorded for the first time.

Sharma² and Malik³ report haploid number in the multiple of 14 for *C. diffusa* and *C. forskalaei* respectively and for several African species by Morton⁴ including the 2 species noted above which need further re-examination. The root-tips and flower buds of these two species from different populations in India have been repeatedly examined by the present writers and found to show $2n=30$ and $n=15$ only⁵⁻⁸.

On careful scrutiny of taxonomic evidence and chromosome numbers of *Commelina paludosa* Bl. (= *C. obliqua* Ham.) and *C. kurzii* Cl. which are most commonly mixed up and confused by several workers as explained by Rolla and Kammathy (Jour. Bomb. Nat. Hist. Soc. 1962, in press), it is evident that *C. paludosa* from various parts of Eastern and Peninsular India irrespective of the altitude, locality and size of plant and even including both the varieties of Clarke⁹ "mathewii" and "viscida", constantly shows $n=30$ without any variation. The reported variation in the chromosome number viz. $2n=45, 100, 150$ by Sharma^{2,7}, $n=60$ by Malik³, Raghavan and Rolla⁵ and $n=ca.55$ by Panigrahi and Kammathy⁸ under *C. paludosa* has created considerable difficulty in the understanding of the species. But, the careful observation of a good number of populations of *C. paludosa* and *C. kurzii* under cultivation and in field conditions revealed interesting characters of taxonomic importance towards their correct identity. In *C. kurzii* there are two distinct groups with respect to the capsule character; one group with capsule having a warty indehiscent posterior cell and the other with capsule having 3 equal cells without any indehiscent cell as in *C. paludosa* but similar to *C. kurzii* in all other characters. Both the groups of *C. kurzii* have been observed as growing intermixed in parts of North India up to Meerut and throughout Bengal, Bihar, Orissa and peninsular India. This variable species with two types of capsule is distinctly polyploid with $n=45$ and 60 without any definite correlation with respect to capsule character and chromosome number. Such confusion with regard to *C. kurzii* considering it under *C. paludosa* has led to the report of highly variable number of chromosomes from $2n=45$ to 150 and thereby considering such a stable species as *C. paludosa* as containing different ecotypes and polyploid types^{2,8}, thus treating it as a species complex. With such results, which are purely due to misunderstanding of the correct identity of the species, a hypothetical argument about the relation between the chromosome number and the altitude has also been put forward². Therefore, observations of Sharma^{2,7}, Malik³ and Deodikar¹ need revision in the light of their correctly identified voucher specimens if available for scrutiny. *C. paludosa* of Panigrahi and Kammathy⁸ collected from Howrah ($n=ca.55$) and Poona 64939 of Raghavan and Rolla⁵ are now correctly identified as *Commelina kurzii* Cl.

Morton's⁴ statement that polyploidy has played little part in the recent evolution of the African species of *Commelina* does not apply to the Indian species of the

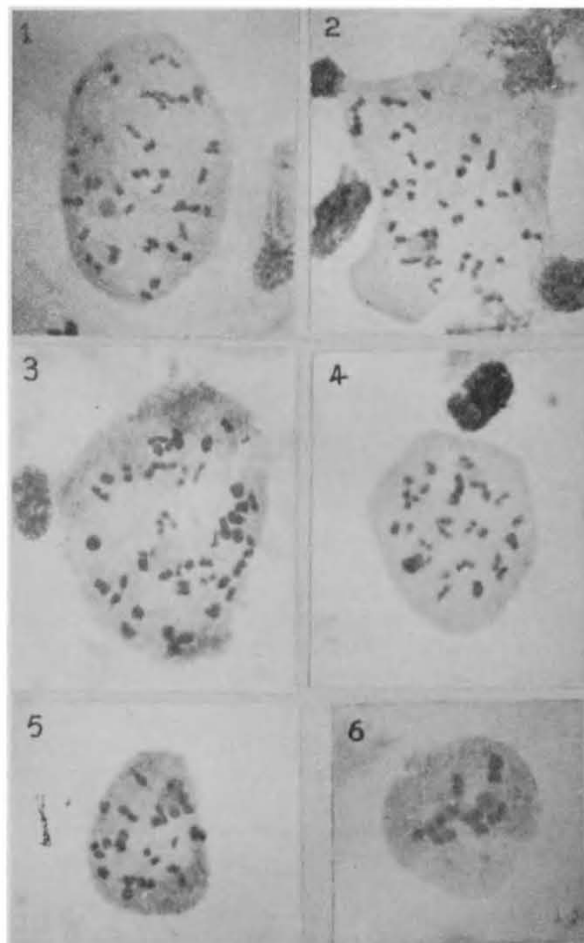


PLATE I

Explanations to Plate I

Figs 1-6: Fig. 1. *Commelina paleata* $n=45$; Fig. 2. *C. kurzii* $n=45$; Fig. 3. *C. ensifolia* $n=45$; Fig. 4. *C. paludosa* $n=30$; Fig. 5. *C. suffruticosa* $n=30$; Fig. 6. *C. jacobii* $n=15$. (Magnification \times Ca. 675)

genus and this was to some extent indicated by Deodikar¹ and Sharma² also.

A new name and two new combinations under *Commelina* are validated after careful scrutiny of the material as follows:

1. *Commelina paludosa* Bl. var. *mathewii* (Cl.) Rolla et Kammathy comb. nov. (= *Commelina obliqua* Ham. var. *mathewii* Cl. in DC. Mon. Phan. 3:178, 1881).
2. *C. paludosa* Bl. var. *viscida* (Cl.) Rolla et Kammathy comb. nov. (= *Commelina obliqua* Ham. var. *viscida* Cl. in DC. Mon. Phan. 3:178, 1881).
3. *C. wightii* Rolla nom. nov. (= *Heterocarpus glaber* Wt. Icones Plant. Ind. Orient. 6: tab. 2067, 29, 1853; *Commelina glabra* (Wt.) Cl. in DC. Mon. Phan. 3:163, 1881. non G. F. W. Meyer (1818). Clarke's name is

invalid as it is a later homonym and the necessity of a new name was suggested by Rolla¹⁴ in 1958.

A detailed paper on this subject will be published elsewhere.

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