

ABNORMAL MEIOSIS AS AN INDICATION OF GENE CONTROLLED PAIRING OF CHROMOSOMES IN *CYMOPOGON CAESIUS* (NEES) STAPF

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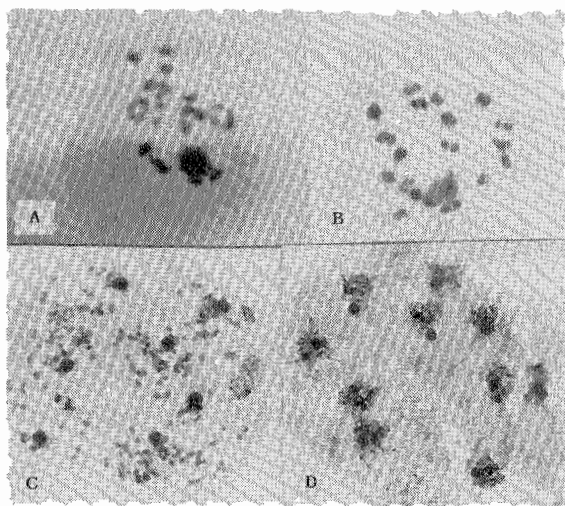
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During the study of Andropogoneae of Pakistan, plant number 2038 of *Cymbopogon caesius* (Nees) Stapf was seen producing abnormal looking inflorescence. Meiosis in this plant was studied at an earlier date when the plant had produced morphologically normal inflorescence (Quraish & Faruqi, 1979). Meiosis was studied again from this abnormal inflorescence.

The chromosome number in this inflorescence was the same (i.e. $n=20$) as recorded earlier. In the metaphase I, up to 6 multivalents were recorded (Fig. 1A). In the normal inflorescence, however, a maximum of only quadrivalents were observed (Fig. 1B). After metaphase I, the equational divisions continued resulting in polyads (Fig. 1C). Upto 10 nuclei were recorded in a single polyad (Fig. 1D).

Loss of a gene or a chromosome is known to affect chromosomal pairing. In *Bothriochloa intermedia* aneuploidy could produce desynapsis or asynapsis depending whether one or both the chromosomes bearing genes which controlled pairing were absent (Chheda & Harlan, 1962). In *Hyparrhenia hirta* loss of chromosomes has resulted in increase of multivalents (Faruqi & Quraish, 1978). Similarly B-chromosomes are known to affect chiasma frequency in *Lolium* spp. (Evans & Taylor, 1976). In *Cymbopogon caesius* some unknown cause which produced the abnormality of inflorescence and that of meiosis has also suppressed the gene which controlled the chromosomal pairing. The true homology of chromosomes is seen when this control has broken down. In *C. caesius*, therefore, out of 10 basic number at least six have homologues which are presented in a multiple of four. These results provide strength to our earlier contention that gene controlled pairing plays an important role in the survival of polyploids in those plant hybrids where the two parental genomes are either similar or only partly different (Faruqi, 1972; Quraish & Faruqi, 1979).

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- Fig. 1. A. Diakinesis in the abnormal inflorescence of *Cymbopogon caesius* 2038 with $2n=40$ chromosomes showing five multivalents. 1200X
 B. Diakinesis in the normal inflorescence of *C. caesius* 2038 with $2n=40$ chromosomes showing two quadrivalents. 1200X
 C. Post meiotic chromosomal divisions in a PMC from the abnormal inflorescence *C. caesius* 2038. 600X
 D. A polyad with 10 nuclei from the abnormal inflorescence of *C. caesius* 2038. 600X

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