1. Cooke, C. I. E., *The flora of the Presidency of Bombay*, Vol. I & II, Botanical Survey of India, Calcutta, 1958.
2. Gamble, J. S., *Flora of the Presidency of Madras*, Vol. I & II, Botanical Survey of India, Calcutta, 1957.

EFFECT OF B-CHROMOSOMES ON A-CHROMOSOME CHIASMA DISTRIBUTION IN A SECTORIAL TETRAPLOID PEARL MILLET PLANT FROM A WEST AFRICAN CULTIVAR

A. LATHA KUMARI and K. JAYALAKSHMI
Department of Botany, Andhra University, Waltair 530 003, India.

B-CHROMOSOMES are known to suppress the homoeologous chromosome pairing in hybrids and allopolyploids[1-5]. Even in autotetraploids they are known to suppress multivalent formation and encourage bivalent formation independent of chiasma frequency[6]. However, in pearl millet it was shown that B-chromosomes have a differential effect, that is, they encourage multivalent formation independent of chiasma frequency[7]. In the present investigation it was possible to study the effect of Bs on A-chromosome pairing pattern in a (sectorial) tetraploid spontaneously occurred in a cultivar from Mali, a different agroecological region. The earlier work was on the B-chromosomes present in a cultivar of Sudanese origin.

Seeds of pearl millet, *Pennisetum typhoides* (Burm.) S. & H from Mali (West Africa), supplied by ICRISAT, showed the occurrence of B-chromosomes[8]. The B carrying materials are being maintained for further cytogenetic investigations. In the selfed progeny plants with 1–4, B-chromosomes were observed and in one plant, a spikelet containing tetraploid pollen mother cells (p.m.c.'s) along with diploid cells was encountered. Data on A-chromosome associations were collected from p.m.c.'s at diakinesis, employing the usual cytological and staining techniques (fixation being in a mixture of 1:3 acetic acid : methanol and staining in 2% acetocarmine).

The plant contained mostly diploid p.m.c.s with 0 to 2Bs ($2n = 14 + 0$ to 2Bs). The tetraploid sector contained 2 Bs (in all 30 p.m.c.'s studied). The mean A-chromosome chiasma frequency per tetraploid p.m.c. was 18.67, with a mean number of 3.27 quadrivalents, 0.83 of trivalents, 4.07 bivalents and 4.37 of univalents (table 1). The mean A-chromosome chiasma frequency of 1B-cells in diploid sector was 12.20 ± 0.11 and that of 2 B cells was 11.37 ± 0.24. The mean A-chiasma frequency of tetraploid cells with 2 Bs was less than double ($p < 0.01$) the number of chiasmata per diploid p.m.c. with 1 or 2 Bs in the diploid sector. In the present investigation, no p.m.c.'s without B-chromosomes were available. Therefore comparisons were made with OB tetraploids reported earlier[9, 10]. (table 1). Since those tetraploids are in other varieties, they are genetically different. The differences in chiasma frequencies and chromosomal association frequencies, if any, among the three materials might be due to these varietal differences in addition to B-chromosome effects.

The table shows that though the mean A-

Table 1 *Comparison of means of A-chromosome chiasma frequency and chromosome association frequencies in tetraploid pearl millet, from different sources.*

Reference	Source	Origin	Bs	Mean A-chromosome chiasma frequency	Mean chromosome associations per p.m.c.				No. of p.m.c.'s studied
					Quadrivalents	Bivalents	Trivalents	Univalents	
Present	Mali-Africa-1	Spontaneous	Present	18.67 ± 0.43	3.27 ± 0.17	4.07 ± 0.30	0.83 ± 0.16	4.37 ± 0.41	30
Narasinga Rao, 1978[7]	IP 1475	Colchicine induced	Absent	23.76 ± 0.19	2.88 ± 0.13	7.54 ± 0.13	0.34 ± 0.05	0.56 ± 0.09	100
Koduru and Krishna Rao, 1978[10]	IP 482	Spontaneous	Absent	24.06	3.14	7.44	0.06	0.38	50

chromosome chiasma frequency in the present report was the least among the three, the mean quadrivalents per cell, mean trivalents per cell and especially the mean univalents per cell were the highest. In pearl millet, it is well known that the chromosome association frequencies are interdependent and are also dependent on chiasma frequency[9] (multivalents being positively associated). Instead of normal more distal localization of chiasmata, non-distal sites would become active in the presence of Bs[7, 11], which would enhance multivalent formation, with or without increase in chiasma frequency. On the whole, it appears, that Bs disturb chiasma localization, resulting in redistribution of chiasmata. This effect of Bs on A-chromosome chiasma pattern was found not to be concentrated to any one particular set but uniform over all seven sets of homologous chromosomes as per the result of Hall's test[12] ($\chi^2 = 7.91$; $p > 0.05$).

In the present tetraploid, 79 % of quadrivalents were simple chains or rings (types 11 and 17 respectively of Darlington[13]). The rest are complex types. This might be due to low A-chromosome chiasma frequency in this material. Thus, the role of B-chromosomes in plants from Mali on A-chromosome chiasma distribution independent of A-chromosome chiasma frequency reminds one of the earlier work on Bs in Sudanese cultivars of pearl millet[7].

Our sincere thanks are due to Prof. J. V. Pantulu for encouragement and critical suggestions in the preparation of the manuscript; to ICRISAT for providing the material and to UGC (special assistance programme) for financial support.

25 November 1983; Revised 8 March 1984

1. Evans, G. M. and Macefield, A. J., *Nature (London)*, 1972, **236**, 110.
2. Evans, G. M. and Macefield, A. J., *Chromosoma*, 1973, **41**, 63.
3. Evans, G. M. and Macefield, A. J., *Chromosoma*, 1974, **45**, 369.
4. Bowman, J. G. and Thomas, H., *Nature (London)*, 1973, **245**, 80.
5. Dover, G. A. and Riley, R., *Nature (London)*, 1972, **240**, 159.
6. Macefield, A. J. and Evans, G. M., *Heredity*, 1976, **36**, 393.
7. Jayalakshmi, K., Pantulu, J. V. and Narasinga Rao, P. S. R. L., *Gen. Res.*, 1983 (in press).
8. Pantulu, J. V., *Curr. Sci.*, 1983, **52**, 83.
9. Narasinga Rao, P. S. R. L., Ph.D. thesis, Andhra University, Waltair, 1978.
10. Prasad, R. K. Koduru and Krishna Rao, M., *Cytologia*, 1978, **43**, 445.
11. Jayalakshmi, K., Pantulu, J. V., *Cytologia*, 1983 (in press).
12. Hall, B. M., *Proc. Penn. Acad. Sci.*, 1955, **29**, 121.
13. Darlington, C. D., *Recent advances in cytology*. 2nd Edn. (London), J & A Churchill Ltd., 1937.

OCCURRENCE OF *PLEUROTUS CYSTIDIOSUS* IN INDIA

K. NATARAJAN and N. RAMAN

Centre of Advanced study in Botany, University of Madras, Madras 600 005, India.

PLEUROSUS CYSTIDIOSUS was described by Miller[1] based on an isolate from a trunk rot of a living red mapple in Indiana, USA. Later Pollack and Miller[2] described the anamorph of this fungus as *Antromycopsis broussonetiae*. *P. cystidiosus* has also been reported to occur wildly on decaying wood in Taiwan and has been cultivated on a commercial scale and has become an industry of importance in that island[3, 4]. Because of its commercial importance and since it has not been reported from India so far a full description of the fungus is given below. The colour terminology used is that of Kornerup and Wancher[5].

Pleurotus cystidiosus O. K. Miller, *Mycologia* **6**: 881–893 (1969). Basidiocarp pleurotoid, fleshy. Pileus up to 9.5 cm broad, flabelliform, thick, with a slight depression on the upper surface at the point of attachment with the stipe; margin striate, grooved, incurved, brownish orange (5C4) at the centre, orange grey (5B2) on the margin. Stipe up to 1.5 cm long, laterally attached. Lamellae decurrent, broad, white to yellowish white (4A2), some forked at the tip, distant; lamellulae present. Spore print white. Spores 12.5–15.5 × 4.2–5.6 μm, cylindrical, hyaline, smooth, without germ pore, inamyloid. Basidia 37.5–42 × 8.5–9.8 μm, both bisporic and tetrasporic basidia present, sterigmata up to 9.8 μm long. Cheilocystidia 18.2–22.4 × 8.4–9.8 μm, clavate. Pleurocystidia 49–68.6 × 7–11.2 μm, cylindric clavate, mucronate. Hymenophoral trama brownish in 10% KOH, consisting of subregularly arranged hyphae which measure up to 5.6 μm in width; subhymenium well-developed, up to 33 μm width, hyaline, consisting of inflated hyphae which are interwoven and irregularly arranged and measure 2.8–8.4 μm in width. Context up to 3 mm thick, of