shorter in *C. flexuosus* than in *C. pendulus* as evidenced by the frequency of its occurrence, 5–12% and 15–35% respectively. The fibrillar connections and stickiness of the bivalents persisted upto metaphase I in *C. pendulus* compared to *C. flexuosus* where the bivalents exhibit only stickiness. The behaviour of chromosomes during further stages of meiosis was observed to be regular.

The normal appearance of the bivalents at pachytene and the loss of their morphology subsequently and till the onset of diplotene stage is a clear sign of uncoiling process involved which resulted in the interphase-like appearance. The fibrillar connections and the stickiness of the bivalents resulting often in multivalent-like configuration during diplotene and diakinesis indicate the irregular condensation of chromosomes. All these events clearly evince the occurrence of the diffuse stage during prophase of the PMC meiosis in hexaploid lemongrasses.

Even though the diffuse stage in Poaceae was contemplated as early as 1929 in *Hordeum*[1] it was only recently the existence of such a stage has been reported in *Secale cereale* and few other grasses[3,5] including *Cymbopogon caesius*[6]—a diploid species. Often the diffuse stage is shown to be a source of meiotic aberration as seen especially in plants of hybrid and polyploid origin[3,4]. The species of *Cymbopogon* are known to exhibit polyploidy and hybridity very commonly[2]. Our observations on the occurrence of the diffuse stages in PMC meiosis of the hexaploid lemongrasses, *viz.*, *C. flexuosus* and *C. pendulus* could well be correlated to their polyploidy and/or hybridity.

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ANTAGONISM BETWEEN SAPROPHYTIC AND PATHOGENIC SPECIES OF *CURCULARIA*

THE antagonistic studies of pathogenic fungi on the aerial parts of plants have been periodically reviewed[1–4]. When the pathogen is inoculated together with the phylloplane fungi, a reduction in disease incidence is noticed in the case of *Pennisetum typhoides*[4], *Oryza sativa*[5], *Phaseolus vulgaris*[6], *Trifolium pratense*[7], *Nicotiana rustica*[8], *Brassica oleracea*[9], *Allium cepa*[10], *Triticum aestivum*[11] and *Lycopersicum esculentum*[12]. The present communication deals with the *antagonistic* study between *Curvularia penniseti* and *Curvularia tuberculata*, a pathogen and a leaf saprophyte respectively on the leaves of bajra.

A spore suspension in 0·1% Tween 80 of different concentrations of *C. tuberculata* (ranging from 2×10^4 to 2×10^7 spores/ml) and a constant concentration of *C. penniseti* (2×10^4 spores/ml) in equal proportions is sprayed on the leaves of 60 days old bajra seedlings, raised in pots from surface sterilized seeds. The spore suspension of *C. tuberculata* (2×10^5 spores/ml) was sprayed one to three days before and after the spray of *C. penniseti* and also simultaneously. The percentage efficiency for disease control was made after 21 days of inoculation[13].

The percentage efficiency for disease control increases with the increase in concentration of spores of *C. tuberculata* from 2×10^4 spores/ml to 2×10^5 spores/ml. Further increase in its spore concentration does not cause any significant reduction in percentage infection of *C. penniseti* (Table I, A). Similarly the incidence of disease of bean leaves caused by *Alternaria zinniae* was reduced with the increase in a spore concentration of *Alternaria tenuissima* up to the optimal concentration ($7{\cdot}5 \times 10^6 \times$ spores/ml)[6].

Further studies on the efficiency of the disease control are done using the concentration of 2×10^5 spores/ml of *C. tuberculata*. The percentage efficiency for disease control has been found to be maximum when *C. tuberculata* and *C. penniseti* are sprayed simultaneously and the percentage efficiency for disease control decreases when *C. tuberculata* was sprayed one to three days before or after the spray of *C. penniseti* (Table I, B). However, in *Phaseolus vulgaris* (dwarf bean), the maximum inhibition of disease incidence (percentage efficiency for disease control) was when *A. tenuissima* was sprayed two days before the spray of *A. zinniae*[6].

A cell free germination liquid obtained by germinating the spores of *C. tuberculata* in sterile distilled water in a moist chamber for 24 hr and subsequently filtered and centrifuged, is used to study the germination of fresh spores of *C. penniseti* by hanging drop method incubating the slide in a moist chamber for 10 hr against a control of spore germination of *C. penniseti*

TABLE I

Treatment	Percentage efficiency for disease control
A.	
Approximate number of *C. tuberculata*/ml	
2×10^4	69·9
2×10^5	70·2
2×10^6	69·5
2×10^7	69·8

B. Time of inoculation	0	1	2	3	1′	2′	3′
Percentage efficiency for disease control	70·2	55·2	2·6	1·2	38·5	23·8	3·0

C.	
Germination of conidia of C. penniseti :	
(i) In cell free germination liquid of *C. tuberculata*	74·9
(ii) In sterile distilled water	82·7

0 = simultaneous inoculation of *C. tuberculata* and *C. penniseti*. 1, 2, 3 and 1′, 2′, 3′ respectively are the days of inoculation of *C. tuberculata* before and after the inoculation of *C. penniseti*.

in sterile distilled water. The percentage of spore germination of *C. penniseti* in the cell free germination liquid is reduced (Table I, C). The inhibition of germination of spores of *C. penniseti* in cell free germination liquid of *C. tuberculata* may be due to the toxic metabolites released into the liquid by the spores of *C. tuberculata*.

However, when the spores of *C. penniseti* were streaked opposite to *C. tuberculata* on the sides of an agar plate in triplicate with a gap of one to three days and were incubated to observe the development of inhibition zone if any. The agar plate did not show any inhibition zone in all the three cases. This suggests that the inhibition of the disease on the leaf surface may be due to the action of leaf inhibitors induced by *C. tuberculata* as suggested in the case of *Alternaria tenuissima* which induces the leaves of *Phaseolus vulgaris* to produce inhibitors which may ultimately inhibit the germination of spores of *A. zinniae*[6].

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