TABLE I

Growth and yield per plant of twelve rice varieties under varying levels of salinity

Character	Height (cm)	No. of panicle	Grain yield (g)	Straw yield (g)	Height (cm)	No. of panicle	Grain yield (g)	Straw yield (g)	Height (cm)	No. of panicle	Grain yield (g)	Straw yield (g)	Height (cm)	No. of panicle	Grain yield (g)	Straw yield (g)
Treatment (mmhos)	'Patnai-23'				'Benisail'				'Kumargore'				'Rupsail'			
Control	151·7	8·0	22·1	54·4	154·3	8·1	17·5	41·1	174·4	6·9	23·4	67·3	163·9	8·0	19·0	58·0
4·5	154·3	6·8	16·4	49·6	152·0	5·7	15·6	32·0	161·1	5·8	13·8	57·5	157·7	6·2	8·1	49·0
9·5	144·1	7·5	15·8	44·0	136·3	4·6	8·3	26·7	142·7	4·9	7·5	37·6	144·3	5·5	7·3	30·0
12·5	126·5	5·0	4·8	23·1	120·8	5·1	6·8	21·2	116·8	3·1	2·0	23·3	115·9	4·6	3·8	18·8
15·5	104·1	..	..	9·2	92·3	0·9	1·0	8·4	..	..	..	..	111·8	..	..	7·8
	'Bokra'				'Nonabokra'				'Getu'				'O.C 1393'			
Control	191·8	4·0	20·4	76·9	179·2	10·9	22·8	79·8	133·8	15·2	26·3	64·5	152·2	12·3	25·8	64·7
4·5	181·0	3·0	11·1	45·0	163·8	12·3	14·4	68·6	139·4	6·6	12·3	48·8	151·6	7·7	17·6	55·4
9·5	145·0	2·6	4·9	34·9	158·1	12·1	13·2	59·2	130·8	7·6	11·4	32·7	145·9	7·6	12·7	45·7
12·5	119·3	0·5	0·4	8·7	137·9	8·2	7·9	44·8	111·5	5·6	4·7	25·3	116·7	4·3	1·1	27·6
15·5	..	..	..	..	117·5	4·3	1·5	26·0	100·1	1·3	0·5	15·1	95·3	..	..	16·1
	'T (N). 1'				'I.R. 8'				'B.P.I. 76'				'SR 26 B'			
Control	91·6	9·1	12·4	19·0	101·6	6·3	19·6	32·4	132·3	5·9	15·2	33·8	173·0	7·5	35·7	68·6
4·5	86·6	5·5	9·0	13·6	101·3	4·2	12·3	20·7	119·0	3·5	8·6	22·1	169·6	5·5	15·8	49·6
9·5	84·0	5·0	5·6	7·8	97·8	4·9	7·1	24·9	111·6	3·4	4·6	16·7	152·6	5·0	12·9	51·4
12·5	81·3	5·7	1·0	9·9	91·5	4·9	3·1	21·7	98·0	1·5	1·9	6·4	130·2	2·3	1·0	24·0
15·5	..	..	..	..	..	..	..	..	..	..	..	..	94·8	..	..	12·9

A marked difference in plant height was observed between control and 4·5 mmhos in Patnai-23 and Getu, when height was increased more under 4·5 mmhos than control.

Among the varieties the highest yield of grain was recorded by Nonabokra in both the years' under higher levels of salinity and also the yield was almost same with the other promising varieties under medium and lower levels of salinity, indicating thereby that although this variety belongs to short day photosensitive *aman* group, it can safely be grown both during *Kharif* (wet) and *Rabi* (dry) seasons in the adverse saline area. Mention may be made here that during *Rabi* season, due to lower rainfall and humidity and higher evaporation and bright sunshine, occurrence of salt incrustation deposited over the soil surface, as a result of which true salt resistant rice varieties are highly essential. B. P. I. 76, on the other hand, gave the lowest yield performance under any salt treatment, but the difference in yield with that of T. (N). 1 was not very prominent. This showed their salt sensitive characters.

The results indicate that different nature of rice varieties clearly shows their differential capacities to tolerate varying levels of salinity. The above investigation points out that there is a fair possibility in selection and breeding of rice to produce high yielding salt resistant varieties.

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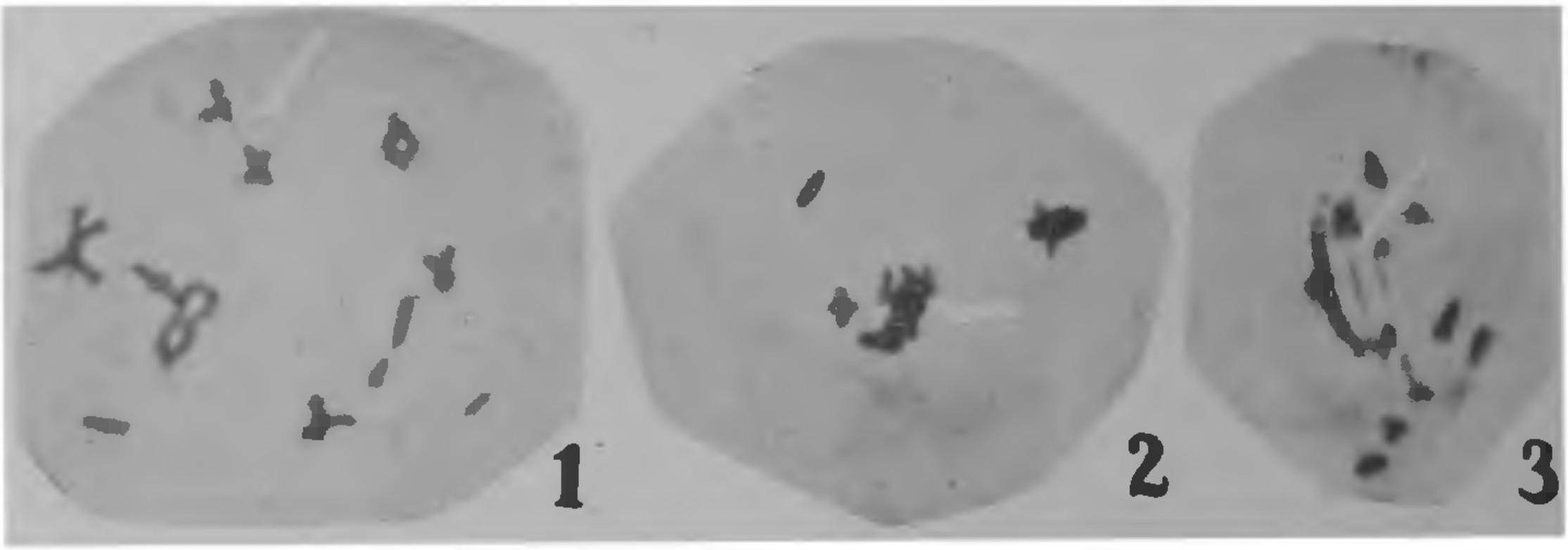
CALCIUM CHLORIDE INDUCED MEIOTIC CHROMOSOME ABERRATIONS IN GRASSHOPPER, *SPATHOSTERNUM PRASINIFERUM*

THE occurrence of metals as stabilizing factors in the maintenance of chromosomal architecture has been suggested by many workers who have studied the heavy metal complexing agents to induce chromosomal aberrations, especially in plant materials[1]. It is also known that spontaneous chromosomal aberrations in *Tradescantia* are increased if the plants are cultivated in calcium and magnesium deficient media[2]. Our information on the role of metal ions in inducing chromosomal aberrations in

animal material is relatively meagre[3–5]. So studies were undertaken to find the effect, if any, of the metal ions on the spermatocyte chromosomes of grasshoppers.

These preliminary observations indicate that inorganic salts of calcium may have some effect in denaturing the protein and/or DNA moiety of chromosomes. As the animals feed



FIGS. 1–3. Fig. 1. Late diplotene cell showing interbivalent connection between two bivalents. Fig. 2. Clumping of bivalents in Metaphase I. Fig. 3. Anaphase I cell showing stickiness and chromatin bridge. (Microphotograph, × 1,500).

Adult males of *Spathosternum prasiniferum*, intended to serve as control, were injected individually with 0·05 cc of distilled water and their testes fixed at intervals of 4, 8, 12, 16, 20 and 24 hours. No casualty was recorded in the control series. In the treated series the individuals were injected with 0·05 cc of 1% calcium chloride solution and their testes fixed at 4, 8 and 12 hours. As no single individual of the series survived beyond 12 hours, the pertinent tissues could not be fixed at 16, 20 or 24 hours. The prepared slides from both the control and the treated series were examined following the use of specific cytological techniques. Chromosomal aberrations of any type were not seen in the control series. In treated series, however, the manifestation of general stickiness was readily seen, reflected in clumping of chromosomes in all divisional stages, especially in prophase I (Fig. 1), metaphase I (Fig. 2) and anaphase I (Fig. 3). Interbivalent connections were also observed in the diakinesis (Fig. 1) stage. No chromosome or chromatid type breaks were observed in the divisional stages. However, very thin chromatin bridges were encountered in most anaphase I cells which are likely to have stemmed from stickiness as well as from breakage at subchromatid level of the chromosomes (Fig. 3). The frequency of aberrations, as seen at 12-hour treatment, is more than at 4- or 8-hour treatment.

on grass, it is likely that calcium present in the soil becomes absorbed in them metabolically and is eventually incorporated into the chromosomal framework. It is believed that chromosome fibrils are largely composed of nucleic acid and protein particles linked end to end by bridges of divalent cations, probably of calcium and/or magnesium[6]. Penetration of excess calcium into the body may adversely affect the nucleoprotein synthesis resulting in the observed chromosomal aberrations.

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