

and bendiocarb inhibited the nitrogenase activity. Isufenphos, applied as granule or emulsifiable concentrate was not stimulatory to nitrogen fixation during the early periods while slight stimulation occurred as the plants grew older. Similar innocuous effects of insecticides were evident with the several other formulations. Admittedly, certain inconsistent effects were also not uncommon as evidenced with evisect, ethio-prop and chlorbenvinphos on nitrogen fixation in the rhizosphere soil.

Consistent stimulatory or inhibitory influence of certain pesticides on nitrogen fixation has been reported particularly in studies under controlled laboratory conditions^{11,7,8}. Also, in a field trial Nayak *et al.*¹² demonstrated the inhibitory effect of certain organophosphate insecticides. The inconsistent behaviour of certain insecticides with regard to rhizosphere nitrogenase activity is not clear. Perhaps physiological change in the rice plant during the growing period coupled with the wide fluctuations in the field eco-environment under natural conditions might be partly responsible. Moreover, the pattern of degradation of the parent molecule viz., the appearance and disappearance of metabolites might contribute to the alteration in the effects on the rhizosphere nitrogenase activity.

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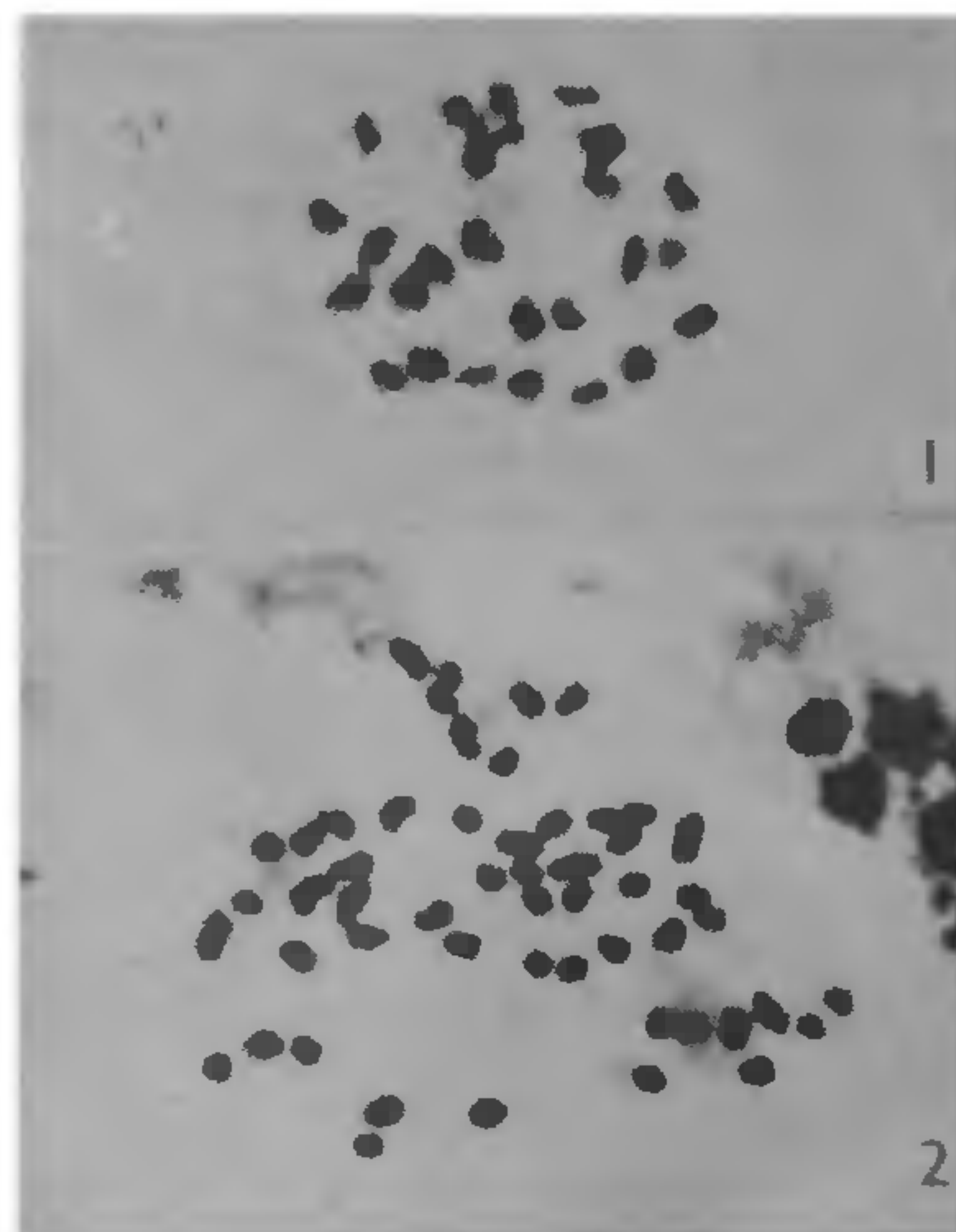
CYTOLOGY OF THE HYBRID PEPPER VARIETY, 'PANNIYUR-I'

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'PANNIYUR-I' is a high yielding hybrid variety of *Piper nigrum* L., evolved at the pepper research station at Panniyur (North Kerala) by crossing two local varieties, 'Uthiramkotta' (completely female vine) as the female parent and 'Cheriakaniakkadan' (bisexual) as the male parent. The desirable characters of the parent varieties are combined in the hybrid. Cytology of the hybrid is reported here.

Mitosis and meiosis were studied from root tips and PMCs respectively. Root tips and young spikes were fixed in 3:1 Carnoy's fluid, and chromosome preparations made by acetocarmine squash method¹. The root tips were pretreated with 0.002 M solution of 8-hydroxyquinoline for 3 hr at 4°C.

Root tip cells showed 52 small-sized chromosomes (figure 2), and they could be grouped into three size classes such as 4 pairs of relatively long and rod-shaped (1.8–1.6 μ), 10 medium-sized (1.3–1.1 μ) and 12 of very small-sized (1.0–0.8 μ) chromosomes. The parental varieties also showed $2n = 52$ chromosomes, and in karyotype features they were closely similar. Twenty six bivalents were observed in the PMCs of the hybrid (figure 1) as well as its male parent



Figures 1, 2. Chromosomes of the hybrid 'Panniyur-I'. 1. A PMC at metaphase I, $n = 26 \times 1400$. 2. Root tip mitosis, $2n = 52 \times 1400$.

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variety. Meiosis was strikingly normal except for the occurrence of 2–5 two-bivalent secondary associations at metaphase I in both. There was appreciable pollen fertility also (91%).

Previous reports show that all the cultivated and most of the wild varieties of *P. nigrum* possess $2n = 52^{1-3}$. All the $2n = 52$ varieties whose meiosis have been studied, including the present hybrid and its male parent variety have exhibited diploid-like behaviour characterised by regular synaptic pairing leading to formation of only bivalents and regular anaphase separation resulting in high pollen fertility. But, it has earlier been postulated² that the $2n = 52$ condition in *P. nigrum* could be a polyploid derivation, possibly tetraploid on $x = 13$. Recent reports of $2n = 26$ and 39 species of the genus have confirmed this possibility³. Consistent occurrence of the type of secondary association of bivalents noticed in the present Panniyur-I hybrid and its parent variety may suggest the allotetraploid origin of the $2n = 52$ condition.

Although the different varieties exhibit recognizable difference with regard to certain exomorphic characters, all the $2n = 52$ varieties studied from S. India^{1,2}, showed almost similar karyotype features. The karyotype of the present hybrid variety is found to compare very well with that of the other $2n = 52$ varieties including its parents. The strikingly normal meiotic behaviour of the hybrid should be a reflection of the similarity between the somatic complements of its parents, which has evidently facilitated their successful crossing leading to good fertility and high fruit set in the hybrid.

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TRICHOLOMA LOBAYENSE: A NEW EDIBLE MUSHROOM FROM INDIA

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DURING a survey of mushroom flora of West Bengal, a species of *Tricholoma* namely *T. lobayense* Heim was found to grow wild in summer in different areas of

Indo-gangetic plains (Districts of Howrah, Hooghly and 24-Parganas). This mushroom is large in size, has attractive snow white colour, is delicious and fetch a lucrative market value. The fruit bodies of these beautiful mushrooms grow generally in clusters on the soil near the base of trees under partial shade (figure 1).



Figure 1 *Tricholoma lobayense* in its wild habitat.

Tricholoma lobayense Heim

Pileus 8–22 cm in diameter, upper surface convex at the beginning which gradually flatten with age, smooth, appressed scales being present at the centre; margin thin regular, bent downwards, cuticle easily peeled, cortex homogeneous consisting of cylindrical homogeneous interwoven hyphae with clamp connections, gills decurrent, white, alternate, free towards the margin of the pileus; flesh white and fibrous; gill trama regular, consisting of parallel thin-walled hyphae; stipe 14–28 cm in length, unequal tapering towards the apex, smooth, fibrillose, solid sub-bulbous base; annulus and volva are absent; basidia clavate, tetra-sterigmatic, $20-28 \times 5-9 \mu\text{m}$; basidiospores hyaline, smooth, nonamyloid, ellipsoid, thin-walled, $4-6 \times 3.5-5 \mu\text{m}$, spore print milky white; Reaction with HOH positive, with HCl negative at first and then positive.

Literature survey shows that this species has not been previously reported from India¹⁻⁴ though this has been reported from West Africa⁵.