TABLE I

*Segregation of liveborn and stillborn cubs of the white and yellow tigers*

| Matings | Live born | Still-born | Total |
|---|---|---|---|
| I. *Both parents are white* | | | |
| Sukeshi × Mohan, Delhi | 9 | 1 | 10 |
| Rani × Raja, Delhi | 18 | 2 | 20 |
| Ashima × Hari, Delhi | 4 | 2 | 6 |
| Homa × Hari, Delhi | 2 | 1 | 3 |
| Mohini × Samson, Washington, DC | 4 | 1 | 5 |
| Mohini × Ramana, Washington, DC | 6 | 1 | 7 |
| II. *Female parent is white and male parent is wild yellow* | | | |
| Homa × Moti, Delhi | 12 | 4 | 16 |
| Roma × Moti, Delhi | 3 | 1 | 4 |
| All matings | 58 | 13 | 71 |
| Expected segregation (3:1) | 53·25 | 17·75 | 71 |

$\chi^2 = 1{\cdot}69$ d.f. = 1

Unless both parents are heterozygous for lethal gene, no stillborn cubs are produced.

Since there was not a single stillborn among ten cubs produced in the three litters of Begum, she was not likely to be heterozygous for the lethal gene. Mohan transmitted the lethal gene to one son named Samson and to the four offsprings namely, Raja, Rani, Sukeshi and Mohini, in the first litter of Radha as is evident from the fact that matings among them produced at least one stillborn. In their turn either Raja or Rani transmitted the lethal gene to their offsprings namely, Hari, Ashima and Roma. All of them are heterozygous for this gene. So are Homa and Ramana who are the products of the matings of Mohan–Sukeshi and Samson–Mohini respectively. Roma and Homa produced stillborn cubs when they mated with a normal coloured tiger, Moti who was caught from the forests of Panna in the neighbourhood of Rewa (*Fig.* 1). This evidence indicates that Moti must be heterozygous for the lethal gene.

If two parents, each having a lethal gene mate with each other, one in four cubs is likely to be stillborn. Due to small size of the progeny there exists heterogeneity in the segregation of some individual matings but the pooled data are in accordance with an expected segregation of liveborn and stillborn cubs in the ratio of 3 : 1 as is evident from $\chi^2$-test (Table I). However, more data are needed to confirm the presence of a lethal gene in the tigers of present investigation. Furthermore, it is also necessary to investigate whether there exists any chromosomal aberration either numerically or structurally among stillborn cubs.

*The absence of stillbirths in the Bristol* and Calcutta zoos may be due to the absence of the lethal gene among the progenitors of the white tigers in these two zoos.

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## CHLOROTIC STREAK, A NEW VIRUS DISEASE OF RICE

RICE is known to be affected by 11 virus diseases and two diseases caused by mycoplasma-like organism[2–4]. A new virus disease differing in symptoms and mode of transmission is reported in this paper.

The symptoms of the disease were stunting of plant growth; chlorotic streaking, striping or mottling of the newly emerged leaves; and difficult emergence of leaves. Characteristic chlorotic streaks were also observed on the leaf sheath. Recovery of the diseased plants after shock phase of the infection was often observed. The stubbles of the infected plants showed clear chlorotic streak symptoms, indicating the systemic nature of the disease.

*Nephotettix virescens* (Distant), *N. nigropictus* (Stål), and *Nilaparvata lugens* (Stål) failed to transmit the disease. The disease was also not transmissible by sap, seed and soil. Rice mealy bug, *Heterococcus rehi* (Lindinger) (=*Ripersia oryzae* Green) which is associated with disease spread, under field conditions successfully transmitted the disease in artificial inoculation tests.

One week after colonisation of the mealy bugs on the diseased plants, the nymphs that emerged on the diseased plants were transferred to 10-day-old seedlings of IR 26 at the rate of 3 nymphs per seedling.

After 8 hr inoculation access period, the nymphs were removed and the insecticide, phosphomidon was sprayed on the test seedlings. The typical symptoms of the disease were observed on the test seedlings in 7 to 15 days. The control seedlings fed with healthy nymphs did not exhibit any symptoms. The percentage of infection increased with the increase in number of infective nymphs used for inoculation in all five tests conducted involving 20 seedlings per each test. The average percentage of infection was 22, 38, 52, 65, and 95 when inoculated with 1, 2, 3, 5, and 10 bugs per seedling respectively.

The symptoms, systemic nature and mode of transmission provide the evidence that the disease is caused by a virus.

Previously reported virus and mycoplasma diseases of rice are transmitted by leafhoppers, planthoppers beetles, or sap. None of these diseases was reported to be transmitted by rice mealy bug. The symptoms of the disease are also distinctly different from the previously reported virus or mycoplasma diseases. Although the appearance of chlorotic streaks is similar to necrosis mosaic virus reported from India[1] and the disease reported in the present paper, the disease under investigation differs from necrosis mosaic in transmission, as the latter has been reported to be transmitted by mechanical inoculation and through soil. Hence, we conclude that this is a new virus disease of rice and tentatively designate it as 'chlorotic streak' based on the characteristic symptom of the disease subject to the confirmation by electromicroscopic studies.

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## KARYOMORPHOLOGY OF *LEUCAS* R.BR.

ALTHOUGH *Leucas* is a weed of common occurrence, no literature is available on its karyology. In the present work three species of this genus, namely, *L. aspera* Spreng, *L. diffusa* Benth. and *L. suffruticosa* Benth. have been attempted. Of these, *L. suffruticosa* was collected from Ooty; the other species were collected from Chidambaram, Tamil Nadu.

The root tips were pretreated for two hours in 0·003 M solution of 8-hydroxyquinoline. They were hydrolysed in con. HCl and then stained in 2% propiono orcein, for about two hours.

In *L. aspera* there are eleven pairs of chromosomes in the somatic complement. This agrees with the previous report[3] on this species. Of the eleven pairs (cf. Fig. 3) the I pair is medianly constricted. Secondary constriction is also present. Here, length of each chromosome is 2·5 $\mu$. II pair: median; secondary constriction is present; length: 1·5 $\mu$. III pair: median; length 1·5 $\mu$. IV and V pairs: median; length 1·25 $\mu$. VI pair: submedian; length 1·25 $\mu$. VII pair: subterminal; length 1·25 $\mu$. VIII pair: subterminal; length 1·0 $\mu$. IX and X pairs: median; length 1·0 $\mu$. XI pair: median; length: 0·75 $\mu$. Absolute length of haploid set: 14·25 $\mu$.

FIGS. 1–2. Fig. 1. *Leucas aspera*. Fig. 2. *L. diffusa* (× 1325).

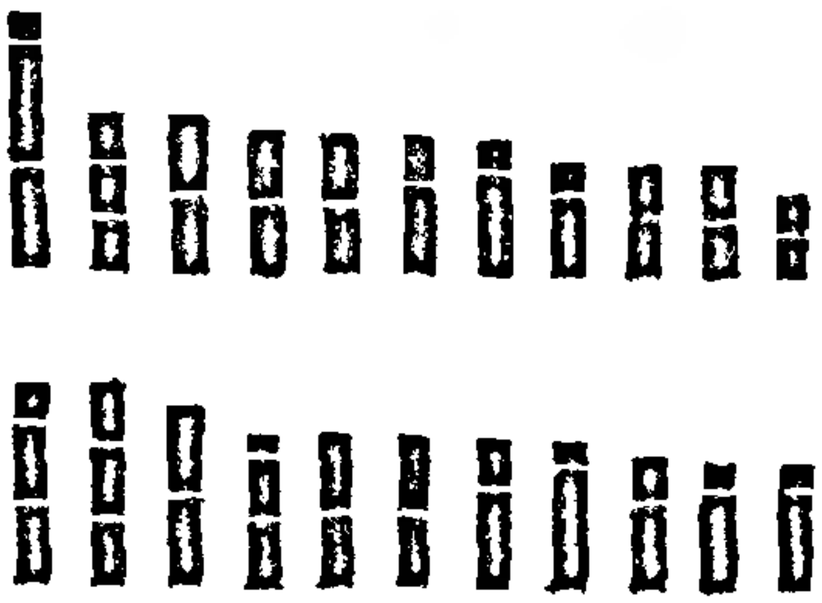

FIG. 3 Idiogram : (From top) *Leucas aspera*; *L. diffusa* ; *L. suffruticosa*.

In *L. diffusa* there are eleven pairs of chromosomes in the somatic cells. I and II pairs: median: secondary constriction is also present: length 2·0 $\mu$. III pair: median; length 1·75 $\mu$. IV pair: median; secondary constriction is also present; length