

spread mitotic stages were located, were carefully detached from the slides and a drop of 1% aceto-orcein solution was added to stain the pollen tube chromosomes.

Next the coverglasses were passed quickly through Acetic acid: Alcohol :: 1:1, 1:3, Absolute Alcohol, Alcohol: Xylol :: 1:1, 1:3 and pure Xylol grades and were finally mounted on slides in Canada Balsam.

In *L. aurea* well spread metaphase stages from pollen tube mitosis of our greenhouse plants showed 4 V-shaped and 3 rod-shaped chromosomes thus implying a somatic number of 8 V and 6 rod-chromosomes ($2n=14$) (Fig. 1, 6 and 7). An attempt was made later to determine the chromosome number from pollen tube germination of potted plants of another individual of *L. aurea*. Here a different chromosome number and karyotype was found. Well spread metaphase stages showed 5 V and 1 rod-chromosome (Fig. 2). Later, root tip mitosis from this potted plant showed 10 V and 2 rod-chromosomes thus implying a somatic number of 12 chromosomes. Occasional chromosome stickiness was observed (Fig. 8).

In *L. radiata* pollen tubes with 14 (Fig. 3); 15 (Fig. 4); 16 (Fig. 9) and 17 (Fig. 5) chromosomes were observed of which 16 and 17 were in a majority. Inariyama² also found the distribution of 16 and 17 chromosomes to be in a majority in $2n=33$ chromosome *L. radiata*. A study of pollen tube mitosis from other potted plants ($2n=33$) also showed similar distribution of chromosomes.

This easy method of chromosome number determination from pollen tube mitosis shows the possibility of counting chromosome number and analysing karyotype in those cases where root tips are not available for cytological studies. Species like *L. aurea* with markedly differentiated chromosomes (V and rod-shaped) could also be used for X-ray and chemical breakage of chromosome studies. The finding of pollen tubes with different chromosome numbers in *L. radiata* shows the possibility of the origin of different chromosome number races in *L. radiata*.

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- ¹ O. J. Eigsti, and P. Dustin, Colchicine in Agriculture, Medicine, Biology and Chemistry. 1957.
² S. Inariyama. *Sci. Rep. Tokyo Bun. Dai.*, 7, 103, 1951.

Note on the effectiveness of a combination treatment of Half Cutch and Half Bark of Cotton Fishing net Twines

The conventional method used by the vast majority of Indian fishermen for treatment of cotton nets is extracts of tannin from barks of various trees. Commercially available Cutch (extract of *Accacia catechu*) has been found to be generally more effective than bark treatment in the experiments conducted at this Institute². Levy³ while reviewing the preservation methods adopted by Moroccan fishermen, reports that a combination of half Catechu (cutch) and half ground pine bark "gives results one would not even have dared to hope for".

The percentage impregnation of the various preservative treatments on cotton twines are easily seen. The effectiveness of the individual and combination treatment is given in Table 1.

TABLE I

Preservatives	Effectiveness
Control	1.00
Indian Cutch	1.87
"Kalasam" bark	1.49
"Aiyana" bark	1.85
$\frac{1}{2}$ Indian Cutch + $\frac{1}{2}$ "Kalasam" bark	1.91
$\frac{1}{2}$ Indian Cutch + $\frac{1}{2}$ "Aiyana" bark	2.11

The effectiveness is calculated based on the method outlined by Nayar and Naidu¹. The combinations used in each case were half Indian Cutch on the one hand and half bark of 'Kalasam' (*Odina woder*) or half bark of 'Aiyana' (*Terminalia tomentosa*) on the other. For comparison, twines treated individually were also simultaneously exposed.

When half cutch and half bark are used, there is a definite increase in the percentage impregnation of the preservative. The effectiveness also shows a slight increase (Table 1). The combination treatment may therefore be more economically advantageous to the fishermen.

Full details of the experiments will be published elsewhere.

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¹ S. Gopalan Nayar and Mangayya R. Naidu, *Sci. & Cilt.*, **26**, 271, 1960.

² R. G. K. Kuriyan, *et. al.*, *Indian Fish. Bull.*, **9**, 1962.

³ H. Levy, *Modern Fishing Gear of the World*, 137, 1957.

Fusarium wilt of Ipecac

During cultivation of Ipecac by the Forest Department, Government of Assam, a widespread wilting disease of the Ipecac plants was noted and infected plants were supplied to the Botany Department for investigation.

The aim of the investigation has been to determine the causes of infection and the mode of parasitism of the disease.

The first symptom of wilt is associated with the yellowing of the lower leaves of the plant. When the disease is more pronounced, the yellowing, wilting and leaf fall begin resulting in drying of the leaves and stems. At the first stage the roots are not so markedly affected but after death of the upper portion the browning extends through the vascular bundles. The extent of wilting of the plants in the field was calculated and found to be about 8% of the total population.

Diseased plant materials were cut into $\frac{1}{2}$ " bits and were plated on Czapek's Dox agar medium after surface sterilization. Potato-dextrose medium was employed for maintaining the cultures.

Tissue plantings made from the wilted tissues on Czapek's Dox agar plates and incubated at room temperature almost always yielded a slow growing fungus resembling *Fusarium*. Occasionally colonies of *Rhizoctonia*, *Aspergillus*, *Penicillium*, *Curvularia*, *Syncephalastrum*, *Helminthosporium* were obtained.

Pathogenicity Tests—Inoculation experiments for the pathogenicity tests were made :

- (a) By incorporating inoculum of spores and mycelium of each isolate grown

previously in wheat bran for 13 days in sterile soil pots.

- (b) By spraying a suspension of spores by means of a sprayer on potted Ipecac plants.

Table 1 shows the number of seedlings infected with different isolates.

TABLE 1

Extent of wilting of Ipecac seedlings on 40th day

Pot soil treatment	Total No. of seedlings	No. of seedlings wilted	% of wilt
Control (No inoculum)	6	0	0
<i>Fusarium</i> inoculum	6	4	67%
<i>Rhizoctonia</i> inoculum	6	0	0
<i>Penicillium</i> inoculum	6	0	0
<i>Syncephalastrum</i> inoculum	6	0	0
<i>Helminthosporium</i> „	6	0	0
<i>Curvularia</i> „	6	0	0
<i>Aspergillus</i> „	6	0	0
Mixture of fungal „	6	1	16.7%

When the seven cultures of *Fusarium*, *Rhizoctonia*, *Aspergillus*, *Penicillium*, *Curvularia*, *Syncephalastrum*, *Helminthosporium* were tested for pathogenicity to Ipecac seedlings, six of them were non-pathogenic and only *Fusarium* caused a brown rot on the stem-base. Infected plants showed early signs of wilting. When a mixture of inoculum of spores of *Fusarium*, *Rhizoctonia*, *Aspergillus*, *Penicillium*, *Curvularia*, *Syncephalastrum*, *Helminthosporium*, was used, there was a limited extent of wilting, percentage of plants affected being 16.7%. In the controls, however, there was no infection.

In the plants, the first visible symptom of wilting was observed on the 8th day of the transplantation accompanied by a faint yellowing of the veins. This is similar to that reported in cotton and redgram by Satyanarayana and Kalyansundaram¹. The yellowing became more pronounced on the 10th day and on the 20th day the leaf has only a few green spots. The plants collapsed on the 32nd day after the transplantation.

From all the wilted plants in the above experiments, *Fusarium* sp. was reisolated and it corresponded in every instance with the form which was isolated from the wilted plants.

Spraying with suspension of spores—Ipecac plants growing in pots were sprayed with