as protein and nucleic acids. Al is known to decrease the contents of high bond energy P in peas[9]. Obviously this would limit the availability of energy compounds like ATP for the synthetic activities of the plant. Evidently, Al supply decreased the protein and RNA content of rice plant.

Thus, increasing concentrations of Al seemed to affect adversely the vital physiological processes of rice resulting in a serious physiological stress.

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1. Barber, S. A., *The plant root and its environment*, (ed.) E. W. Carson, Charlottesville, Univ. Press Virginia, 1974, p. 525.
2. Foy, C. D., Chaney, R. L. and White, M. C., *Annu. Rev. Plant Physiol.*, 1978, **29**, 514.
3. Yoshida, S., Forno, D. A., Cook, J. H. and Gomez, K. A., *Laboratory manual for physiological studies of rice*. International Rice Research Institute, Philippines, 1976, p. 43.
4. Nelson, L. E., *J. Biol. Chem.*, 1944, **153**, 375.
5. More, S. and Stein, W. H., *J. Biol. Chem.*, 1948, **176**, 367.
6. Lowry, O. H., Rosenbrough, N. J., Farr, H. L. and Randall, R. J., *J. Biol. Chem.*, 1951, **193**, 265.
7. Fletcher, R. A. and Osborne, D. J., *Can. J. Bot.*, 1966, **44**, 739.
8. Sung, M. W. and Kwon, B. K., *Korean J. Bot.*, 1980, **23**, 17.
9. Dedov, V. M. and Klimashevskii, E. L., *Skh. Nauki*, 1976, **3**, 13.

CALONECTRIA THEAE LOOS AND ITS ANAMORPH *CYLINDROCLADIUM THEAE* (PETCH) ALF. AND SOB. A NEW RECORD ON *EUCALYPTUS* FROM INDIA*

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DURING the monsoon of 1983 (June–September) a severe leaf blight disease was noticed in *Eucalyptus grandis* Hills ex Maiden plantations in high elevated areas of Kerala. The disease was so severe that within two months it defoliated prematurely the entire 1- to 3-year-old plants in various plantations in Wynad (Periya, Chandanathode), Idukki (Kulamavu, Meenmutty, Manjakkuzhy) and Pamba (Uppupara and Kakki) areas. Severe infection also caused large scale mortality (> 50 %) of *E. grandis* saplings in 1-year-old plantations due to repeated infections on new flushes. Initially the disease appeared as small water soaked lesions on leaves of the lower branches. Under high humidity and incessant heavy rain these lesions enlarged and coalesced together to cover the entire area of the leaf. The affected leaves turned greyish black and later brown and dropped. The disease also affected branches, causing cankers which resulted in die-back of shoots. The infection spread rapidly from lower whorl of branches towards the terminal shoots and within a short period the entire canopy of young trees got affected, giving a brownish appearance to the tree.

A fungus repeatedly isolated on potato-dextrose-agar (PDA) medium, from the diseased specimens collected from various plantations, was identified as *Calonectria theae* Loos and its anamorph *Cylindrocladium theae* (Petch) Alf. and Sob. Identity of the isolate was confirmed by CMI, England where cultures of *C. theae* have been deposited (IMI 280734 to 280737, 280739 to 280741).

Colony of *C. theae* is fast growing on PDA with abundant aerial mycelium. Conidiophore branches arise laterally from a stipe. Phialides hyaline, conidia hyaline, cylindrical, 3 septate, 42–66 × 3.9–6.6 μm. Sterile hyphae septate, 242–385 μm long, terminates in a broadly clavate vesicle. Chlamydospores and microsclerotia are produced in culture. Perithecia, produced in culture after 2 weeks of incubation, superficial, scattered, arising from a stroma, globose to ovoid, yellowish orange later turning reddish brown, 208–420 μm high, 210–390 μm diam. Asci club-shaped, hyaline, thin-walled, long stalked, 8 spored, 68.7–128.2 × 16.3–24.1 μm. Ascospores hyaline, elongate-fusoid, 3 septate 47–68.1 × 4.9–7.8 μm.

Pathogenicity of the isolate was confirmed by spraying conidial suspension mixed with 2 drops of Tween-20 on leaves of one-year-old *E. grandis* plants and by reisolating *C. theae* from infected leaves. The foliar symptoms produced by *C. theae* were more or less similar to those of *C. quinqueseptatum* Boedijn and Reitsma, *C. ilicicola* (Hawley) Boedijn and Reitsma, *C. clavatum* Hodges and May, and *C. scoparium*

Morg[1–3]. This is the first report of *Cal. theae* and its anamorph *Cylindrocladium theae* from India on *Eucalyptus grandis*. The anamorph was initially described as *Cercosporella theae*[4] Petch, and changed to *Candelospora theae*[5] (Petch) Wakefield ex Gaad, and finally to *Cylindrocladium theae*[6]. Even though, earlier the teleomorph, *Calonectria theae* was reported on dead tea leaves[7] as well as on artificial culture media[8], the full description of the fungus was only given by Loos[9].

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1. Sharma, J. K. and Mohanan, C., *Eur. J. For. Pathol.*, 1981, **12**, 129.
2. Pandotra, V. R., Gupta, J. H. and Sastry, K. S. M., *Sci. Cult.*, 1971, **37**, 391.
3. Bakshi, B. K., Disease-Insect Survey Report, 1975–1977. Dehra Dun; FRI & Colleges, 1977, 46.
4. Petch, T., *Ann. R. Bot. Gardens Peradeniya*, 1917, **6**, 246.
5. Gaad, C. H., *Monograph No. 2. The Tea Res. Inst. Ceylon*, 1949, 59.
6. Alfieri, S. A., Jr., Linderman, R. G., Morrison, R. H. and Sobers, E. K., *Phytopathology*, 1972, **62**, 647.
7. Gaad, C. H., *Tea Res. Inst. Ceylon Bull.*, 1929, **3**, 8.
8. Subba Rao, M. K., *Tea Sci. Sec. United Planters Assn. South India*, 1942, 25.
9. Loos, C. A., *Trans. Br. Mycol. Soc.*, 1949, **32**, 13.

KARYOTYPE OF *RHINOLOPHUS LUCTUS* (ORD: CHIROPTERA)

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THE genus *Rhinolophus* is represented by about 50 species. Of these, karyotypic data are available for 10 species. They are remarkable for their high diploid numbers and large number of telocentric chromosomes[2–9]. The present communication describes for the first time the karyotype of *Rhinolophus luctus* which is the largest rhinolophid bat occurring in India.

A single male individual was captured by a mist net from Halepalya village, Karnataka, India. Metaphase chromosomes were prepared and subsequently karyotyped according to conventional procedures[1,10].

The diploid number of chromosome complement was found to be 32 (figures 1 and 2). Of the 15 pairs of autosomes, 10 pairs were metacentrics and 5 pairs were submetacentrics (figure 3). The fundamental number was 60. While the X chromosome was a medium sized metacentric, the Y was the smallest telocentric.

The karyotypes in various species of *Rhinolophus* have remained relatively conservative having a diploid number ranging from 56–62 but possessing the same FN = 60. The existing variations in the rhinolophid bats reported thus far, arise from centric fusions and

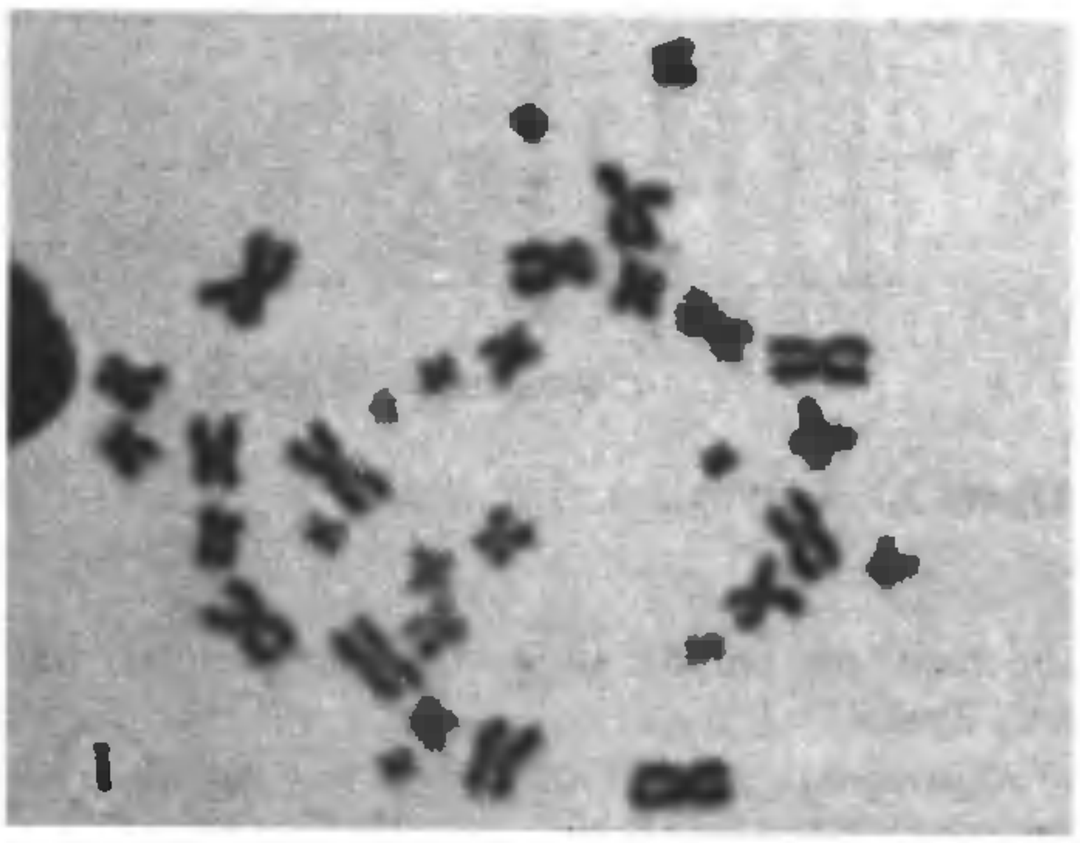

Figure 1. Metaphase plate of male *R. luctus*

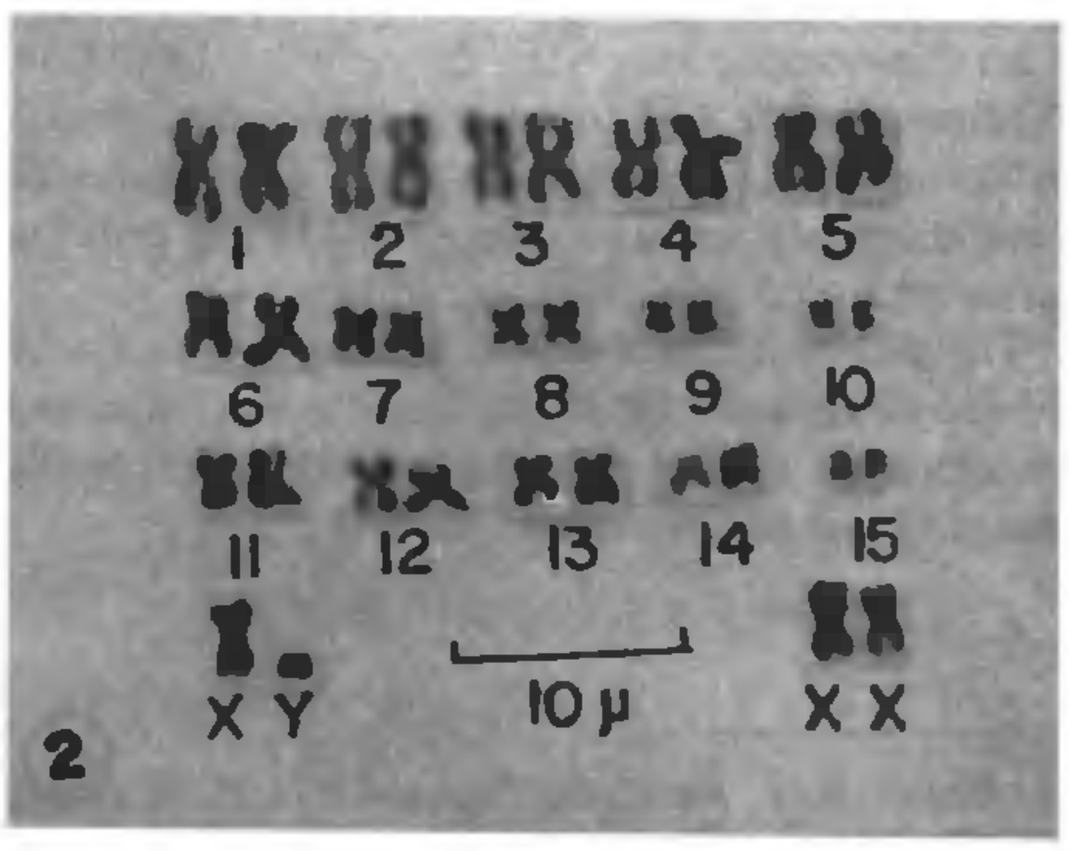

Figure 2. Karyotype of *R. luctus*