filtered through filter-paper containing 5 g Na_2SO_4. Cupric carbonate was washed with 25 ml chloroform and filtered through Na_2SO_4. The combined chloroform layer was evaporaed to 0·5 ml and subjected to thin layer chromatography using chloroform : methanol (97:3) as solvent system. The position of aflatoxin spots was observed under UV-light and Rf values of standards and samples were compared.

For the determination of aflatoxin concentration the procedure of Nobney and Nesbitt's[5] was followed.

Aspergillus, *Penicillium* and *Rhizopus* were the main fungi associated with the samples studied. Thin layer chromatography showed that out of 36 samples 18 were aflatoxin positive. Since the samples were obtained from flood affected areas they had plenty of moisture to support fungal growth and mycotoxin production.

Aflatoxin B_1 wos found most abundantly in the positive samples. Very few samples contained aflatoxin B_2, G_1 and G_2. The typical strains of *Aspergillus flavus* that produce aflatoxins do not form G_1 and G_2[4]. The concentration of aflatoxin B_1 ranged from 6 ppb to 200 ppb. Among the various aflatoxins, B_1 is most toxic and produced in maximum amount. Food and Drug Administration of the United States has fixed the tolerance limit for aflatoxin at 20 ppb. In the present study four samples were exceeding this limit, the highest being 200 ppb. However, the condentrations of afflatoxin B_2, G_1 and G_2 were below 10 ppb in all the cases.

Nothing definite is known about toxicity levels of aflatoxins for man. Tulpule *et al.*[8] have reported that young monkeys develop liver lesions, very like bilary cirrhosis, when fed with 1 mg aflatoxin daily for 3 weeks. Monkeys were not, however, as susceptible as guinea pigs to the toxin. Scientists from CFTRI, Mysore, have reported the occurrence of liver cirrhosis, similar to Indian childhood cirrhosis, in a few children who were accidently fed aflatoxin contaminated peanut protein flour as part of their treatment for protein deficiency.

P.G. Department of Botany, R. S. MISHRA.
Bhagalpur University,
Bhagalpur 812 007, Bihar,
and
Department of Plant Pathology, R. S. SINGH.
G.B. Pant Univ. Agric. and
Technology,
Pantnagar, Naini Tal,
November 21, 1977.

1. Allcroft, R. and Carnaghan, R. B. A., *Chem. Ind.* (England), 1963, p. 50.
2. Carnaghan, R. B. A., *Nature*, 1965, 208, 308.
3. Dapis, N. D. and Diener, U. L., *Proc. First U.S.-Japan Conf. on Toxic Micro-organisms*, ed. M. Herzberg., 1970, p. 43.
4. Hesseltine, C. W., *et al.*, Paper presented at meeting of American Soc. Microbiol., Detioit, Mich., 1968.
5. Nabney, J. and Nesbitt, B. F., *Analyst*, 1965, 90, 115.
6. Thomas, R., Eppley, R. M. and Tricksess, *JOAC*, 1975, 58, 114.
7. Tripathi, R. K., *Indian J. Exp. Biol.*, 1973, 11, 361.
8. Tulpule. P. G., Mahadevan, T. V. and Gopalan, C., *Lancet*, 1964.

TWO NEW SPECIES OF HYPHOMYCETES

Two new species of Hyphomycetes, *viz.*, *Cercospora crotonicola* and *Phaeoisariopsis lagerstromeae* are being described here.

(1) *Cercospora crotonicola* spec. nov.

Leaf spots amphigenous, circular to oval, dull white. Conidiophores abdundant, epiphyllous, stroma of few brown cells, fasciculate, olivaceous brown, septate, unbranched, simple, straight or flexuous, sometimes distinct scar is present at the apex of conidiophore, 50–110 × 4–7 μ. Conidia hyaline, broader below tapering upwards, 3–13 septate, 26–82 × 3–4.5 μ.

On the living leaves of *Croton sparsiflorus* Morong. Jabalpur (M.P.), India, October, 1976, Leg. R.C. Rajak.

Type specimen has been deposited in herb. IMI, Kew, No. 214009.

There is no report of any *Cercospora* parasitising *Croton*. It is, therefore, being described here as a new species *C. crotonicola* sp. nov.

Cercospora crotonicola spec. nov.

Maculae folicolae amphigena, circulara vel ovala, albus pulveraceous, Conidinophora abundans, epiphylla, hypostromata minutum, fasciculata, olivacea—brunnea, septata, non ramus, simplicia, recta vel flexuosa, nonunquam cicatrice eminente ad apicem conidiophorum, 50–110 × 4–7 μ. Conidiis hyalina, latus infra fastigata sursum, 3–13 septata, 26–82 × 3–4·5 μ. (Fig. 1).

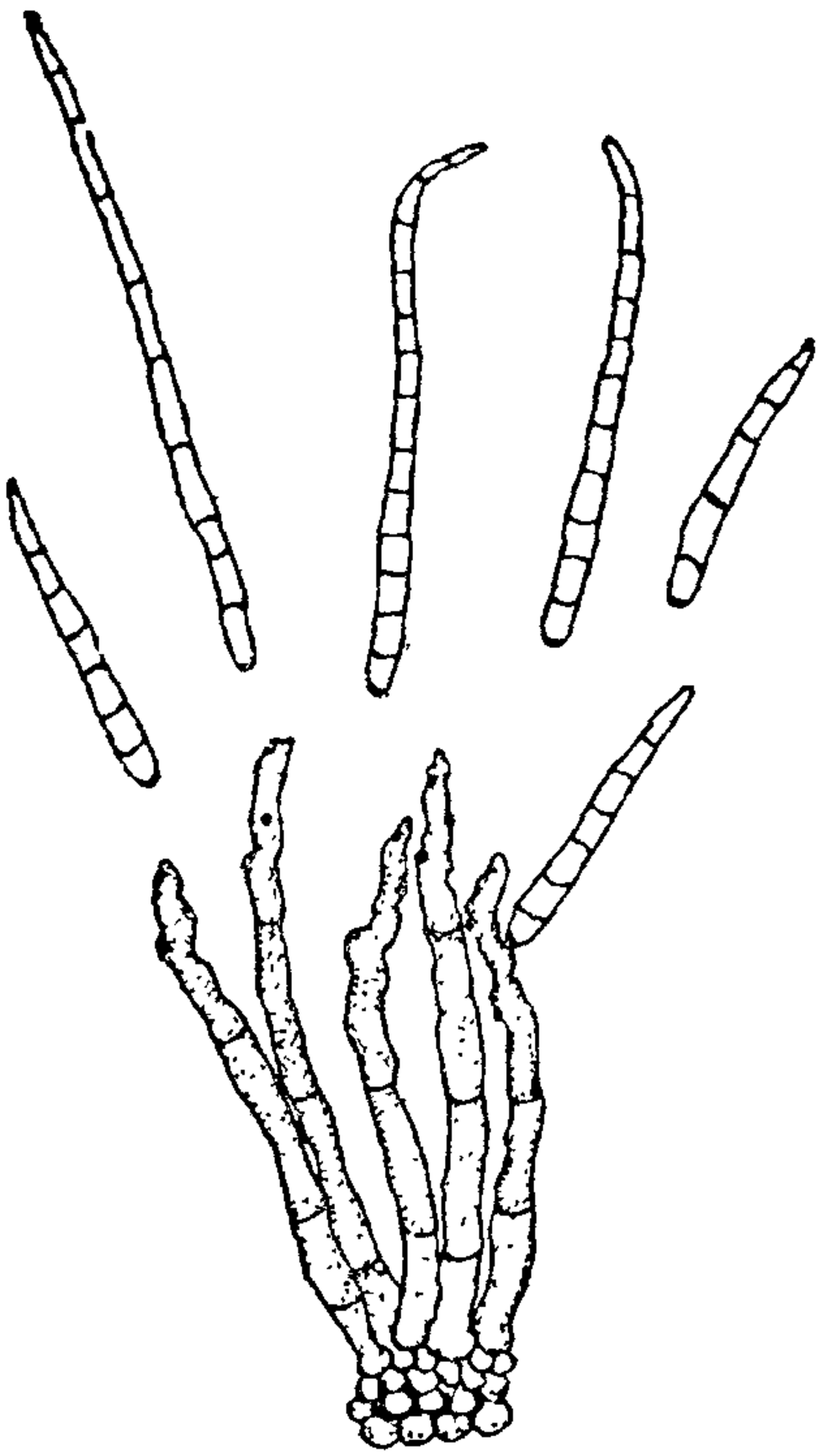
In foliis viventibus *Croton sparsiflorus* Morong, ad, Jabalpur (M.P.), India, Octoberi 1976, Leg R. C. Rajak.

Typus positus in Herb. I.M.I., Kew, No. 214009.

(2) *Phaeosariopsis lagerstromeae* spec. nov.

Colonies effuse, greyish brown, cottony, amphigenous, scattered. Mycelium immersed. Stroma partly immersed, spongy, bulbous to pulvinate, olivа-

ceous brown, 60–118 μ broad and 44–70 μ high. Conidiophores macronematous, caespitose or forming loose synnemata, up to 230 μ long, threads 5·5 μ thick near the base, swelling up to 9·5 μ near the apex, septate, olivaceous brown. Conidia solitary, dry, acropleurogenous, simple, mostly obclavate or cylindrical, olivaceous, end cells subhyaline, conicotruncate at the base, smooth, 0–12 septate, septa thick and dark brown, 26–80 × 5·5–9 μ.



25 μ

FIG. 1. *Cercospora crotonicola conidiophores and conidia.*

On the living leaves of *Lagerstroemia parviflora* Roxb., Pachmarhi (M.P.), India, January, 1977, Leg. R. C. Rajak.

Type specimen has been deposited in Herb. I.M.I., Kew, No. 212436.

The form genus *Phaeoisariopsis* was erected by Teódoro Ferraris[1] (1909) based on *Isariopsis griseola* Sacc. Ellis (1971, 76) described about eleven species.[2,3] On comparison, the present fungus is found to be quite distinct from all the known species. The specimen was referred to Dr. J. L. Mulder of the C.M.I., Kew, England, who confirmed that it is a new species of *Phaeoisariopsis*.

Phaeoisariopsis lagerstroemeae spec. nov.

Coloniae effusae, griseo-brunneae, bysinnae, amphigenae, sparsae. Mycelio immerso. Stroma parte immersum, spongoideum, bulbiforme vel pulvinatum, olivaceobrunneum, 60–118 μ latum, 40–70 μ altum. Conidiophori macronemati, caespitosi vel synnemata laxa efformantes, ad 230 μ longi, floccis 5·5 μ diametro juxta basim, apicem versus ad 9·5 μ inflatis, septatis, olivaceo-brunneis. Conidia solitaria, sicca, acropleurogena, simplicia, plerumque obclavata vel cylindrica, divaceo—brunnea, cellulis terminalibus pallide olivaceis, ad basim conicotruncata, levia, 0–12 septata, septis crassis, atro brunneis, 26–80 × 5·5–9 μ. (Fig. 2).

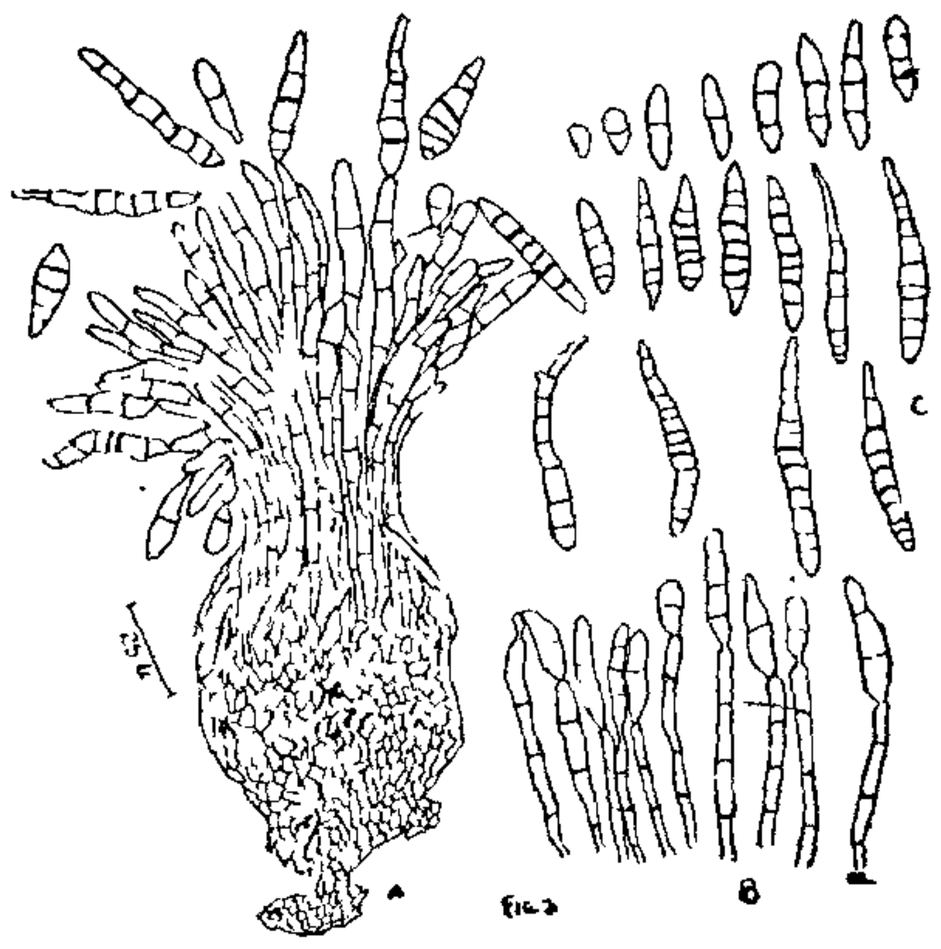


FIG. 2. *Phaesisariopsis lagerstroemeae.* A. Stromata, conidiophores and conidia. B. Conidiophores and conidia, C. Conidia.

In follis viventibus *Lagerstroemia parviflora* Roxb., Pachmarhi (M.P.), India, January, 1977, Leg. R. C. Rajak.

Typus positus in Herb. I.M.I., Kew, No. 212436.

We are grateful to the Director and Drs. B. C. Sutton and J. L. Mulder of the Commonwealth Mycological Institute, Kew, for their help in the identification of the species. Thanks are also due to Dr. D. P. Rogers, University of Illinois, Urbana, Illinois U.S.A. for rendering into latin the diagnoses of new species and to the Principal and Head, Botany

Department, Government Science College, Jabalpur for providing Laboratory facilities.

Phytopathological Laboratory, R. C. RAJAK.
Department of Botany, K. K. SONI.
Government Science College, G. P. PATHAK.
Jabalpur-482 001 (M.P.).
January 23, 1978.

1. Ferraris, T., *Ann. Mycol.*, 1909, 7, 280.
2. Ellis, M. B., *Dematiaceous Hypomycetes*, C.M.I., Kew, England, 1971, p. 608.
3. —, *More Dematiaceous Hyphomycetes*, C.M.I., Kew, England, 1976, p. 507.

STUDIES OF CHROMOCENTRES IN RADISH (*RAPHANUS SATIVUS* L.)

MANY species of angiosperms, including radish, are characterized by the presence of constitutive heterochromatin in the interphase nuclei as heteropycnotic bodies which are termed as chromocentres[1-7]. They remain condensed during the interphase of the cell cycle and stain differently than euchromatin. Heterochromatin is known to play a key role in gene regulation in eucaryotes, functioning as a non-specific repressor that blocks uncoiling and brings gene inactivation[5-9]. Radish constitutes a suitable object for the study of constitutive heterochromatin, for all types of its cells exhibit chromocentres in thhe interphase nuclei. A comparative study of the number and distribution of chromocentres may be of considerable evolutionary value[10]. It may also help us to understand the mechanism of chromosome pairing since heterochromatin plays a definite role in this process[11-12]. The present report gives an account of the number and distribution of chromocentres in four varieties of radish (*Raphanus sativus* L.) in order to understand these varieties in terms of their nuclear structure and organization,

Four varieties of radish, namely 'Japanese White', 'Rainy Season Radish Red', 'Kalamikati Red' and 'Pusa Desi', have been used in the present study. Plants were raised from seeds in identical field condition. For cytological analysis, flower buds were fixed in acetic alcohol (1 : 3) mordanted with $FeCl_3$. Pistils were dissected out and only the stigmatic portion was stained and squashed in 1·5% acetocarmine. Scoring was made in 20 receptive cells of stigma per plant and altogether 5 plants were studied in each variety. Chromocentre counts were made in well squashed cells only.

Although chromocentres were present in all types of cells, receptive cells of the stigma were purposely chosen for counting chromocentres because of two principal considerations: firstly, receptive cells were flask-shaped and could, therefore, be easily distinguished and, secondly, chromocentres in them were larger in size, stained better and were countable. Several chromocentres in the form of heteropycnotic bodies were observed in the interphase nuclei of these cells. The number of these heteropyenotic bodies varied greatly, ranging from 11 to 18 per nucleus, with the majority of nuclei containing 12–14 chromocentres. They also varied in size. A pair of chromocentres was found attached to the nucleous (Fig. 1). Although

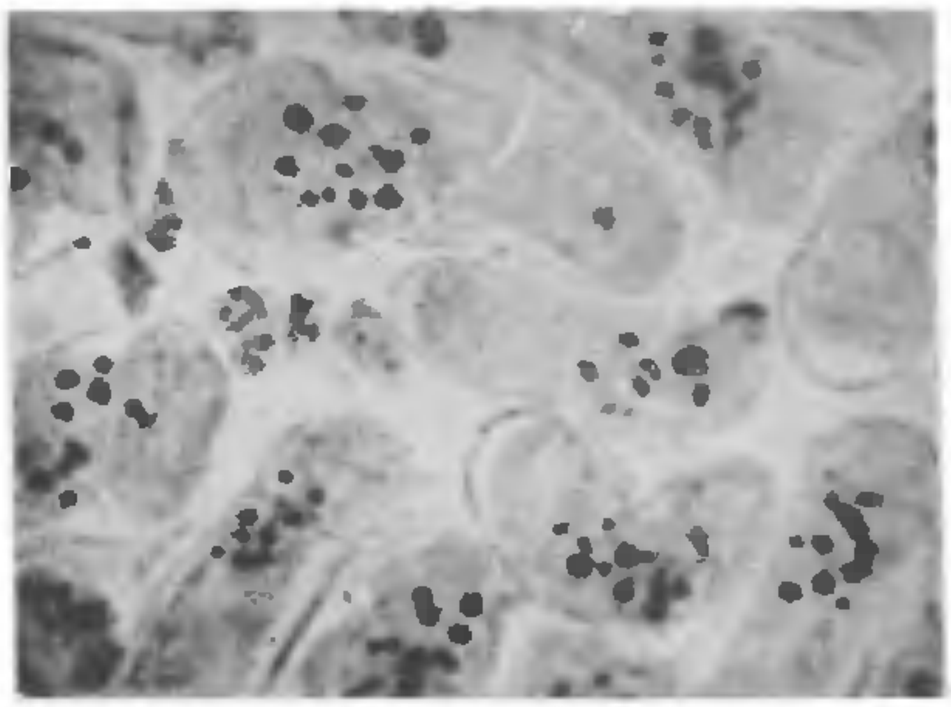


FIG. 1. Receptive cells of stigma showing varying number of chromocentres in the interphase nuclei.

these varieties did not vary significantly among themselves, plants belonging to these varieties definitely demonstrated variation in the mean number of chromocentres in the interphase nuclei which ranged from 12·5 to 14·6 (Table I) · the mean number of chromocentres was found to be 13·2 in 'Japanese White', 13·3 in 'Rainy Season Radish Red', 13·5 in 'Kalamikati Red' and 13·6 in 'Pusa Desi'. The distribution pattern of chromocentres in the nuclei also showed variation in these varieties. 'Kalamikati Red' demonstrated a more uniform distribution of chromocentres than other varieties. Nuclei containing 16 or more chromocentres were characteristic of 'Rainy Season Radish Red' and 'Pusa Desi' only.

Chromocentres have been an object of cytogenetic investigations for quite sometime. Earlier studies have demonstrated that the amount and the distribution of heterochromatin, as indicated by the number and distribution of chromocentres, in the interphase nuclei, of radish and maize are genotypically controlled[7-13]. Different varietal populations of radish may similarly be exploited as a suitable model for the study of genetics of heterochromatin. The present study demonstrates clearly that plants belonging to different varietal populations of radish vary among themselves in the mean number of chromocentres and their distribution in their interphase nuclei. Inter and intravarietal variations in this heterochromatin pheno-