

**CYLINDROCARPON MANGIFERUM SP NOV—A NEW FUNGUS ISOLATED FROM MANGO (*MANGIFERA INDICA*) AFFECTED WITH VEGETATIVE MALFORMATION**

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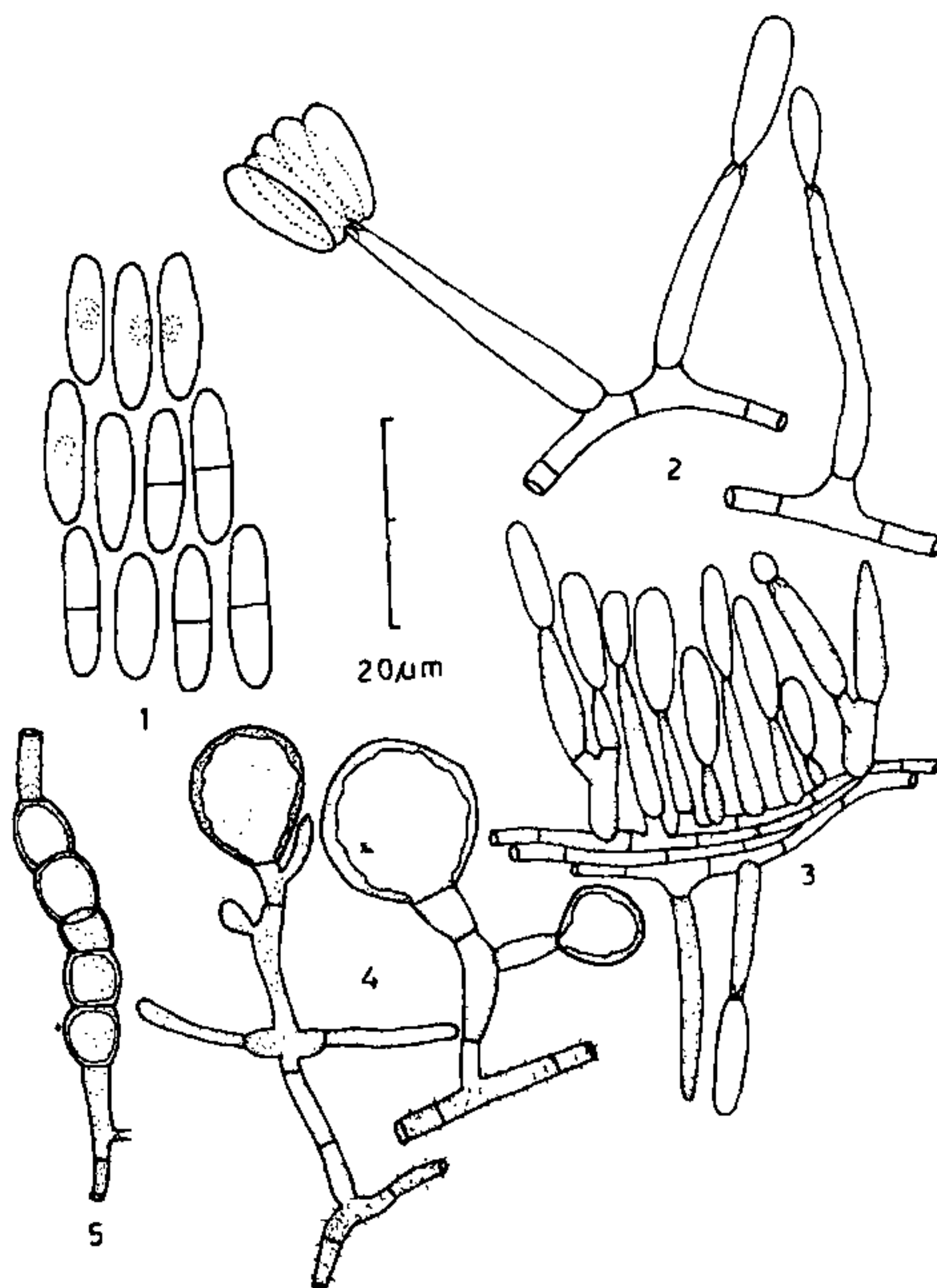
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MANGO malformation, a serious disease in north-west India<sup>1</sup>, is caused by *Fusarium moniliforme*. The association of the same fungus with the disease has also been found in other parts of the world<sup>1</sup>. However, some studies<sup>3</sup> have reported *F. oxysporum* to be the cause of this disease. Therefore, to check the disease, samples of vegetative malformation were collected during 1985 from 130 trees from different parts of northern India. From these samples 392 were isolated, of which 336 were *F. moniliforme*, 35 *Cylindrocarpon* sp and the remaining miscellaneous fungi.

The *Cylindrocarpon* species are known to cause fruit rot, dry rot, root rot, fruit and leaf spot and wilt disease in woody trees of economic importance. This is, however, the first time that a *Cylindrocarpon* sp has been isolated from mango in India. The only species of *Cylindrocarpon* isolated from mango outside India is *C. destructans*<sup>4</sup>. The present isolate differs considerably from *C. destructans* and other species of this genus.<sup>5-10</sup> This paper describes the new fungus named as *C. mangiferum*, after the name of the host, and also compares it with some closely related species of the genus.

*Cylindrocarpon mangiferum* P. N. Chowdhry and A. Varma sp nov

Colonies on carrot potato agar at 27°C attaining a diameter 6.5 cm in three days, cottony white initially, turning beige with maturity, reverse pale pinkish, buff to cinnamon in colour. *Aerial hyphae* pale cinnamon, smooth and thin-walled, 1.5–2.5 μm wide. *Submerged hyphae* hyaline to olive brown, slightly thick-walled and rough. Mucilaginous orange mass of macroconidia arise from simple or erumpent pinnotal sporodochia. *Conidiophores* hyaline, simple or penicillately branched in pinnotal sporodochia, terminating into long cylindrical phialides with marked terminal collar, 5–35 × 2–4 μm size. *Macroconidia* hyaline individually, pinkish orange in groups, centrally guttulate, straight and cylindrical with rounded ends, often



**Figures 1–5.** *Cylindrocarpon mangiferum* sp nov. 1. Conidia. 2. Simple phialides. 3. Pinnotal sporodochia showing mucilaginous mass of conidia. 4. Terminal chlamydospores from rough mycelium. 5. Intercalary chlamydospores.

narrowing slightly towards base, 0–1 septate (mostly 0-septate, occasionally 1-septate), 12–15 × 3–4 μm in size. *Chlamydospores* terminal or intercalary, globose, smooth, thin-walled, hyaline becoming brown 5–15 μm diam. (figures 1–5).

In malformed inflorescens of *Mangifera indica* Linn. 12 September 1985, Pantnagar, Anupam Varma, (HCIO 32331 Holotype, ITCC 3549 Isotype).

*Cylindrocarpon mangiferum* P. N. Chowdhry and A. Varma sp nov

Colonies in CPA addita 27°C post 3 dies 6.5 cm diam. In *Cultura Mycelium aerium* album vel brunneum, floccosum, colour dilute roseum vel brunneum. *Conidiophora* simplicia vel penicillate ramosa in sporodochis producta, hyalina, phialidibus cylindricis terminantia, 5–35 × 2–4 μm size. *Macroconidia* hyalina, guttulata, recta, cylindrica.

utrine rotundata, 0-1 septata,  $12-15 \times 3-4 \mu\text{m}$ . *Chlamydo sporae* globosae levia et tenuitunicata, album vel brunneum,  $5-15 \mu\text{m}$  diametro.

Habitat: Ex *Mangifera indica* Linn, 12 September 1985, Pantnagar, Anupam Varma (HCIO 38231 Holotypus, ITCC 3549 Isotypus).

The above description of *C. mangiferum* clearly places this species in group 4 of the genus<sup>4</sup>. This group has 13 species. Of these *C. mangiferum* resembles *C. tenue*, *C. gracile*, *C. indicum* and *C. reteaudii* more closely than other species. A close examination, however, differentiates *C. mangiferum* from these species as they differ in the size and shape of conidia, and cultural characters. For example, *C. mangiferum* has faster growth rate, absence of reddish brown pigment in aerial mycelium and also agar medium, smaller and less septate conidia, longer phialides as well as smaller chlamydospores and rough walled submerged hyphae. On the basis of various distinguishing features of the new fungus the following key has been developed for help in identification.

Microconidia absent but chlamydospore present

Macroconidia straight and cylindrical:

- a. Conidia 0-1 Septate (i)  $12-15 \times 3-4 \mu\text{m}$  size  
- *C. mangiferum* sp  
nov  
(ii)  $16-20 \times 2-3 \mu\text{m}$  size  
- *C. tenue* Bugn<sup>4</sup>
- b. Conidia 1-Septate (i)  $26-44 \times 3-4 \mu\text{m}$  size  
- *C. gracile* Bugn<sup>4</sup>
- c. Conidia 4-Septate (i)  $15-26 \times \mu\text{m}$  size  
 $\times C. indicum$   
Chowdhry<sup>5</sup>  
(ii)  $80-110 \times 6-7 \mu\text{m}$  size  
- *C. reteaudii* Bugn<sup>4</sup>

The type materials of *C. mangiferum* have been deposited in *Herbarium Cryptogamiae Indiae Orientalis* and Indian Type Culture Collection, IARI, New Delhi.

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#### SPEED OF GERMINATION AND ITS GENETICS IN CHICKPEA (*CICER ARIETINUM* L)

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SPEED of seed germination (germination rate) has been recognized in certain cases as a useful parameter of seed quality<sup>1</sup> and has been used as a criterion in field crops for evaluation of seedling vigour. Among food legumes the effect of speed of germination on the development and seed yield has been investigated employing soyabean<sup>2</sup>. In chickpea, an important food legume, there are no reports on differences in speed of germination and its genetics.

A spontaneous mutant E100y(m) reported<sup>3</sup> earlier is a late germinator and takes 15-16 days for emergence as compared to 7-8 days by the parent E100y and other lines. The present study included E100y and H81-73, normal germinators; and [E100y(m)], slow germinating mutant line; the F<sub>1</sub> and F<sub>2</sub> generations of the two crosses between the normal and slow germinating lines. The seeds were