

FIG. 7. Photomicrograph: Glands on the cotyledons of witchweed, $\times 525$.

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Department of Botany,
Nagarjuna University,
Nagarjunanagar 522 510,
Guntur Dt., A.P., December 12, 1979.

B. V. N. REDDY.
PIRATLA N. RAO.

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TWO NEW FRUIT ROT DISEASES OF CITRUS

DURING surveys on fruit-rot diseases in Jabalpur, two interesting and hitherto undescribed diseases of citrus (*Citrus medica* and *C. sinensis*) were observed. They have been described here for the first time from India.

Hormonema rot

The symptoms on fruits of *Citrus medica* Linn. started in the form of small, discoloured area changing to greyish brown coloured spots, 2-2 cm in diameter. In the advanced stage, the spots became dark greyish black and shining, mucilagenous mass appeared in the diseased regions. After a week the infected regions dried up and shrank.

Isolations were made on potato-dextrose-agar medium and the fungus was identified as *Hormonema* (Arx¹). The culture (IMI No. 224340) was also examined by Dr. B. L. Bready of Commonwealth Mycological Institute, Kew, who remarked that "It is difficult to determine species in the genus *Hormonema* which consists of the conidial cultural states of various ascomycetes". When compared with the description of the known species of *Hormonema* (De Hoog, et al.²) the cultural and morphological characters of the present isolate agrees well with *H. dematioides*. Since this genus is newly recorded for India a brief description of the fungus is given below.

Colonies on P.D.A. dark greyish black | with collapsed margins, slimy, shining; mycelium hyaline becoming brown to dark brown with age, septate, branched, thick walled; conidia borne from dark cells of hyphae, unicellular, ellipsoidal, hyaline, $4-14 \times 3.5-6 \mu\text{m}$ (Fig. 1).

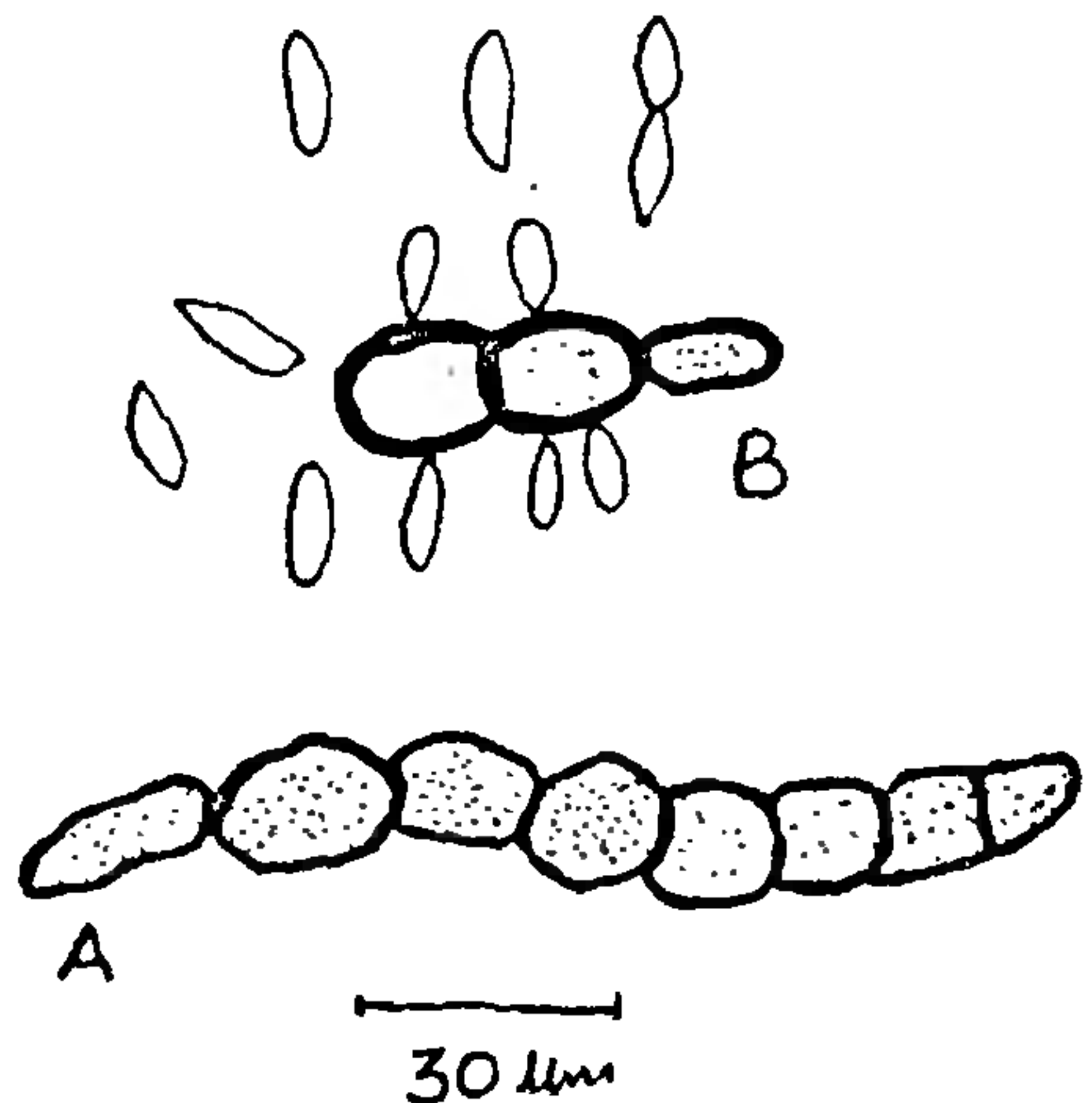


FIG. 1 A-B. A, Thick walled mycelium; B, Sporogenous hyphae.

Pathogenicity test was performed by inflicting a small, shallow wound in the healthy lemon fruits and inoculating with a bit of mycelium and spore (Tandon et al.³). The inoculated region was covered with moistened cotton pads for 24 hrs. The symptoms

developed within 7 days. Reisolations always yielded the same organism in culture.

Drechslera rot

The infection on the fruits of *Citrus sinensis* Osbeck, started as small water soaked lesions surrounded by chlorotic zone. Gradually the colour of the diseased regions changed to greyish brown which measured 2-4 cm in diameter. After 7 days the whole of the infected region was seen covered with greyish cottony, fluffy mycelium and yellow drops ooze out of the cracked surface and the rotted fruit gave foul smell.

The isolations on P.D.A. medium repeatedly yielded *Drechslera* in culture which was identified as *D. rostrata* Drechsler (Ellis³). Pathogenicity test was confirmed by inoculating the healthy fruits by the method as suggested by Tandon *et al.*⁴, and Koch's postulates were fully satisfied. The culture has been deposited in the Herbarium Commonwealth Mycological Institute, Kew, England (IMI No. 204325).

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Department of Biological Sciences,
University of Jabalpur,
Jabalpur 482 001, M.P.,
December 24, 1979.

R. C. RAJAK,
S. P. GAUTAM.]

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GENETIC SYSTEM AND INTERRELATIONSHIP BETWEEN *SOLANUM RETROFLEXUM* AND *S. NODIFLORUM* OF *S. NIGRUM* COMPLEX

A POLYPLOID complex, such as *Solanum nigrum* L. complex, provides a system in which the process of speciation and mechanism of evolution of higher chromosomal forms can be studied and experimentally demonstrated. The present note deals with genetic system and interrelationship between *Solanum retroflexum* Dun. and *Solanum nodiflorum* Jacq. subsp. *nodiflorum* as indicated by preliminary cytomorphological study of the F₁ hybrids and the amphidiploids obtained by doubling the chromosome number of the hybrids by colchicine treatment (0.20% for 18 hrs).

S. retroflexum and *S. nodiflorum* subsp. *nodiflorum* are the species of *S. nigrum* complex and these were raised from seed supplied by Dr. Allan K. Stoner, Research Horticulturist, United States Department of Agriculture, Beltsville Agricultural Research Center, Beltsville, Maryland (USA). The former species is a tetraploid with $2n = 48$ chromosomes while the latter is a diploid with $2n = 24$ chromosomes. *S. retroflexum* is small with several spreading branches and dull black fruits whereas *S. nodiflorum* subsp. *nodiflorum* is tall and erect bearing several shiny purple fruits which are smaller than those of the former.

The cross-pollinations between the two species were successful only when the higher chromosomal form, that is, *S. retroflexum* was used as female parent. Hundred flowers of *S. retroflexum* were pollinated with pollen of *S. nodiflorum* subsp. *nodiflorum*. The fruit-set was 21.00%. The mean number of seeds per fruit was about 12 and the germination was 10.60%. The F₁ hybrids were erect with thick dark green leaves. They branched profusely and flowered abundantly, but there was no fruit-set either on self- or cross-pollinations among them. The pollen fertility of the hybrids was as low as 1.32%. They were at triploid level with $n = 18$ chromosomes. A detailed comparative account of morphological features of the parents and hybrids is presented in Table I.

TABLE I

Comparison of morphological characters of *S. retroflexum*, *S. nodiflorum* subsp. *nodiflorum* and F₁ hybrids

Characters	<i>S. retroflexum</i>	Hybrid (F ₁)	<i>S. nodiflorum</i> subsp. <i>nodiflorum</i>
Habit	Profusely branched [and semi-erect	Erect	[Erect
Plant height (cm)	38.40	[48.80	61.50
Leaf	Ovate	Ovate	Ovate
Petiole length (cm)	1.80	2.05	[1.58
Lamina length (cm)	5.83	6.48	7.67
Lamina breadth (cm)	3.10	3.13	3.50
Leaf thickness (μ)	299.62	268.68	241.40
Flowers per inflorescence	3	4	6
Fruits per cluster	2	No fruit-set	5
Fruit colour	Dark black	..	Deep purple
Seeds per fruit	31	..	67
Pollen diameter (μ)	23.83	18.56	19.20
Pollen fertility (%)	83.63	1.32	83.00
Chromosome number (n)	24	18	12