

time. Twig blight and stem canker occurred on Jayadhar cotton plants. Repeated isolations from infected twig and stem consistently yielded *Alternaria* sp. At first the infection appeared as a dark brown, semicircular lesions on twigs and stem. The lesions on the stem enlarged rapidly with its centre becoming deeply sunken to form a canker. Diameter of lesions changed gradually and became elliptical or oval in shape with its long axis parallel to the stem. The infected tissues split longitudinally or crack into small pieces. Finally the stem or twig breaks off at the canker resulting in the death of the part or entire plant.

Pathogeny was confirmed by spraying the spore suspension of *Alternaria* sp. on twigs, and stems of Jayadhar cotton plants grown in earthen pots in the laboratory. Maximum humidity was maintained by frequent sprays of sterile water. The plants were later incubated at room temperature ($27 \pm 1^\circ\text{C}$). All the symptoms mentioned above were confirmed.

The fungus under study was identified as *Alternaria macrospora* Zimm. by P. M. Kirk, Commonwealth Mycological Institute, England IMI 214710.

This is a first report of twig blight and stem canker on *Gossypium herbaceum* L. cotton from India. Stem canker of cotton caused by *A. macrospora* Zimm. was reported from China¹.

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PRODUCTION OF PECTIC ENZYMES BY *CASSYTHA FILIFORMIS* L.

A. S. REDDY, M. KOMRAIAH AND S. M. REDDY
Department of Botany, Kakatiya University
Warangal 506 009, India

Cassytha filiformis, a partial angiospermic parasite, generally harbours perennial plants and causes adverse effect on the growth of the host, besides causing an ugly appearance. Though the role of the cell wall degrading enzymes in general and pectic enzymes in particular has been very well established in the pathogenesis of bacteria and fungi¹, very little is known in regard to parasitic angiosperms. Secretion of cellulase enzymes by haustoria of *C. filiformis* has been reported earlier². In this communication, the production of pectin degrading enzymes is reported.

Two strains of *C. filiformis* growing on *Nerium indicum* Mill. and *Hibiscus rosa-sinensis* L. were selected for the present investigation. The deep seated haustoria were collected intact by carefully dissecting the host tissue. Five g of haustoria were ground in a chilled pestle and mortar. The pectic enzymes were extracted with citrate buffer (pH 5.5). The tissue extracts were centrifuged at 1800 g for 30 min and dialysed. Pectin methyl esterase³ (PME), hydrolases (polygalacturonase—PG and pectin methyl galacturonase—PMG)⁴⁻⁵, lyases (pectin lyase—PL and pectic acid lyase—PAL)⁶ were assayed by standard methods and the results are presented in Table I.

From Table I, it is evident that both strains elaborated different types of pectic enzymes. However, the degree varied both with the strain and with the type of enzyme. The *Nerium indicum* strain comparatively produced more of PME. Both strains showed activity of Exo-PG and Exo-PMG. The Exo-PG was comparatively more than that of Exo-PMG activity. The

TABLE I

Pectinase (hydrolases, lyases, PME) enzyme activity in haustoria of Cassytha filiformis

Strain	PG		PMG		PL	PAL	PME***
	Exo*	Endo**	Exo*	Endo**	Endo**	Endo**	
<i>Nerium indicum</i> Mill.	350.0	22.0	180.0	10.67	—	67.11	0.217
<i>Hibiscus rosa-sinensis</i> L.	270.0	—	140.0	24.87	2.57	—	0.132

* Expressed in the terms of glucose liberated during 6 hours of incubation.

** Expressed in the terms of relative enzyme activity (REA = $1000/r_{v_{60}}$).

*** The number of mg of methoxyl groups split during the 3 hours reaction time by 1 ml of enzyme solution.

Nerium isolate, disintegrated pectic acid randomly while *Hibiscus* strain failed to show Endo-PG. In contrast to this, both the strains showed Endo-PMG activity. Two strains significantly differed in the production of lyases. *Nerium* strain produced Endo-PAL, while *Hibiscus* strain elaborated Endo-PL.

The difference between the two strains of *C. filiformis* may be either due to genetical difference or due to the difference in cell wall components of the host. However, further work is needed to suggest its exact mechanism of operation.

From the present investigations it can be concluded that the *C. filiformis* produces cell wall degrading enzymes which probably help the haustoria to make entry into the host.

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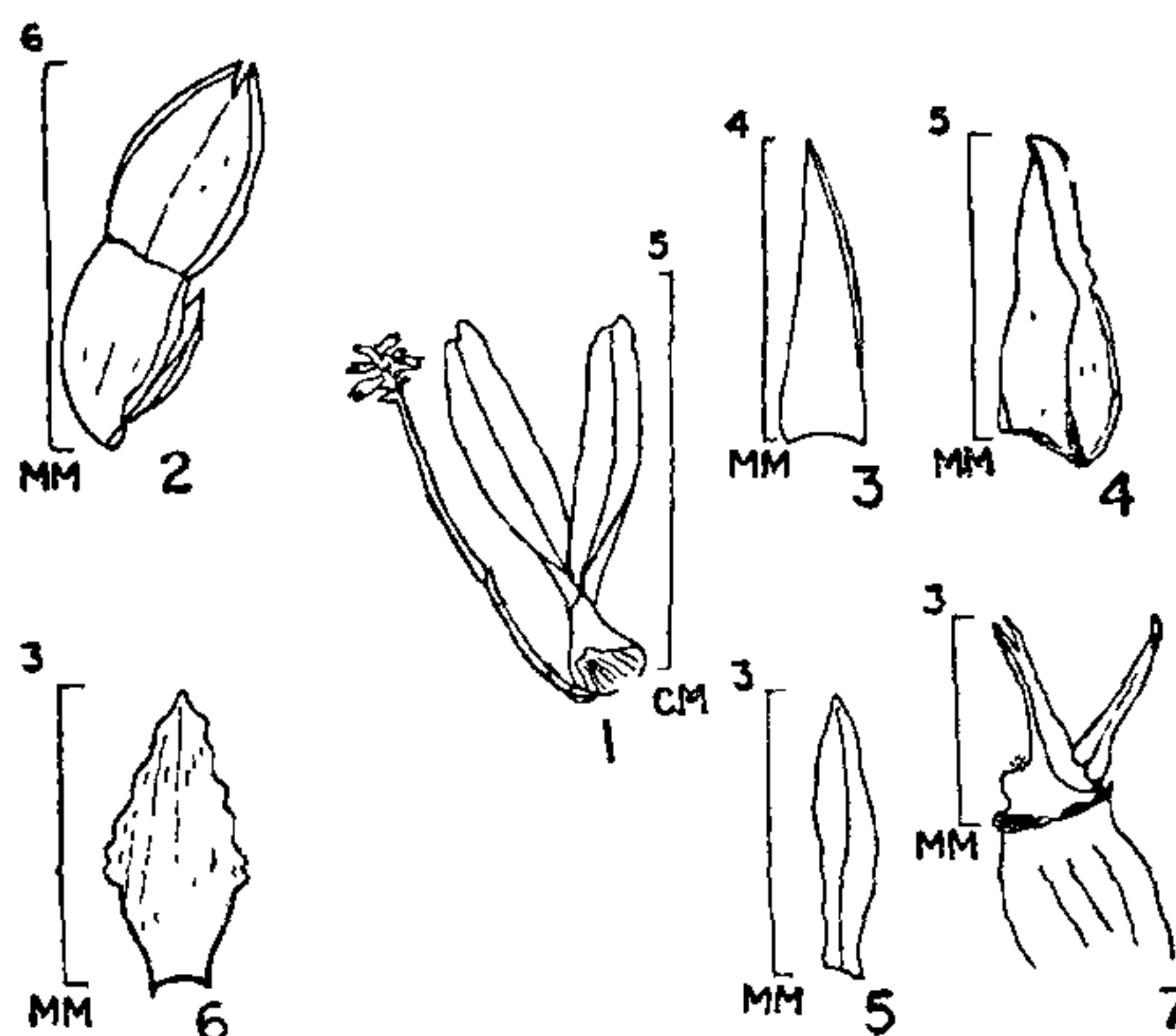
THELASIS PYGMAEA LINDL.— NEW ADDITION TO THE ORCHID FLORA OF ANDAMAN AND NICOBARS

S. N. YOGANARASIMHAN, V. CHELLADURAI AND
V. S. TOGUNASHI

Regional Research Centre (Ay.), Jayanagar
Bangalore 560 011, India

DURING a medico-botanical tour in the Andaman and Nicobar islands, an interesting orchid was collected from India's southernmost tip, Campbell Bay in Great Nicobar. It was identified as *Thelasis pygmaea* Lindl., reported earlier only from South India, Central and N.E. Himalayas, Sikkim, Nepal and Tenasserim in Burma^{1, 2}. Studies carried out by the authors at Botanical Survey of India, Port Blair (PBL) revealed that the taxon has not been recorded from the islands. Hence, the same is reported with a brief description and illustrations, since any new finding from these islands is considered of phytogeographic significance. The study also extends the range of distribution of the taxon from the mainland to the southernmost tip in the islands.

THELASIS PYGMAEA Lindl.: Pseudobulbous 2-leaved tufted epiphytes. *Leaves* 2, linear-oblong, shortly and obliquely bifid at apex, narrowed at sessile base. *Scape* as long as or shorter than the leaf and pseudobulb, arising laterally from the base of pseudobulb. *Spike* dense flowered at the tip of the scape. *Flowers* non-resupinate, not widely opening. *Bracts* ovate, acute, persistent. *Dorsal sepals* lanceolate, acute, *Lateral sepals* ovate-lanceolate, acute, strongly keeled. *Lateral petals* oblong, obtuse, involute at apical margins, 1-nerved. *Lip* ovate-lanceolate, fleshy, involute apically, sparsely gland-dotted in the middle. *Rostellum* deeply forked at apex (Figs. 1-7).



FIGS. 1-7. *Thelasis pygmaea* Lindl.: Fig. 1. Plant; Fig. 2. Flower (non-resupinate); Fig. 3. Dorsal sepal; Fig. 4. Lateral sepal; Fig. 5. Lateral petal; Fig. 6. Lip, Fig. 7. Column showing forked rostellum.

Exc.: *Simhan and party* 659, collected from the forests along North-South Road, rear Campbell Bay, Great Nicobar on 2nd April 1980, deposited at RRCB.

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