fibres were then tested for their initial tenacity. The fibres were then sampled and bundles 8" in length and 15g in weight were incubatesd at 30° C with 30°g sterile distilled water in sterile petri dishes under covered condition for different periods of time. Loss of moisture in the petri dishes during incubation was made up aseptically with sterile distilled water once a week. At definite intervals of time, representative samples were taken out, washed first with water and then with rectified spirit and finally dried in air. The fibre strength was then tested in J.T.R.L. bundle strength tester[3] and the extent of retention of strength was taken as an index of extent of resistance to microbial damage.

Results are presented in Table 1 from which the fibres may be graded in the order of decreasing resistance to microbial damage as Manila > sisal > mesta > sunnhemp > *banana* > tossa jute > white lute.

TABLE I

Comparative resistance of different fibres to microbia damage

Fibre	% retention of tensile strength after incubation for			
	15 days	1 month	2 months	3 months
White jute	64·9	60·4	36·0	7·2
Tossa jute	68·5	47·6	25·0	14·9
Banana	78·7	37·0	34·3	15·0
Sunnhemp	43·4	32·7	27·3	20·6
Mesta	73·2	51·4	44·6	34·5
Sisal	80·5	66·7	70·2*	52·5
Manila	100	99·6	86·9*	91·3

N.B.—Results were calculated on the average of 3 replications.

* These anomalies may be due to minor sample variations.

In the method described, the clean and undamaged fibres were sampled under identical conditions and during the period of sampling all the fibres were under the same microbial exposure. As such, there was no significant difference in the initial microbial population of the fibres. Obviously, incubation in moistened state with sterile distilled water under covered condition at 30° C allowed the predominant growth and activity of the microorganisms (mainly fungi and bacteria) in their normal association to degrade the fibre cellulose proportionately as the susceptibility to damage.

Reports so far published[3,4] indicate that the resistance to damage of a fibre is mainly related to its physical properties, *viz.*, crystallinity, chain length of cellulose and mode of association of fibre constituents and its chemical composition, *viz.*, lignin/hemicellulose ratio and presence of some minor constituents. The findings of the present study are more or less concordant with the reasoning as evidenced from available data on different fibres[5–7]. In general higher the crystallinity, chain length and lignin/hemicellulose ratio values, less is the microbial damage.

The methods of testing resistance of fibres to damage includes soil burial test and mixed culture inoculation method[8]. The former is the universal method of testing rot resistance and is most suitable for testing fibre goods treated with antiseptics. The mixed culture test is no doubt every sound but is a bit cdmbersome as the propagation and maintenance of five different cellulolytic fungi are involved in it. Along with the above two methods, the method mentioned here may be used as a very simple and inexpensive technique for comparing the resistance of different cellulosic fibres and fibre goods to microbial damage without any serious drawback.

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Jute Technological Research Laboratories, Indian Council of Agricultural Research, 12, Regent Park, Calcutta 700 040, *March* 28, 1977.

S. K. BHATTACHARYYA,
N. B. PAUL.

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A NEW DISEASE OF *SOLANUM KHASIANUM* C. B. CLARKE emend SEN GUPTA

DURING the survey on diseases of solanaceous plants, the authors observed an interesting disease of *Solanum khasianum* caused by *Colletotrichum capsici* (Syd.) Butl. and Bisb. which is not reported[1-2] earlier from India.

All the aerial parts are susceptible to the disease, which generally appeared at the collar region as dark-brown lesion which deepened and gradually

extended to the upper aerial branches. The tender aerial parts showed ' epinasty ' followed by premature defoliation. In severely affected plants, yellowing of leaves was conspicuous and the plants ultimately died prematurely. At the advanced stage, black bodies made their appearance which were identified as *Colletotrichum capsici* (Syd.) Butl. and Bisb.

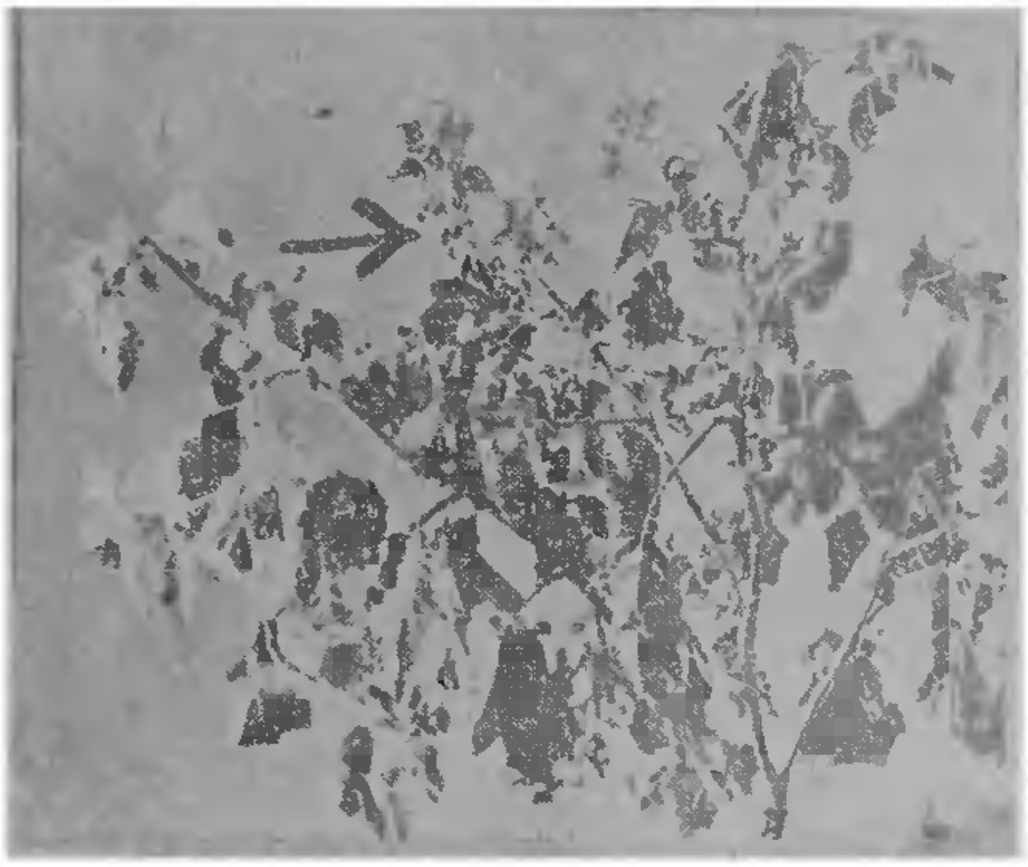

FIG. 1. A branch of *Solanum khasianum* showing the symptoms of the disease caused by *Colletotrichum capsici*.

Pathogenicity of the organism was established by spraying spore suspension in sterilized water as well as mass inoculation after a scalpel injury. The inoculated plants were protected by covering with sterile polythene bags. Sufficient moisture was maintained by placing wet cotton pad over the inoculum. Characteristic symptoms developed after 5–7 days. Isolations from the induced disease tissue yielded the same organism. The disease was more prevalent during October–November months during which high humidity and favourable temperature prevailed.

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Department of Botany,
Kakatiya University,
Warangal 506 009,
April 11, 1977.

P. LAXMINARAYANA.
S. R. REDDY.
S. M. REDDY.

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AMYLASE ACTIVITY IN A BLUE-GREEN ALGA

ELECTRON microscopic studies in blue-green algae have revealed the presence of interlamellar granules such as α-granules[1,2]. These were further isolated into a pure state from the blue-green alga *Nostoc muscorum*[2]. Chemical analysis of the α-granules suggested these to contain highly branched polyglucosides. Degradation of the isolated α-granules by α-amylase was also achieved *in vitro*[3]. The α- and β-amylases and their isoenzymes of the blue-green alga *Anabaena ambigua* were studied by Wahal *et al.*[4] Since a comparative account on the activity of α-amylase in the vegetative cells and spores of blue-green algae is lacking, the present work was undertaken.

The filamentous, heterocystous and sporulating blue green alga *Anabaena* sp. was employed during the present study. The alga was grown in the nitrogen-free medium of Allen and Arnon[5]. The cultures were maintained at 30 ± 1° C and illuminated with daylight fluorescent tubes. Log-phase cultures and spores were used for obtaining cell-free preparations. Two methods were tried. In the first method, the enzyme extracts were prepared by directly grindng the cells in buffer in a pre-chilled glass mortar. Significant activity of the enzyme could not be detected from these extracts. So the second method was adopted further in which the cell-free preparations were obtained from protoplasts. Log-phase cultures of the alga were concentrated by centrifugation, washed with sterilized water, followed by washings with 0·03 M sodium phosphate buffer (pH 6·8). The cells were resuspended in 10 ml solution consisting of phosphate buffer, 0·5 M mannitol and 10 mg lysozyme (BDH, London, 3 X crystallized). The suspension was incubated in a water bath at 37 ± 1° C for 4 hours to obtain protoplasts[6,7]. Microscopic examination revealed the formation of protoplasts. Initial attempts to wash the protoplasts revealed the loss of amylase activity in the supernatant of the centrifuged protoplast suspension. Hence no further attempts were made to free the protoplast suspension from the added lysozyme. The suspension was then macerated in a glass morter at 4° C for 10 min with 0·5 g of acid-washed sand. The leaching out of the biliprotein pigments indicated the disruption of the protoplasts. It was then centrifuged at 3,000 rpm for 10 min to remove cell debris. The process of maceration was repeated thrice followed by intermitent washings with cold buffer-manitol solution. The cell-free extract thus pooled to a final volume of 25·0 ml was utilized as crude extract for the assay of α-amylase.

Amylase activity was measured by incubating 1 ml of the cell-free extract with 2 ml of 2% soluble starch solution (dissolved in PO_4-mannitol buffer) and 2 ml of buffer solution, pH 6·8, for 1 hour at 37 ± 1° C.