

note that nodal explant responded to plantlet and callus formation in the same combinations of auxins or IAA (table I).

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SPODOPTERA LITURA—A VORACIOUS FEEDER OF MARSILEA WEED

MANGAL SAIN, J. S. BENTUR AND M. B. KALODE
All India Coordinated Rice Improvement Project,
Rajendranagar, Hyderabad 500 030, India.

SEVERAL noctuid larvae were found feeding on the common weed, *Marsilea quadrifolia* (L.), so voraciously that within 2-3 days they completely defoliated the weed plants in quarter of a hectare rice field

at the All India Coordinated Rice Improvement Project farm in Hyderabad during wet season. The population of this insect was high and more than ten larvae at times were seen even on rice plant but with no obvious symptoms of damage. This observation prompted the following investigations.

The larvae collected from the field were reared on *Marsilea* at $30 \pm 5^\circ \text{C}$ under glasshouse conditions. The Commonwealth Institute of Entomology, London, identified the adults as *Spodoptera litura* F. The life cycle of *S. litura* on *Marsilea* was studied. A female moth laid 300 to 400 eggs in 3 to 4 batches covered by yellowish-brown scales. Eggs hatched after 4-5 days into green bodied black headed larvae that tended to aggregate and feed on the same leaf on which eggs were laid. Five larval instars lasted for 4-5, 3-4, 2-3, 3-4 and 3-4 days, respectively. Full grown larvae measured 60 mm in length and fed voraciously on the weed foliage (figure 1). Pupal period ranged from 9-11 days and the adults lived for 5-6 days. The entire life cycle was completed in 29-37 days.

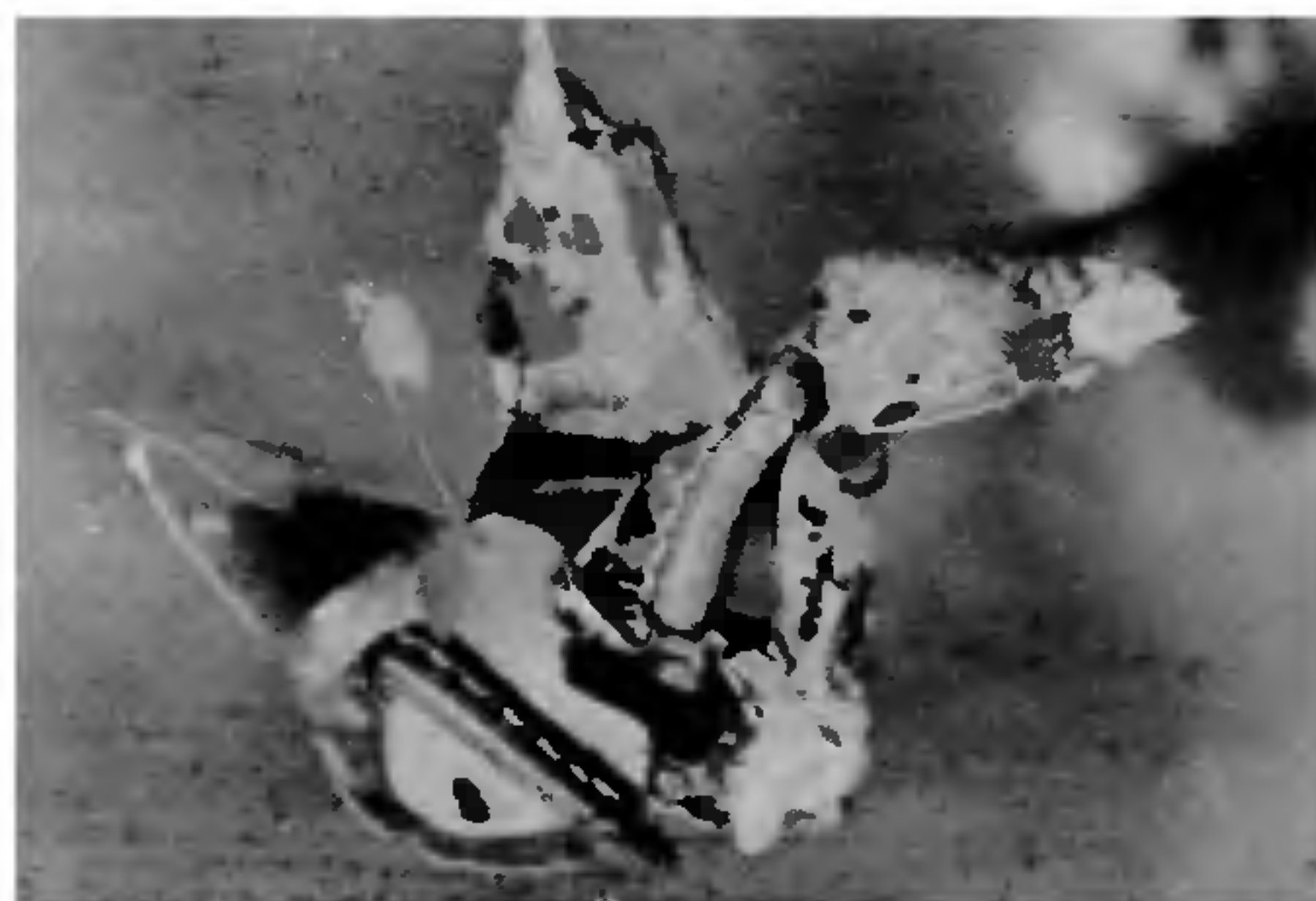


Figure 1. Full grown larva of *S. litura* F. feeding on *M. quadrifolia* leaves.

Host-range was studied by releasing 10 first instar larvae in suitable cages on six weeds collected from rice fields and also on a rice variety, T(N)1 (table I). Results, presented in table I, revealed cent per cent larval survival on *Marsilea quadrifolia*, *Ammania bacifera* and *Eclipta alba*. However, limited survival (20 to 40%) on the 4th day of caging and no survival on 10th day on the three other weeds studied and on the rice plant was observed.

Though *S. litura* is on record as a pest of rice, no detailed study on life cycle in relation to rice crop is available. In our investigation, although larvae nibbled the rice leaves initially, they tended to be weak and sluggish and died ultimately. In addition, larvae reared on artificial diet, obtained from other Agricultural Research Institutes, gave similar results.

TABLE I

Survival of Spodoptera litura F. on different weeds and rice plant

| Plant | Percent survival on | |
|---|---------------------|----------|
| | 4th Day | 10th Day |
| <i>Marsilea quadrifolia</i> | 100 | 100 |
| <i>Ammania bacifera</i> | 100 | 100 |
| <i>Eclipta alba</i> | 100 | 100 |
| <i>Echinochloa colonum</i> | 30 | 0 |
| <i>Leersia hexandra</i> | 40 | 0 |
| <i>Cyperus difformis</i> | 20 | 0 |
| <i>Oryza sativa</i> (Rice, T(N)1 Var.) | 30 | 0 |

Number of 1st instar larvae caged—10.

Besides *Spodoptera litura*, there were two other species of insects viz., *Echinocnemus* sp. near *insubidus* Faust and *Echinocnemus* sp. (Coleoptera: Curculionidae) which were found feeding on *Marsilea* weed though less voraciously.

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TANDONELLA LEAF-SPOT: A NEW DISEASE OF BER IN PUNJAB

K. S. VERMA AND S. S. CHEEMA
Department of Plant Pathology,
Punjab Agricultural University, Ludhiana 141 004,
India.

THE cultivation of *ber* has attained a good deal of popularity among the cultivators of Punjab and other northern states of India. Recent surveys of *ber* plantations in Punjab have revealed the occurrence of a new hitherto unrecorded leaf spot disease in epiphytotic proportions resulting in premature defoliation and considerable loss in yield. Commercial cultivars like Umran, Ilaichi, Selected Safeda, Sabza-3 and Sabza-5 registered 70-80% disease incidence. The disease appeared on the undersurface of the leaves as circular to irregular, ash-grey spots with smooth to fringed margins, varying in size from 2-12 mm across with corresponding upper area turning light brown and necrotic.

Microscopic examination revealed the identity of the pathogen as *Tandonella zizyphi* Prasad and

Verma, based on the resemblance of morphological characters of synnemata, conidiophores and conidia. The pathogen was first named and described by Prasad and Verma¹ from Muzaffarpur (UP) on *Z. jujuba*. Since, then, no report is available on its occurrence on *ber* or any other host in India or elsewhere.

Pure culture of the pathogen was raised for the first time on potato dextrose agar medium. White-fluffy growth of the pathogen produced abundant identical conidia on conidiophores within one week at $25 \pm 1^\circ \text{C}$. For pathogenicity tests, conidial suspension prepared in distilled water (one slant/100 ml) sprayed on the leaves of selected branchlets with 20-25 leaves and covered with polythene bags containing a wet cotton swab to provide requisite humid conditions. Typical symptoms appeared within 8-12 days. Reisolations yielded the same fungus.

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INTERCEPTION OF TWO NEW FUNGI ON POTATO IN QUARANTINE

R. DWIVEDI
Central Potato Research Institute, Simla 171 001,
India.

EXOTIC tuber cultures of hybrid varieties evolved in different potato growing countries were imported for research work. The tubers were examined and subsequently grown in post-entry quarantine glasshouse in sterilized pots containing sterilized soil and were regularly examined during active plant growth. The produce of only healthy clones was released. Plants showing any disease symptom were destroyed at the site of examination. On some plants the occurrence of *Drechslera australiensis* (Bugnicourt) Subram. and Jain ex M. B. Ellis and *D. hawaiiensis* (Bugnicourt) Subram. and Jain ex. M. B. Ellis¹ was observed.

On tubers the symptoms were brown to reddish brown, irregular spots of 0.25 to 1 cm size. On stolons near soil surface it showed light brown spots. On leaves the spots were observed on petiole, mid-rib and adjacent veins on lower side. The spots were irregular black and elongate measuring 0.25 cm to 1 cm. Fungi were isolated on PDA and Czapek's media.

The colonies of *D. australiensis* (Bugnicourt) Subram. and Jain ex. M. B. Ellis a state of *Cochliobolus hawaiiensis* Alcorn. were effuse, grey to dark brown.