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Acrocercops phaeospora Meyr. (Gracillaridae : Lepidoptera) a New Leaf Miner in *Syzygium jambolanum* Skeels; in Tamil Nadu

Syzygium jambolanum Skeels *(Eugenia jambolana)* is one of the minor fruit trees growing wild on river banks or planted for shade as avenue trees. The fruits are edible. The insect pests that affect this tree have been reported by various workers (Fletcher, 1920; 1921; Crawford, 1924; Ayyar, 1940; Ananthanarayanan and Venugopal, 1951; 1954; 1955). Among them, two leaf miners *viz.*, *Acrocercops phaeospora* Meyr., and *A. telestis* were included (Fletcher, 1920).

During 1972-73, a very severe incidence of blister formation on almost all leaves of *Eugenia* trees was observed in the University Orchard of the Faculty of Agriculture, Annamalai University, Annamalainagar. Upon rearing, the leaf miner was identified as *Acrocercops phaeospora* Meyr. (Gracillaridae: Lepidoptera). This is the first record of its occurrence in Tamil Nadu. Fletcher (1920) reported that *A.phaeospora* was found to mine green leaves of *Eugenia jambolana* causing blister like swelling on the upper surface. In the absence of detailed observations on the biology of this insect, the observations made on the biology of this insect is of interest.

Twenty five leaves at random were collected from *Eugenia* trees and observations made. The average length of the mine and blisters were 85 and 39 mm respectively. The maximum length of the blister observed in one case was 125 mm. The width of the blister averaged to 8 mm. The percentage of leaves showing the blisters varied from 40 to 90 and averaged to 68. On an average two leaf miners were observed per leaf. The blisters were found on both sides whereas Fletcher (1920) reported the occurrence of blisters only on the upper surface. The maximum incidence was found to be in the months of September - October.

The female moth laid eggs singly on the leaves. In 3 to 4 days the larva hatched out and the caterpillar was pale yellow in colour measuring about 5 cm. It was slightly hairy, transparent and wriggled out when touched. It turned brown later. The larvae mined into the lamina in about 24 to 48 hr. The blister was almost parallel to the midrib and was never found across the lamina of the leaf. The caterpillar was found to feed on chlorophyll within the blister. The blister turned yellow at first and later the leaves dried. The mining of the leaves started at first in the freshly formed leaves only. The larvae turned pink before pupation. The larval period averaged to 8 - 10 days. The full grown larvae pupated outside the blister in a thin papery cocoon. The time taken for pupation was 2 to 3 days. The average length of the pupa was 4 and 0.5 mm in width. The pupal appendages were not completely sol-

dered to the body. The pupal period varied from 7 to 9 days. The adult is a tiny moth of 3 mm in size and a wing expansion of 6 mm. The forewings had alternatively white and grey patches.

This is the first record of *Acricercons phaeospora* Meyr. in *Syzygium iambolanum* in Tamil Nadu.

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Record of Three New Caterpillar Pests Damaging Maize Cobs

During the course of investigations on the insects damaging the cobs of maize at the Agricultural Reseach Station, Bhavanisagar during November-December, 1973, five species of caterpillar pests were noticed to infest the cobs on maize plants. The larvae that were collected and reared have been identified as *Heliothis armigera*H bn., *Spodoptera litura* (Fb.), *Cryptoblabes angustipennella* Hmpsn., *Mythimna venalba* (Moore) and *Anatrachyntis simplex* Wlsm. Among these *Heliothis armigera* is well known as the cob borer of maize.

Fletcher (1921) has recorded *Spodoptera litura* and *S. mauritia* Boisd at Daltonganj, *S. exigua* (Hb.) at Surat and Pusa, *Mythimna* separata (Walk.) *(Cirphis unipuncta* Haw.) at Poona and Pusa, *Pseudaletia* (=*Cirphis*) *loreyi* (Dup.) at Surat and Pusa and *Heliothis armigera* on maize. Hence the occurence of *M. venalba*, *C. angustipennella* and *A. simplex* are new records on this host and the observations made on these species are briefly indicated.

i. *Spodoptera litura* (Fb.) (Noctuidae): So far it has been known to infest maize only from North India (Fletcher, 1921) and its occurrence on maize in South India is of interest.

ii. *Cryptoblabes angustipennella* (Hampson) (Pyraustidae): This insect has been reported to damage sorghum (David and David, 1961) and

ragi ears (David *et al.*, 1962 and Veeresh and Channabasavanna, 1966). The larvae were found to remain in webs towards the tip portion of the cobs feeding on the silk and grains already partially damaged by *Heliothis*. Nearly 10 per cent of the cobs showed infestation by this.

iii. *Anatrachyntis simplex* Wlsm. (Cosmopterygidae): The reddish small caterpillars were found to bore through the grains and feed on the internal contents. This insect has been previously reported to damage sorghum and *ragi* ears in Coimbatore (David and David, 1961 and David *et al*, 1962).

iv. *Mythimna venalba* (Moore) (Noctuidae): The larvae of this insect caused damage similar to that of *Heliothis*, feeding both on silk and developing grains. Fletcher (1913) has recorded it as an occasional pest of rice, especially in South India.

Control: It has been found that spray appiication of endosulfan @ 0.5 kg a. i./ha or Sevimol 40 per cent @ 1 kg a. i./ha on the cobs on the 60th and 75th day of sowing is effective in reducing the incidence of the caterpillar pests damaging cobs of maize.

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A New Host Record for the Grapevine Girdler, *Sthenias grisator* F. (Cerambycidae : Coleoptera)

Lawsonia inermis L., is one of the common hedge plants grown in Tamil Nadu. The plant is referred as 'Maruthani' in Tamil language and the leaves are used to impart red colour if applied as a paste.

Between January and June 1971 and 1972, a few *L. inermis* plants grown as hedge plants in Annamalai University, showed signs of wilting resulting in the death of plants. On examination of these plants, various stages of *Sthenias grisator* F., were observed. The affected shoots were brought to the laboratory and the grubs were maintained and allowed to pupate. The adults emerged were collected and identification of the adults confirmed. The adult is a medium sized stout beetle. It measured 2.5 to 3.75 mm in length. It is a longicorn beetle with strongly developed mouth parts.

This insect was noted to attack the grapevines by girdling the grapevine branches. It was also noted on *Erythrina*, mulberry, tea, garden shrubs and creepers (Ayyar, 1953). Lefroy (1909) noted this insect on *Ervertimia* (*Tabernaemontana*) *alba* branches and rose bushes in South India. Sanjeevaraj (1958) recorded it on casurina, mango, jack, Indian mulberry, almond, croton, bougainvillea, oleander, *Odina wodier*, *Jatropa glandulifera*, *Acacia leucophloea* and *Allamanda cathartica*. But so far this insect has not been reported on *L. inermis* and thus *L. inermis* is a new host for *S. grisator* as evidenced by the present study.

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A Preliminary Report on the Occurrence of Kerala Root (Wilt) Disease of Coconut in Tamil Nadu

The root (wilt) disease of coconut in Kerala is the cause of heavy loss to the economy of this important crop. It is a debiliating systemic disease occurring in Southern and Central Districts of Kerala (Pillai *et al.*, 1972) and is slowly spreading both towards north and south. The etiology of the disease is not fully understood. The cause of the disease was considered to be a mechanically transmissible pathogen, resembling a virus (Nagaraj and Menon, 1956; Shanta *et al.*, 1964). *Rhizoctonia solani*, a root rot fungi seems to aggravate the diseased condition (Menon, 1961). The west coast tall variety of coconut is highly susceptible to the disease. Some diseased coconut trees were observed in Thirunondikarai village, near Kulasekaram in Kanyakumari district, Tamil Nadu with symptoms resembling those of root (wilt) disease, during December, 1972. The coconut trees 25 to 30 years old extending from Ealakara to Kothukadam situated in a hill slope surrounded by paddy fields were found to be severely affected by this disease. During 1971 in Sengottai area seedlings aged 5 to 6 years were found to be affected by this disease.

The disease was again observed during June, 1973 and from the symptoms it was suspected to be root (wilt) disease. The diseased trees aged 25 to 30 years produced general yellowing

and drooping of the outer whorl of leaves, flaccidity and ribbing and necrosis of leaflets. The affected leaflets showed a large number of chlorotic streaks which became brownish and necrotic. Reduction of immature nuts was another symptom. The size of nuts was markedly reduced. The growth of roots was also affected. The endocarp and mesocarp were very thin and uneven in thickness. Brown longitudinal streaks were noticed in the roots and rootlets. They were found to dry from the tip.

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Efficacy of Some Chemicals in the Control of Finger-millet Blast

The blast incited by *Pyricularia setariae* Nishikado is a major disease of finger - millet (*Eleusine coracana* (L.) Gaertn.). Mc Rae (1922) reported a loss of 50 per cent by this disease in Tamil Nadu. The present study reports the efficacy of certain chemicals on the on the control of the disease.

An experiment in randomized block design, with 8 treatments replicated thrice was laid out at the Regional Agricultural Research Station, Kovilpatti, on a plot of 5x4 m with 'Saradha'. The treatments were : Aureofungin (a product of *Streptomyces cinnamomeus* var. *terricola*) 10 gm/ha, manel (manganese ethylene bisdithiocarbamate) 2 kg/ha, Zineb (zinc ethylene bisdithiocarbamate) 2 kg/ha, Miltox (zinc ethylene bisdithiocarbamate + copper oxychloride) 2 kg/ha, Benomyl (methl 1 - (butylcarbamoyl) - 2-benzimidazole carbamate) 0.5 kg/ha, Difolatan (heterocyclic nitrogen compound) 1 kg/ha, Hinosan (O-ethyl-S-diphenyl-dithiophosphate) 750 ml/ha and untreated control. The chemicals

except Benomyl were applied thrice, the first one at the time of appearance of the disease on the transplanted crop during mid August and the rest at fortnightly intervals. The chemicals were mixed with water and sprayed at the rate of 1000 litres per ha. The leaf infection was recorded a fortnight after last spray using a numerical scale from 0-4 (no, hypersensitive, light, moderate and severe disease development respectively) by examining 25 selected plants in each treatment. Node, neck and finger infections were recorded from the same plants before harvest.

All the chemical treatments were effective in reducing the disease incidence (Table 1). Benomyl and Zineb followed by Miltox, Manel and Aureofungin significantly recorded less incidence of neck infection. The differences in the efficacy of chemicals in the control of leaf, node and finger infections of blast were not statistically significant. Miltox, Benomyl, Zineb and Difolatan were significantly superior in recording higher yields by 39.5, 26.9, 26.4 and 16.9 per cent.

The economics of the treatments was worked out on the basis of pre-

TABLE 1. Effect of the chemicals on the blast of finger-millet

	Disease intensity				Grain yield	
	Leaf	Node %	Neck (%)	Finger (%)	kg/ha	Increase in yield (%)
Miltox	2.93	34.0 (35.7)	24.0 (28.7)	25.2 (30.0)	2692	39.5
Benomyl	2.71	34.0 (35.7)	13.3 (21.4)	22.4 (28.1)	2450	26.9
Zineb	2.83	35.3 (26.4)	17.3 (24.4)	19.5 (26.1)	2440	26.4
Difolatan	2.91	36.0 (36.8)	30.7 (33.5)	27.0 (31.2)	2256	16.9
Maneb	2.92	38.6 (38.1)	26.6 (30.8)	26.6 (30 8)	2168	12.3
Aureofungin	2.80	35.3 (36.4)	26.7 (31.0)	27.6 (31.6)	2088	8.0
Hinosan	2.64	36.7 (37.2)	33.3 (35.3)	27.8 (31.7)	1975	2.3
Control	2.99	39.3 (38.8)	37.3 (37.6)	30.8 (33.7)	1930	—
'F' test	Not sig	Not sig.	Sig	Not Sig.	Sig.	
C D at 5%			2.73		474	

Figures in parenthesis are transformed values

vailing market rates of grain, cost of chemicals and labour (Table 2). Miltox and Zineb gave a net profit of Rs. 278 and 237 per/ha respectively over the control. Hence Miltox and Zineb can be used for the control of finger-millet blast.

Ceresan lime dust was reported to be outstanding in the control of the disease (Shanmugam *et al.*, 1962; Sivaprakasam *et al.*, 1974). Zineb and Hinosan have been suggested as alternate chemicals for the control of this disease in case of non avilability of ceresan lime dust (Sivaprakasam *et al.*, 1974).

TABLE 2. Net profit with fungicidal applications

Chemical	Deviation from the control		Cost of sprayings			Net profit (Rs./ha
	Yield kg/ha	Value Rs.	Chemical Rs.	Labour Rs.	Total Rs.	
Miltox	762	533	195	60	255	278
Zineb	510	357	60	60	120	237
Benomyl	520	364	125	20	145	219
Difolatan	326	228	123	60	183	45
Maneb	238	167	107	60	167	—
Aureofungin	158	110	96	60	156	—
Hinosan	45	31	39	60	99	—

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