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STUDIES ON THE RELATIONSHIP BETWEEN LIGHT TRAP CATCHES AND FIELD INCIDENCE OF GROUNDNUT LEAF MINER *Aproaerema modicella* DEVENTER (GELECHIIDAE : LEPIDOPTERA)*

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Attempts were made to correlate the moth catches in the light trap with field incidence of groundnut leaf miner. The light trap catches exerted a positive correlation with the field incidence, Among the three generations in a crop period, third generations accounted for the maximum field incidence for a unit increase of the number of moths in the light trap. The 'r' value was higher whenever the mean incidence of six observations in a sowing was considered for correlation, compared with the mean incidence at each observation in the different sowings. The number of moths caught was at its peak during the second week of October and highest incidence was observed in the first week of November.

The leaf miner (*Aproaerema modicella* D.) popularly called as surul poochi causes severe damage to groundnut crop especially when grown under rainfed condition. This pest which was once considered as minor one on groundnut now poses a major threat to all the groundnut growing areas. Recent report on state wide pest surveillance (Anon , 1985) indicated that the pest is present in all the districts of Tamil Nadu except Kanyakumari where groundnut is not cultivated. A study on the yield losses indicated that one per cent increase in the infestation resulted in an yield loss of 8.79 kg/ha (Logiswaran and Ramachandran, 1984). The Life cycle of the pest is short lasting from 18 to 20 days resulting in continuous damage to the crop. Studies on the seasonal abundance using the data on the moth catches in the light trap for a period of three years at Tindivanam showed that the pest is more abundant in rainfed season with four to five brood emergences whereas only two to three emergences were noticed in the irrigated season (Logiswaran and Madava Rao, 1981). Attempts were made to correlate the realationship between light trap catches and field incidence and the results are presented in this article.

MATERIALS AND METHODS

For studying the relationship in a crop period, T M V 7 groundnut was sown (Kharif) on 26.7.83 in plots of size 3.6 x 4.5 m replicated five times with a spacing of 30 x 10 cm. Twenty five plants were selected at random in each plot and the pest incidence was assessed both on larval counts and on symptom basis. For assessing the incidence on symptom basis, the top

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twenty opened leaf lets from the central axis were examined, affected leaflets counted and percentage calculated. For assessing the incidence on larval count basis, the number of five larvae were counted and the mean number of live larvae per plant were calculated. The above observation were made on alternate days beginning from 18th day of sowing (12.8.83) to 94th day of sowing (27.10.83). Thus thirty nine observations were made and the larvae per plant and percentage leaflets affected were worked out.

For studying the relationship in a period of one year TMV 7 groundnut was sown at a fortnightly intervals in plots of size 3.6 x 4.5 m replicated twice. A total of 24 sowing was taken up commencing from 20—12—82 to 1.1—2—83. Beginning from 20th day of each sowing, six observations were made on the pest incidence (as detailed above) at 15 days interval upto 95th day of sowing. The mean number of moths caught 15 days prior to each field observation was correlated with the mean incidence at each observation. The mean number of moths caught between the period five days after sowing and ten days prior to harvest of each sowing was correlated with the mean incidence of six observations in a sowing.

RESULTS AND DISCUSSION

The results of correlation brood-wise as well as for the total crop period were presented in Table 1. The results of the correlation showing the relationship between field incidence and light trap catches for one year period were presented in Table 2.

A highly significant positive correlation was observed while considering

Table 1. Relationship between mean incidence (Y) and number of *A. medicella* moths caught (x) in light trap. (Brood-wise and for the crop period)

Details	n	'r' value	Regression equation
Percentage leaflets affected (Y)			
First brood	9	+ 0.89^{xx}	Y = 4.03 + 0.11x
Second brood	15	+ 0.96^{xx}	Y = 2.54 + 0.06x
Third brood	15	+ 0.80^{xx}	Y = 1.02 + 0.154x
For the crop period	39	+ 0.73^{xx}	Y = 4.97 + 0.085x
Larvae per plant (Y)			
First brood	9	+ 0.41^{NS}	Y = 0.27 + 0.01x
Second brood	15	+ 0.86^{xx}	Y = 0.19 + 0.008x
Third brood	15	+ 0.81^{xx}	Y = -1.61 + 0.038x
For the crop period	39	+ 0.63^{xx}	Y = 0.28 + 0.016x

the three generations separately as well as together for the total period. However in the case of larvae per plant in the first generation, the correlation was not significant. Among the three observed that for an increase of generations, it was one month in the light trap, the maximum increase in percentage affected leaflets (0.154) and number of larvae per plant (0.038) was in the third brood. This suggested that the third generation caused more damage than the initial generations because of the increase in the number of moths.

In the case of realationship worked out for one year period also, the number of moths caught in the light trap had positive correlation with the incidence both while considering the mean incidence at each observation in the concerned sowings and the mean incidence of six observations in a sowing. It was observed that the 'r' values were high when the mean incidence of six observations in a sowing was taken into consideration. When compared with mean incidence at each observation in the concerned sowings. This may probably due the fact that in the former case the variables involved a whole crop period while in the latter, the variables represented only a shorter

Table 2 Relationship between incidence (Y) and number of *A. modicella* moths caught (x) in the light trap (for one year period)

Details	n	'r' value	Regression equation
Mean incidence at each observation			
Leaflets affected (%)	24	+ 0.55^{xx}	Y = 3.90 + 0.0077x
Larvae per plant	24	+ 0.48^{xx}	Y = 0.81 + 0.0015x
Mean incidence of six observations in a sowing			
Leaflets affected (%)	24	+ 0.81^{xx}	Y = 1.61 + 0.0018x
Larvae per plant	24	+ 0.75^{xx}	Y = 0.47 + 0.0003x

period i. e. 15 days prior to each observation

The trend in the number of moths caught in the light trap and percentage leaflets affected during the year 1983 was presented in Fig 1. It was observed that the moths appeared in the light trap in the eight week which was reflected in the field incidence that started from eleventh week. From then onwards, number of moths caught and field incidence followed a similar trend. The population of the moths was highest in October followed by August and September and this is in confirmity with the findings of Logiswaran and Madhava Rao (1981). The number of moths caught was at its peak during the second week of October and the highest incidence was observd in the first week of November.

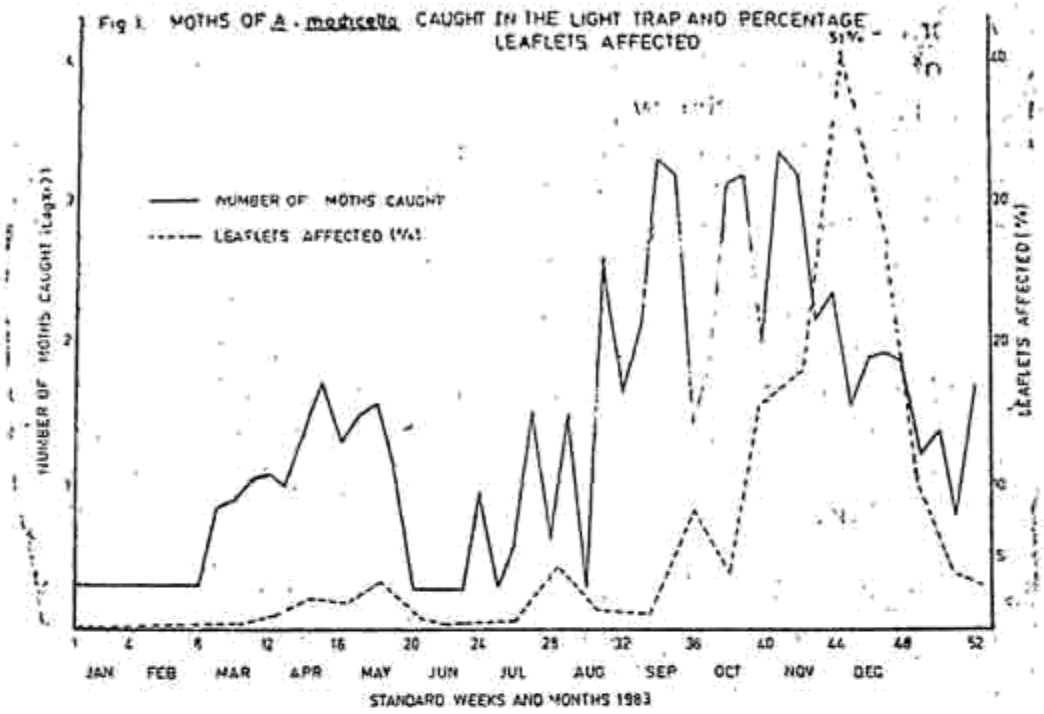

Fig 1. MOTHS OF A. modicella CAUGHT IN THE LIGHT TRAP AND PERCENTAGE LEAFLETS AFFECTED

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