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CARIBBEAN FOOD CROPS SOCIETY

PROCEEDINGS



**ELEVENTH ANNUAL
MEETING**

THE PEPPER FLOWER BUD MOTH IN THE CARIBBEAN —

(an Evaluation)

by

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INTRODUCTION

Peppers of the genus *Capsicum* L. are attacked by a Gelechiid moth *Gnorimoschema capsicum* (Bradley & Povolny), now referred to as *Symmetrischema capsicum* Povolny. Fennah (1947) previously described this pest as *Phthorimaea gudmanella* (Zell.) occurring in the Lesser Antilles.

Alexander (1970) reported that the life cycle of *S. capsicum* averaged 29-38 days and there are 4 larval instars with a prepupal stage. Des Vignes (pers. comm.) indicated that the eggs of the moth are laid singly with few exceptions on the young leaves. Damage is done mainly to the flower buds which are eaten by the larvae causing the buds to absciss.

In Trinidad *S. capsicum* is found infesting hot pepper, *Capsicum annuum* L., bird pepper, *C. minimum* L. and sweet pepper, *C. grossum* L. The moth has also been recorded on peppers in the Virgin Islands (Wilson, 1923) Puerto Rico (Sein, 1944), Montserrat W.I. and the Rio Grande Valley, Texas (Schuster, 1960).

The larvae *S. capsicum* is parasitized mainly by the hymenopteran *Copidosoma capsicum* Leiby and to a lesser extent by *Enderus* sp.

Chelonus sp., *Apanteles dignus* (Muesbeck). Alexander (1970) found that the average percentage parasitism in Trinidad of fields randomly sampled were as follows: St. Augustine – 39.0%; UWI Field Station – 32.3%; Aranguez – 23%. In all instances there was an increased incidence of the moth over the period December – January.

This paper details a brief survey conducted in some of the West Indian islands to determine the levels of infestation.

MATERIALS AND METHODS

For the purposes of the survey buds were chosen at random in pepper plots in different areas and examined for the presence of the larvae.

RESULTS AND DISCUSSION

The results of the survey are given in Table 1. The results indicate that *S. capsicum* is present in several West Indian islands. When the infestation is of the order of 90-100% there is a severe effect on the yield as evidenced in Questelles, St. Vincent where fruit production was negligible. When infestation is of a lower order it is difficult to ascertain at what level of infestation economic damage occurs.

Many of the pepper flower buds produced fall off under normal conditions. Sein (1944) theorized that the thinning out of the flowers by the bud-moths lead to larger fruit size. While there may be merit in such a suggestion it is also true that heavy infestations affect yield. It is not unusual to find one larva per bud. When the attack is early in the crop cycle and the food supply is depleted before full larval development occurs, larvae will migrate to other buds. Several generations may be found on a pepper crop which may last for six months (sweet pepper) or continue for more than a year (hot & bird peppers).

Parasram (1971) has shown that the use of chemicals can keep the infestation at very low levels even where the population density is high.

Table i
% INFESTATION IN DIFFERENT ISLANDS

Island/Area	% Infestation	Year	Classification
Trinidad			
— St. Augustine	48.0	1973	Bird pepper
— U.W.I. Field Station	33.3	1972	Hot peper
— Texaco Food Crops Dem. Sta.	90.0	1972	Hot pepper
St. Vincent			
— Campden Park	90.0	1972	Sweet pepper
— Questelles	100.0	1970	Hot pepper
— Clare Valley	80.0	1970	" "
— Clare Valley	94.0	1972	" "
— Clare Valley	94.0	1973	" "
— Crichton (ArnosVale)	60.0	1973	" "
Grenada			
— Mirabeau	33.0	1973	" "
St. Lucia			
— Balambouche	90.0	1972	Sweet pepper
— Balambouche	80.0	1972	Bird pepper
Dominica			
— Grand Bay	93.0	1973	Sweet pepper
— Castle Bruce	100.0	1973	Hot pepper
— Island House area	100.0	1973	" "
Antigua			
— Carlisle	30.0	1973	Sweet pepper
— Dunbars	90.0	1972	" "
— Dunbars	70.0	1972	" "
— Diamond	0.0*	1973	Hot pepper
Montserrat			
— Cavallah Hill	79.5	1973	Hot pepper
— Rileys	0.0	1973	Sweet pepper
— Paradise	84.0	1973	" "

* Could not be ascertained whether area was sprayed.

Diazinon (R), Dipterex (R), Rogor (R), Perfekthion (R) and Malathion (R) have given significant control. As stated in the introduction parasitism of larvae occurs and in Montserrat recently a very high level of parasitism due to a pteromalid was noticed during a joint visit with Dr. F. Bennett of CIBC*. The level of bud infestation in this field was high (about 79.5%).

It is felt therefore that the proper use of an integrated programme i.e. biological & chemical measures would aid in the successful control of *S. capsicum*.

* (R) – Trade Name.

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SUMMARY

The pepper flower bud moth occurs in most of the West Indian islands. In some areas it is an economic pest while in others there is potential of its becoming one. Parasitism of the larva occurs to varying extents in the region. Diazinon, Rogor, Perfekthion, Dipterex and Malathion keep the population of the insect at a very low economic level. Some suggestions of future lines of work are given.

* Commonwealth Institute of Biological Control.

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