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INSECT AND MITE PESTS OF CORN AND SWEET CORN IN GUYANA

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On an average of last five years (1964-1968), 39 % of Guyana's requirement of corn was met from local production. In 1968, about six million pounds of corn was imported. With the Government's programme to expand the dairy, pig and poultry industry, the demand of corn for stock feed would eventually increase. Under the programme of diversification of agriculture in Guyana, cultivation of corn is being pushed up to meet the increasing local requirement, by increasing the cultivated area under hybrid corn. At Central Agricultural Station, Mon Repos, investigations on different aspects of cultivation of hybrid corn are in progress. In this note, pests of corn and sweet corn recorded at Mon Repos, are reported.

A replicated field experiment was laid out at Mon Repos, East Coast, Demerara, with 12 plots i.e., 6 plots of each of corn and sweet corn. Three plots of each corn and sweet corn were meant for treatment with insecticides for the control of pests while other three plots of each crop were allowed to get infested, for recording the pest incidence. In each case, corn and sweet corn plots were adjacent, so that differential susceptibility of these two crops to pests could be worked out. The details of the experiment were as under :

	Corn	Sweet Corn
Net plot size	50' × 26'	50' × 26'
Variety	Hybrid Corn × 304 from Pioneer Hybrid Corn Co., Jamaica, W. I.	Honey Cross Bautan from Burpee Seed Co., U. S. A.
Date of sowing	27.11.68	27.11.68
No. of seeds sown per hill	3	3
Seed to seed distance	4'	4'
Row to row distance	3'	2'
No. of rows per plot	9	13

Ammonium sulphate, triple super phosphate and muriate of potash were applied at 200,100 and 100 lbs. per acre for both corn and sweet corn. Pre-emergence weedicide, atrazine was applied at 3 lbs. per acre.

Central Agricultural Station, Mon Repos, Guyana.

CRICKET

Cricket, *Acheta* sp. (Gryllidae : Orthoptera) was found damaging corn and sweet corn a few days after germination. The pest incidence was almost negligible.

ARMYWORM

On 8th December, 1968, i.e., eleven days after sowing, plants of both corn and sweet corn were found to be infested with army worm, *Spodoptera* (*Laphygma*) *frugiperda* — J. E. SMITH — (*Lepidoptera* : *Noctuidae*). The data on the number of damaged plants is presented in Table I. A perusal of this table indicates that (a) pest incidence was not uniform in different replications and (b) on an average sweet corn was damaged more than corn i. e., 23.2 % sweet corn plants were damaged against 14.6 % corn plants.

TABLE I

*Data on plants of corn and sweet corn
damaged by army worm (8.12.68)*

Repli- cation	Corn			Sweet corn		
	No. of plants observed	No. of plants damaged	Percent plants damaged	No. of plants observed	No. of plants damaged	Percent plants damaged
I	613	93	15.2	538	158	29.3
II	608	134	22.0	574	140	24.4
III	626	43	6.9	541	85	15.8
Total	1 847	270	14.6	1 653	383	23.2

A close scrutiny of 30 damaged plants, 14 days after sowing of corn and sweet corn revealed the presence of 30 and 42 army worms respectively. Some of the damaged plants had more than one army worm while a few of the damaged plants did not have any worm, probably the worms were picked up by birds. The worms were pretty small and had not yet started descending to soil. The records of both the number of damaged plants and the number of army worms supported per damaged plant, indicate that sweet corn is attacked more than corn by the army worm.

On 6th January, 1969 i. e., 40 days after sowing, on an average 1 % plants of corn and 4 % plants of sweet corn were found to be further damaged by army worms. Pest was controlled chemically in plots meant for treatments.

At Black Bush Polder, Corentyne, 40 days old corn crop was found to be heavily damaged by the army worm.

APHID

On 18th January, 1969, i. e., 52 days after sowing, aphid (*Rhopalosiphum maidis* (Fitch) ?) infestation of corn and sweet corn was observed. The aphids first appeared

on the male flowers and later the infestation descended to leaves. All plants in three central rows of both corn and sweet corn were observed for aphid infestation. The infested plants were divided into two categories i. e., lightly infested and heavily infested. When aphids were observed only on the tassels and up to a few aphids on leaves, the infestation was termed as light while when aphids appeared on leaves in large numbers, the infestation was termed as heavy.

The data on aphid infestation in untreated plots are presented in Table II which indicate that (a) aphid infestation was not uniform in all the replicates and (b) sweet corn was infested more than corn, the percentage of not infested plants being 73.4 for sweet corn and 90.0 for corn. Parathion (18 ml of Folidol in 3.5 gallons of water per plot) was used for the control of aphids in plots meant for the control of pests. Almost complete mortality of aphids was obtained within 24 hours except of those which had entered the cobs.

MITE

On 22nd January 1969 i. e., 56 days after sowing, one plot each of corn and sweet corn meant for chemical control of pests was found infested with mite (*Oligonychus indicus* (Hirst) ? (Tetranychidae Acarina)). The mite did not infest other plots. The mite infestation started from lower leaves and moved upwards unlike aphid infestation which moved downwards. Metasystox (35 ml of metasystox in 3.5 gallons of water per plot) controlled the adult mite but 48 hours after treatment, a few freshly hatched mites were observed on the treated plants.

TABLE II

Data on aphid infestation of corn and sweet Corn plants (16.1.69)

Replication	Corn				Sweet Corn			
	No. of plants observed	Percent of plants			No. of plants observed	Percent of plants		
		Not infested	Infested			Not infested	Infested	
			Light	Heavy			Light	Heavy
I	130	77.8	9.2	13.0	155	63.3	13.5	23.2
II	154	95.5	3.2	1.3	139	66.2	25.2	8.6
III	152	96.7	3.3	0.0	119	90.8	9.2	0.0
Average	145	90.0	5.2	4.8	138	73.4	16.0	10.6

STEM BORER

At harvest of both the crops, about 100 stems from each plot were split open to assess the incidence of stem borers. Pooling up the data of three replications of untreated plots indicated that 32 out of 266 i. e., 12.0 % of stems of corn and 28 out of 332 i. e., 8.4 % stems of sweet corn were affected by the borer. The species was identi-

fied to be *Diatraça saccharalis* F (Pyralidae : Lepidoptera). Generally there was one gallery of about 2" — 4" length with one insect per plant. In a few stems, two larval galleries were observed. The borer, both in the stems of corn and sweet corn was found to be heavily parasitized by Amazon fly, *Metagonistylum minense* Tns (Diptera : Larvaevoridae). The chemical control of army worm, aphid and mite, did not reduce the borer incidence appreciably.

INSECT DAMAGE TO COBS OF CORN

The corn crop was ready for harvest on 7th March i. e., 100 days after sowing. Twenty cobs from each replication of untreated crop were observed for insect damage. Out of 60 cobs of corn observed, 23 cobs were free of insect infestation while 37 cobs were found infested with pink larvae (*Sathrobrotá rileyi* (Wals.) ? Generally the tip of the cobs i. e., not more than 10 grains on tip of each cob, were damaged by the pink larvae. In the plots treated with chemicals for the control of pests, 27 cobs out of 60 were found to be free of insect infestation while tips of the remaining 33 cobs were infested with the pink larvae.

INSECT DAMAGE TO COBS OF SWEET CORN

Cobs of sweet corn were picked twice, on 31st January and 7th February, 1969 i. e. 65 and 72 days after sowing. Twenty cobs from each of the 1st and 2nd picking from each replication of untreated plots were observed for insect damage and the data are presented in Table III which shows that :

a) Some cobs which were superficially damaged by insects were clean inside while some cobs which were superficially undamaged, were infested with insects.

b) Pink larvae damaged 45 out of 120 cobs. A variable number of grains i. e., from 2 to 30 per cob were found to be damaged by these larvae.

TABLE III

Analysis of sweet corn cobs for insect infestation

Class of Cobs	Replication	Total No.	No. actual-ly clean on stripping	No. of cobs damaged due to					
				Pink larvae	Aphids	Sap beetles	<i>Diatraça saccharalis</i>	Ear Worm (under identification) <i>Heliothis</i> sp.	Unknown reason
Superficially damaged cobs	I	9	0	4	0	3	2	0	0
	II	19	9	9	9	1	0	0	0
	III	14	0	6	2	1	2	0	5
Superficially undamaged cobs	I	31	7	15	6	2	0	3	0
	II	21	5	5	11	0	0	0	0
	III	26	13	6	2	1	0	0	5
Total		120	34	45	30	8	4	3	10

c) Aphids were observed to infest the tip region of the cobs. They infested 30 out of 120 cobs. They imparted an ugly appearance to the cobs.

d) Sap beetle (*Carpophilus* sp. ?) infested 8 out of 120 cobs. These beetles spoiled from a few to a large number of grains per cob.

e) Stem borer, *Diatraea saccharalis* F infested 4 out of 42 superficially infested cobs. The larva generally bores into the pith of the cob, but it spoils many grains also.

f) Ear worm (species under identification) infested three cobs out of 120. It spoiled a large number of grains in each cob and rendered the cob unfit for consumption.

g) A few grains per cob were found to be rotting in ten cobs out of 120.

YIELD OF CORN AND SWEET CORN

Average yield from 3 replications of untreated plots worked out to 3.628 lb. of corn grain (15 % moisture content) per acre and 5.856 lbs. of sweet corn cobs per acre. For both these crops, the plots treated with insecticides for the control of the pests, also yielded almost the same, indicating that the chemical control of the light attack of army worm in the early stages of the crop (11 days after sowing), followed by a mild aphid attack on 50 days old crop, did not increase the crop yields. In other words, these light insect infestations did not adversely affect the yield of these crops. However, as already discussed, the insect attack adversely affected the quality of the cobs of sweet corn.

Another crop of corn (Variety : hybrid corn × 304) was sown on 16th January, 1969. From an average of four replications, 14 % plants were found to be damaged by army worm on 3rd February i. e., 18 days after sowing. On 18th March i. e., 61 days after sowing, the plants were observed to be infested with aphid, 23.5 % and 10.5 % plants were infested lightly and heavily respectively. On 31st March i. e., 74 days after sowing, mite infestation of crop was observed. Up to five lower leaves of 20 % plants and more than five lower leaves of 65 % plants were found to be infested with the mite. *Stethorus* sp. (Coccinellidae : Coleoptera), a predator of phytophagous mites was found breeding among the mites on corn.

Thus it will be seen that this crop of corn was much more heavily infested with mite than the earlier one which might be due to the fact that this crop grew in a comparatively dry period. A heavy rain in early April, washed off the mites from the crop. This crop yielded 1.413 lbs. of grain (15 % moisture content) per acre.

PHYTOXICITY OF DIELDRIN EMULSION SPRAYS TO CORN

0.05 % dieldrin emulsion spray formulated with water from a commercial 20 % emulsifiable concentrate was found to be phytotoxic to young corn plants when the latter were sprayed up to run off stage. The phytotoxic symptoms appeared 48 hours after treatment and comprised of absence of green colouring matter from a patch of leaf in about its centre. This symptom appeared in almost all young leaves of each of the plant treated.

SUMMARY

The sequence of appearance of insect and mite pests on and their intensity of infestation of, hybrid corn and sweet corn in Guyana are presented in this note. The following pest are reported.

- (i) Cricket, *Acheta* sp.
- (ii) Armyworm, *Spodoptera frugiperda*, J. E. SMITH.
- (iii) Aphid (*), *Rhopalosiphum maidis* (Fitch).
- (iv) Mite (*), *Oligonychus indicus* (Hirst).
- (v) Stem borer, *Diatraea saccharalis* F.
- (vi) Pink borer (*), *Sathyrobota rileyi* (Wals.).
- (vii) Sap beetle, *Carpophilus* sp.
- (viii) Ear worm (**), (*Heliothis* sp.).

0.05 % dieldrin emulsion spray was found to be phytotoxic to crop plants.

(*) Tentative identification.

(**) Under identification.