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STATUS OF WEST INDIAN FRUITFLY, IN ST. KITTS, W.I.

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ABSTRACT

The West Indian Fruit Fly, Anastrepha obliqua, a serious pest of mangoes in St. Kitts, causes heavy crop losses and makes the fruit unmarketable to other Caribbean countries and the United States of America.

Three unimproved mango varieties, "Round Ball" "long Ball" and "Sour Bath" are widely distributed in the island and harbour large populations of the pest. Of these, "Sour Bath" is most susceptible, with levels of infestation ranging from 0-100% (avg. 32%). At Wingfield under the Tree Crop Project, the Ministry of Agriculture has planted the varieties, Julie, Irwin, Graham, Haydon and Amory Polly. Some of these are also grown at Parsons Estate and Molyneux.

As the unimproved mangoes grown all over the island, WIFF easily migrates to the grafted mangoes, causing heavy damage. Average levels of fruit infestation recorded were: Julie 4%, Haydon 7%, Graham 12%, Irwin 15% and Amory Polly 17%.

Because of the continued influx of WIFF from wild mangoes, sanitation efforts made by the farmers is proving futile, although the levels of fruit damage on their farms is significantly lower.

Three species of predators, Omalodes sp. nr. laevigatus, Glyptolenus sp. and an unidentified species of a staphylinid were found feeding on the pest in the field. Omalodes was most common throughout the island. During these studies no parasite was recorded. It is therefore suggested that where Anastrepha spp. are a serious problem, a long term biological control programme may be organized, in which important exotic parasites may be obtained and released against it.

INTRODUCTION

A number of local (unimproved) varieties of mango (Mangifera indica) are scattered throughout the island of St. Kitts. Recently some improved (grafted) varieties were planted only at Wingfield, Parsons Estate, Molyneux, Harris and Bayford.

Among the insect pests, West Indian Fruit Fly, (WIFF) Anastrepha obliqua (Macq.) is the most serious. It is widely distributed in the New World, causing heavy economic losses. It now exists in the Greater and

Lesser Antilles, the Rio Grande Valley of Texas, Mexico to Panama, Venezuela, Equador and Brazil (Stone 1942). Besides causing heavy crop losses each year in St. Kitts, it also restricts the export of mangoes.

#### Alternate hosts

The WIFF attacks a number of fruits, particularly of the family Anacardiaceae and some of Myrtaceae. van Whervin (1974) reported that in Jamaica, A. obliqua (=A. mombinpraeoptans) attacks hog plum (Spondias mombin), red coat plum (Spondias purpurea), Yellow coat plum (Spondias purpurea var. lutea), plum (Spondias dulcis) and mango (Mangifera indica) (Anacardiaceae); guava (Psidium guajava) and rose apple (Syzygium jambos) (Myrtaceae). In St. Kitts the survey was restricted to mangoes only.

A survey (under a CIDA project) was conducted during July 13-16, 1987, to evaluate the status of the pest, its distribution and varietal susceptibility. Fruits of improved grafted (Julie, Irwin, Haydon and Amory Polly) and unimproved varieties (Round Ball, Long Ball and Sour Bath) were examined on the trees and on the ground at six different localities.

#### Mode of Attack

During early infestation there are no external symptoms of the presence of the pest, although some mango varieties, viz. Julie and Amory Polly exude a sticky secretion after egg deposition. As the maggots develop, damage to the fruit increases and oozing of secretion from the skin begins. At this stage the fruit may become infected by fungi and bacteria, causing more damage. The fruit later falls on the ground and the full-grown maggots emerge, enter the soil and pupate at 2.5 to 3.75 cm below the surface.

#### Infestation Levels

The data collected on infestation levels of WIFF, attacking mango varieties in St. Kitts are presented in Table 1.

Amongst improved varieties, Julie was the most resistant to fruit fly with the levels of infestation ranging from 0 to 6 percent (avg. 4%) at various localities. The damages to other varieties were: Haydon 7%, Graham 12%, Irwin 15% and Amory Polly 17%.

The number of infested fruits on the trees was less than on the ground. This may be due to the fact that many of the infested fruits on the trees did not show visible damage at the time of examination, while the fruits on the ground were usually rotten with full-grown fruit fly maggots.

Of the unimproved varieties, "Round Ball" was prevalent throughout the island and fruit fly attack was fairly high. The levels of infestation ranged from 5-34%, avg. 24.3%, in different areas.

At Wingfield (Tree Crop Project) a single plant of "Sour Bath" was severely attacked by the pest. Over 50% of the fruits on the tree and 100% on the ground were infested.

### Population Levels in Fruits

To record the number of maggots per fruit, ten infested mangoes of "Round Ball" variety were collected from the ground and brought to the laboratory. The skin of each was peeled off and the pulp was gently washed under tap water, through different grades of sieve to recover maggots. The number per fruit ranged from 2-26, avg. 11.

The fruits on the ground were also invaded by vinegar flies (Drosophila spp.), which are usually secondary pests. A Hymenopterous parasite (Trybliographa sp.: Eucolidae) was common on fruits infested by Drosophila spp.

Two species of Nitidulids: Loblopa insularis (Cast.) and Stelidota strigosa (Gyll.) were also collected from rotting fruits. These insects usually feed on fungi and rotting material.

### Natural Enemies

The predatory insects found in infested fruits on the ground were: Histeridae: Omalodes sp. nr. laevigatus Quensel; Carabidae: Glyptolenus sp. (new species); and Staphylinidae: unidentified species. Of these, Omalodes was the most common.

In St. Kitts, a number of field collected pupae and maggots of A. obliqua were reared in the laboratory, but no parasites emerged. It is quite possible that collections of immature stages of fruit fly, from different parts of the island at regular intervals could produce some parasites.

It is therefore suggested that in the Caribbean, especially in St. Kitts and Jamaica, where Anastrepha spp. are serious problems, a long term biological control programme may be organized. Some important exotic parasites may be obtained, mass multiplied in the laboratory and released against WIFF and the Caribbean Fruit Fly (in Jamaica).

### DISCUSSION

It is further suggested that to reduce pest populations, fallen infested fruits should be picked up and destroyed. This is already being done at some plantations where ground sanitation is regular and infested fruits are fed to pigs.

The local unimproved mango varieties growing wild in gullies, ravines and on roadsides, provide continual host material for the pest. To reduce this, it is advisable to encourage more use of green and ripening mango fruits. A small canning industry may be established in the island to use green and ripe mangoes in making pickles, chutney and mango juices.

REFERENCES

- Stone, A. (1942) The fruitflies of the genus Anastrepha. Miscellaneous publication of the USDA No. 439 pp. 44.
- van Whervin, L. W. (1974) Some fruitflies (Tephritidae) in Jamaica. PANS vol. 20 No. 1, pp. 11-19. 36 refs.

TABLE 1 - The infestation of Mango Fruit Fly (*Anastrepha obliqua*) on improved and unimproved mango varieties grown in St. Kitts, West Indies.

Variety	Localities	ON THE TREE		ON THE GROUND		TOTAL	
		No. of mangoes examined	Percent Infestation	No. of mangoes examined	Percent Infestation	No. of mangoes examined	Percent Infestation
Julie	Wingfield (TCP)	572	1.6	81	31	653	5.0
	Parsons Estate	100	0.0	20	0.0	120	0.0
	Molyneux	43	0.0	207	7.0	250	6.0
	Combined	715	0.8	308	13.0	1023	4.0
Irwin	Wingfield (TCP)	99	9	16	50.0	115	15.0
Graham	Wingfield (TCP)	82	5	43	26	125	12
Haydon	Wingfield (TCP)	30	7	0	0.0	30	7
Amory Polly	Molyneux	23	17	0	0	23	17
	Wingfield (TCP)	30	40	50	30	80	34
Round Ball	Harris Bayford	76	5.0	10	0	86	5
	Combined	0	0	130	31	130	31
	Combined	106	15	190	29	296	24
Long Ball	Harris Bayford	40	2	0	0.0	40	2
	Combined	0	0	10	30.0	10	30
Sour Bath	Wingfield (TCP)	40	2	10	30	50	8
	Wingfield (TCP)	10	90	50	100	60	98

TCP = Tree Crop Project