QUARANTINE SURVEY OF SUGARCANE PESTS AND DISEASES ON THE TORRES STRAIT ISLANDS 1989

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Introduction

During the period 30 October to 10 November 1989, sugarcane growing on most of the inhabited and some of the uninhabited islands of the Torres Strait was surveyed for pests and diseases. The islands were visited by helicopter or fixed-wing aircraft. The mainland settlement of Bamaga was also visited.

Concurrently, Dr K. Hyde, Queensland Department of Primary Industries (QDPI), Mareeba, examined cultivated plants for diseases and Mr J.W. Turner, QDPI, Indooroopilly, collected insects associated with such plants. Mr Yang Shaujun, a Chinese quarantine officer training in Australia, assisted Mr Turner.

There are four distinct groups of islands in the Torres Strait:

1. Western islands which are granitic outcrops surrounded by sandy or swampy areas. They are sparsely vegetated in exposed areas, with sheltered moist gullies and lower swampy or sandy areas. Those examined were: Badu, Dauan, Friday, Goode, Hammond, Mabuiag, Moa, Nagir, North Possession, Packe, Prince of Wales, Thursday, Yam, and Zuna Islands.
2. Far eastern islands which are basaltic in origin. These have richer soil and were once well vegetated although much now is cleared. Those examined were: Darnley, Murray, and Stephen Islands.
3. Small sand and coral islands in the south-east. Some are well vegetated although the soil is usually poor. Those examined were: Layoak, Rennel, and Yorke Islands.
4. Large, flat northern islands close to the Papua New Guinea mainland. These are formed of alluvial mud, are fringed by mud flats and mangrove and have a swampy central region. Those examined were: Boigu and Saibai Islands.

Sugarcane growing on all islands often was poorly tended and planted in waste-water or other drainage lines. Most grew to only about 1 m high. Badila types, yellow, green and yellow-purple striped varieties were present. The majority had very short internodes, 1-2 cm long, and were tight trashing.

No sugarcane was found on Friday, Goode, Layoak, Nagir, Packe, Prince of Wales, Rennel, or Zuna Islands.

Pests

Eumetopina spp.

Leafhoppers of this genus (Hemiptera: Delphacidae) were found on most islands and at Bamaga (Table I). Nymphs and adults were found within the spindle with adults also found occasionally on the underside of fully-open leaves. Infested plants showed white speckling, consistent with damage from leafhopper feeding.

Chandler and Croft (1986) recorded *E. flavipes* Muir from sugarcane on most of the Torres Strait islands they visited. Croft (unpubl.) noted that those adults on Saibai were lighter in colour than those found on other islands. Both the pale

KEYWORDS: Quarantine Survey, Torres Strait, Insects, Diseases

form and the usual dark form were found on Saibai this time. This may indicate that more than one species of *Eumetopina* exist in Torres Strait. The classification of *Eumetopina* is currently confused, with at least nine species known from sugarcane in Papua New Guinea (Wilson, 1987). All specimens collected during this visit were sent to Dr M. Wilson, CAB International Institute of Entomology, London, for identification.

TABLE I—Major insect pests and diseases found on sugarcane in Torres Strait communities.

Community	*Eumetopina* spp.	*Aulacaspis tegalensis*	*Aulacaspis madiunensis*	Grasshopper damage	Pokkah boeng	Red rot
Badu	*			*	*	*
Bamaga	*			*		*
Boigu	*			*	*	*
Darnley	*				*	*
Dauan	*			*	*	*
Hammond		*			*	*
Mabuiag	*			*	*	*
Moa-Kubin	*			*	*	*
Moa-St Pauls				*	*	*
Murray	*		*		*	*
N. Possession						
Saibai	*				*	*
Stephen	*				*	*
Thursday	*	*		*	*	*
Yam	*			*	*	*
Yorke					*	*

***Saccharicoccus sacchari* (Cockerell)**

Sugarcane mealybug was present on all islands where sugarcane was growing and at Bamaga. All were ant-attended and some colonies included larvae of the predacious drosophilid *Cacoxenus perspicax* (Knab) and of the predacious phycitine pyralid *Conobathra aphidivora* Meyrich. One colony showed some old infestation by *Aspergillus parasiticus*. This disease becomes more prevalent with the onset of the wet season.

***Antonia graminis* (Maskell)**

This mealybug, the feltid grass coccid, is widespread in eastern Queensland and is recorded from a wide variety of host grasses (Williams, 1985). It occurs on sugarcane in India, Philippines and Hawaii (Dick, 1969). It was found in only one colony on Murray Island.

***Aulacaspis tegalensis* (Zehntner) and *A. madiunensis* (Zehntner)**

These closely related scale insects were found on Hammond and Thursday Islands (*A. tegalensis*) and on Murray Island (*A. madiunensis*) (Table I). The scales occurred in large numbers on the stalks, often covering the entire internode. Scattered scales occurred on the underside of leaves. All were ant-attended.

Chandler and Croft (1986) recorded *A. tegalensis* only from Thursday Island. It also occurs in south-east Asia, east Africa, Mauritius and Reunion. Severe attacks may reduce cane yield by 12 t/ha to 25 t/ha and sucrose content by 35% (Rao and Sankaran, 1969). *A. madiunensis* is widespread in Australia, southern Asia and eastern Africa (Rao and Sankaran, 1969) but, at least in Queensland, it causes few problems. *A. tegalensis* is the greater threat of the two species.

***Neomaskellia bergii* Signoret**

This aleyrodid or white fly occurred in dense, well-defined colonies on the undersurface of leaves at Badu, Boigu, Darnley, Murray, Thursday and Yam Islands. All were ant-attended and no stalk had more than two colonies. They caused little apparent damage.

This species (as *Aleurodes berghi*) is known as a pest of sugarcane in north Queensland and Java (Jarvis, 1927) but reported damage is slight. This may be the unidentified white fly recorded by Chandler and Croft (1986) from Thursday and Yorke Islands.

Grasshoppers

Grasshopper damage was obvious on plants on various islands and at Bamaga (Table I) and both the spurthroated locust *Nomadacris guttulosa* (Walker) and the pyrgomorphid *Atractomorpha* sp. were seen. Locals commented that *N. guttulosa* often formed damaging swarms.

Termites

Two species of termites [*Nasutitermes graveolus* (Hill) and *Heterotermes vagus* (Hill)] were found infesting old stalks on Badu and Darnley Islands, respectively. There was no damage on young stalks in the same stool.

Moth borer

What appeared to be old moth-borer damage, maybe of *Bathytricha truncata* (Walker), was found on old stalks at Kubin (Moa Island) and Thursday and Yorke Islands. No associated larvae were found.

Leaf borer

Two specimens of an unidentified caterpillar were boring in the mid-rib of unopened leaves on Stephen Island. Light tan-coloured frass at the base of the spindle made locating the larvae easy.

Weevil borer

One specimen of a small weevil was found at St Pauls, Moa Island. It closely resembles the cane weevil borer *Rhabdoscelus obscurus* (Boisduval) but is about 1 cm long. No damage was obvious. Chandler and Croft (1986) recorded similar weevils from Dauan, Moa, Saibai and Thursday Islands.

***Dermolepida lixi* (Nonfried)**

Adults of this melolonthine were found on Badu, Mabuiag and Yam Islands. All had emerged recently and some were feeding during the day on coconut leaves.

Britton (1978) recorded *D. lixi* from Dauan, Moa and Murray Islands and from Port Moresby. Chandler and Croft (1986) recorded the remains of a beetle from Darnley Island and attributed them to greyback canegrub *D. albohirtum* (Waterhouse). *D. lixi* and *D. albohirtum* are close relatives, differing only in the density of dorsal scales (Britton, 1978). The present series from Badu and Mabuiag have few dorsal scales but in those from Yam the scales are denser.

Cerambycid borer

Two larvae of an unidentified cerambycid were boring in old stalks at Darnley and Kubin (Moa). Other adult cerambycids, found at Murray in the whorl and apparently eating small amounts of leaf, and at light on Yorke, may be the same species.

***Oligonychus grypus* Baker and Pritchard**

This tetranychid mite occurred on the lower surface of leaves on Badu and Murray Islands but was causing little damage.

Diseases

Pokkah Boeng

At least a few stools on all islands except North Possession and at Bamaga (Table I) were showing classical Pokkah Boeng [*Gibberella fujikuroi* (Sawada) Wollenw.] symptoms: crinkling of leaves, transverse cuts on the leaves, distorted spindle. Chandler and Croft (1986) recorded the disease from Boigu Island.

Red rot fungus

Symptoms of what appeared to be red rot [*Glomerella tucumanensis* (Speg.) Arx and Mueller] were seen at all localities except North Possession Island (Table I). The symptoms were usually a browning of the mid-rib presumably associated with leafhopper feeding, but some reddening of the internal node areas was seen on older stalks.

Chimera

Obvious white chlorotic streaking, probably a chimera, occurred on a few plants at Boigu, Saibai and on the mainland at Bamaga.

Nutritional disorders

Nutritional disorders such as chlorosis, poor growth and silica freckle were obvious at all localities. These reflect the often nutritionally-poor granitic soil or coral sand, the lack of fertiliser, and the often neglected state of the cane.

Discussion

The most important pest found was the leafhopper *Eumetopina*. These caused severe leaf speckling and may have helped to stunt the plants, although nutritional and drought problems confound this. Species of *Eumetopina* are suspected virus vectors (Wilson, 1987) and cage transmission tests at Ramu have implicated one *Eumetopina* sp. as a possible vector of Ramu stunt disease (Egan and Magarey, unpublished data). In the local method of planting cane, the stalk is cut about 30 cm below the growing point, leaves are trimmed to about 10-15 cm long, and the cut end of the stalk placed at an angle into the ground. This virtually assures spread of the nymphs and adults by transferring the insects within the spindle of the planting material.

The taxonomy of *Eumetopina* needs clarification. It is important to know how many species occur on the Torres Strait islands and in Papua New Guinea. Further research should be encouraged.

Given that *Eumetopina* can be easily moved in planting material, its possible occurrence in gardens of expatriate islanders in Cairns and Townsville should be assessed. Some consideration should also be given to the eradication of *Eumetopina* from the Torres Strait islands and Bamaga. Sugarcane has little commercial value in these communities and removal and destruction of tops in spring may eliminate the pest. New growth following summer rains should be free of nymphs and adults. The distribution of free fertiliser as in the recent banana-disease campaign could be considered. There would undoubtedly be considerable adverse reaction from the local communities with the potential for decreased co-operation in future quarantine programs.

The scale *Aulacaspis tegalensis* is not known from the commercial sugar-growing areas of Australia and potentially is more destructive than *A. madiunensis*.

Quarantine restrictions on the movement of sugarcane are in force at Thursday Island and at the quarantine boundary through Coen — these should prevent the spread of *Eumetopina* and *A. tegalensis* to commercial sugar-growing areas

of Australia. More active publicity of the pests' threat should be made in the Torres Strait. Posters and other information in local Creole and Murray languages would be useful and could be prepared with the help of language translators on Yorke and Murray Islands.

Other pests and diseases found during the survey do not pose major threats to the Queensland industry, and the continuation of the Torres Strait quarantine area should provide a fair degree of protection. These other species were similar to those recorded by Chandler and Croft (1986) with the exception that *Chilo* sp. stemborers were not located on Saibai Island. The infestation of this pest may have died out or they were not active during this dry-season survey. Further surveys during the wet season should search for this species.

Acknowledgements

J. Donaldson, M. De Baar and L. Miller identified many of the insects.

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