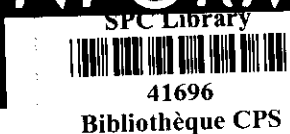




INFORMATION CIRCULAR



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B

PLANT PROTECTION NEWS

Compiled by
SPC Plant Protection Officer
I.D. Firman

This is the fourth Plant Protection News and the third to be published both as an SPC *Information Circular* and in the *South Pacific Bulletin*. The *Information Circular* is distributed to agricultural departments whereas the inclusion of the news in the *Bulletin* brings plant protection to the notice of a wider public.

IBPGR

Pacific Island countries were very well represented at a 'Symposium on the Genetic Resources of the Far East and Pacific Islands' held in Tsukuba, Japan from 20-24 October 1980. The meeting was sponsored by the International Board for Plant Genetic Resources (IBPGR) in cooperation with the Government of Japan.

IBPGR was established in 1974 and receives funds from members of the Consultative Group on International Agricultural Research (CGIAR). Its Secretariat is provided by FAO, Rome. The Board seeks to develop a world-wide network of genetic resource centres. Such a network would have two principal dimensions; a crop-specific one based on specialist institutions and a geographic one based on regions of the world where there is a significant genetic diversity of cultivated plants and their wild relatives.

The aims of the symposium were to assess the nature and extent of various genetic resource activities in the region and to make recommendations to IBPGR to help evolve effective networks for collection, exchange and utilisation of genetic resources.

Asian countries represented were China, Japan and Korea. The representatives from the Pacific Islands, all of whom presented interesting papers on their countries' genetic resources, were Dr M. Krishnamurti, Director of Sugarcane Research, *Fiji*, Dr R. Muniappan, University of *Guam*, Dr G.V.H. Jackson, Plant Pathologist, *Solomon Islands*, Mr T. Moss, Crop Agronomist, *Tuvalu*, Mr P.N. Byrne, FAO Cocoa Development Adviser, *Vanuatu* and Mr M.P. Hazelman, University of the South Pacific, representing *Western Samoa*. SPC was represented by the Plant Protection Officer.

The SPC plant protection programme's main interest in genetic resources is related to the search for resistance to plant pests and diseases and to the quarantine aspects. Knowledge of these matters enables plant material to be more fully utilised and helps to make international exchanges of germplasm safe from the phytosanitary point of view. But of course the meeting was concerned with a much wider range of topics than this.

Because they were subject to genetic erosion and/or not dealt with adequately already and/or needed collecting within the region the Pacific Island countries named the following crops as particularly important to them and worthy of special attention by IBPGR; *Abelmoschus manihot* (aibika/bele), aroids, especially *Colocasia* (taro) and *Cyrtosperma* (giant swamp taro/babai), *Cocos nucifera* (coconut), *Dioscorea* spp. (yam), *Ipomoea batatas* (sweet potato), *Manihot esculenta* (cassava), *Pandanus* spp., *Psophocarpus tetragonalobus* (winged bean) and *Saccharum* spp. (sugarcane).



Breadfruit



Pandanus



Breadfruit, pandanus, taro and bele (*Abelmoschus manihot*)... four of the crops that Pacific Island participants at the IBPGR meeting thought especially important.

It was notable that these plants were almost entirely absent from the lists of importance drawn up by the Asian countries. It is this difference of emphasis that makes the attendance of Pacific Island representatives so important at what are often joint meetings of Asian and Pacific interests. Although there are clearly floristic links between the regions and a need for exchange of genetic resources and information, IBPGR may eventually have separate working groups for East Asia, South East Asia and Pacific regions.

Following an initiative from Pacific participants a recommendation was made to set up crop expert committees and regional working groups to look at specific needs for each of the crops considered important. They would look at all aspects of exploration, evaluation, conservation and storage, exchange of genetic material and quarantine as well as training requirements. In the case of the Pacific region it was also recommended that IBPGR appoint an expert to assist and advise the working groups.

It was noted that some of the crops important to the Pacific Islands are propagated vegetatively. It is necessary to free this material of disease and to be able to keep it. This needs to be done outside the region and the meeting recommended that IBPGR seek ways to do this. As just one example a project has already been initiated to free from virus a few Solomon Islands cultivars of *Dioscorea alata*, selected for resistance to *Colletotrichum* dieback (see SPC *Advisory Leaflet 12*). This project requires funding so that all 50 cultivars maintained can be similarly treated, both for the use of Solomon Islands and for the region as a whole.

PPC/SEAPR or APPPC?

The main objective of the Plant Protection Agreement for the South East Asia and Pacific Region is to prevent the introduction and spread within the region of destructive plant pests and diseases. The Plant Protection Committee for the South East Asia and Pacific Region (PPC/SEAPR) oversees the implementation of the Agreement and, among other things, makes recommendations to the contracting Governments and considers problems requiring regional cooperation.

SPC was represented at the Twelfth Session of PPC/SEAPR held in Chiangmai, Thailand from 27 October - 3 November, 1980. The FAO Council has approved an amendment to the title so that the body can become the Asia and Pacific Plant Protection Commission (APPPC) but so far acceptance of the amendment has not been received from the necessary two thirds of member countries

At the meeting the news that Solomon Islands is the twenty-second and newest member of the Committee was welcomed; it is one of the countries which has already signified its acceptance of the new APPPC title.

The countries of the Pacific region which are signatories to the Plant Protection Agreement are Australia, Fiji, New Zealand, Papua New Guinea, Solomon Islands and Western Samoa. Unfortunately, at this particular meeting, only Australia and Western Samoa were represented (by Mr L. Smee, Principal Plant Quarantine Officer and Mr T.V. Bourke, FAO Crop Protection Adviser respectively). SPC was invited to send an observer and was represented by the Plant Protection Officer.

The Twelfth Session of the Committee in fact marked the twenty-fifth anniversary of its existence. The present FAO Regional Plant Protection Officer and Executive Secretary of the Committee is Professor Huang Ke-xun but the two previous holders of these posts, Mr Anthony Johnston (now Director of the Commonwealth Mycological Institute) and Dr D. Bap Reddy (now FAO Deputy Regional Representative for Asia and the Pacific) were also present. Dr Reddy had prepared a booklet *Plant Protection in Asia and Pacific, an overview* to mark the Committee's 25 years of service.

Fifteen countries were represented at the meeting, including of course a strong delegation from Thailand, the birthplace of the Committee and also host for its silver anniversary. Dr Riksh Syamananda of Thailand was elected Chairman of the Twelfth Session.

The country statement of Australia made mention of assistance given to Fiji, Kiribati, Tonga, Vanuatu and Western Samoa in various aspects of plant quarantine and of an international training course in plant quarantine planned for 1981. Of particular interest to Pacific Island countries was the possibility of a correspondence course in quarantine matters being offered by the Riverina College of Advanced Education.

Western Samoa referred to the development of facilities for post-entry quarantine as well as the provision of laboratories and an insectary/greenhouse. Aid sources were supplying these and also scholarships, training facilities and resource personnel. Three Samoan graduates (a plant pathologist and two entomologists) were now working in the Department of Agriculture.

SPC was able to report on its Third (1980) Regional Technical Meeting on Plant Protection held in Papua New Guinea and particularly on the *ad hoc* Pacific working group of PPC/SEAPR which met in conjunction with it. Matters which particularly concerned Pacific Island countries were quarantine facilities, treatments and training and the quarantine aspects of germplasm especially root crops.

The meeting in Thailand recognised the urgent need for strengthening plant protection and plant quarantine activities in land-locked and island countries and strongly recommended that FAO support, help and give priorities to these countries at least in providing basic facilities and training. This recommendation lends support to the early progress of the project 'Strengthening plant quarantine and plant protection services in the Pacific' which UNDP will fund as a joint FAO/SPC activity. Also, noting the special plant protection problems in the Pacific, the Committee recommended that the *ad hoc* Working Group formed at the Eleventh Session continue to meet regularly and be attended by the PPC/SEAPR Executive Secretary. This will ensure continuing and valuable liaison between FAO and SPC in matters affecting plant protection in the region.

On germplasm the Committee, noting that certain pests and diseases have been, and continue to be, moved with germplasm from international agricultural research centres,

recommended that FAO, in consultation with IBPGR, take all measures to prevent such spread. This resolution, taken in conjunction with those of the IBPGR meeting in Japan, should result in appropriate action being taken.

SPC always has a special interest in the Committee's *Recommended measures for regulating the import and movement of plants* because they form a useful background and guidelines for advice to all the countries of the region, regardless of whether they are members of PPC/SEAPR. Very few changes were made to the recommendations at this session; this is probably not because the recommendations have nearly reached perfection but, regrettably, because few countries had given them much thought recently. However, some minor improvements were made and for the next meeting it is hoped that a revised treatment schedule will be attached to the recommendations and that special quarantine situation reports will be prepared for cardamom, cashew, cassava, cloves, forest trees and pepper (*Piper nigrum*). These were some of the crops about which the Committee thought new information was needed.

COCONUT CADANG-CADANG IN GUAM

The following extracts are from the yearly progress report on coconut research (1979) of FAO's Industrial Crops Group:

'A survey was recently conducted in Guam by Dr G. Boccardo, FAO Consultant in Plant Pathology, as part of his activities under the FAO/UNDP Coconut Research and Development Project in the Philippines. The objective of the survey was to shed some light on the etiology of Tinangaja disease of coconut in Guam as it relates to cadang-cadang in the Philippines. . . . The evidence provided by Dr Boccardo is that cadang-cadang is no longer confined to the Philippines as previously believed. Instead, cadang-cadang is present in Guam since at least 1917 when it was first reported by Weston. The disease must have contributed to the destruction of the coconut industry which is now practically non-existent in Guam. Considering the World War II events that took place in this area and the unrestricted traffic of men and materials between Guam and other islands of the South Pacific plus the fact that the cadang-cadang pathogen is not known to occur in other plant hosts, it is very likely that the pathogen and/or its vector(s) have also moved outside of Guam and that they are present in some other locations in the Pacific.

It seems therefore advisable to alert local plant protection authorities so that they are immediately aware of this possibility and they can take the necessary action to detect as soon as possible outbreaks of this very important coconut disease.'

ANTS AGAIN

A recent (June 1980) SPC *Information Circular* by J.H. Stapley, Department of Agriculture and Lands, Solomon Islands, dealt with *Using the predatory ant, Oecophylla smaragdina*, to control insect pests of coconut and cocoa.

An article (originally from the French newspaper *Le Parisien*) later appeared in *Les Nouvelles Calédoniennes* of 10 December 1980 describing how 'Ants' nests come to the help of the Russian forest'. It seems that Soviet scientists are studying the contribution of these insects to the development of young forests and have calculated that a colony of ants can eat 1 kg of parasites a day, thus protecting a quarter of a hectare of forest. The article goes on to mention similar uses of ants in France, Germany and Italy.

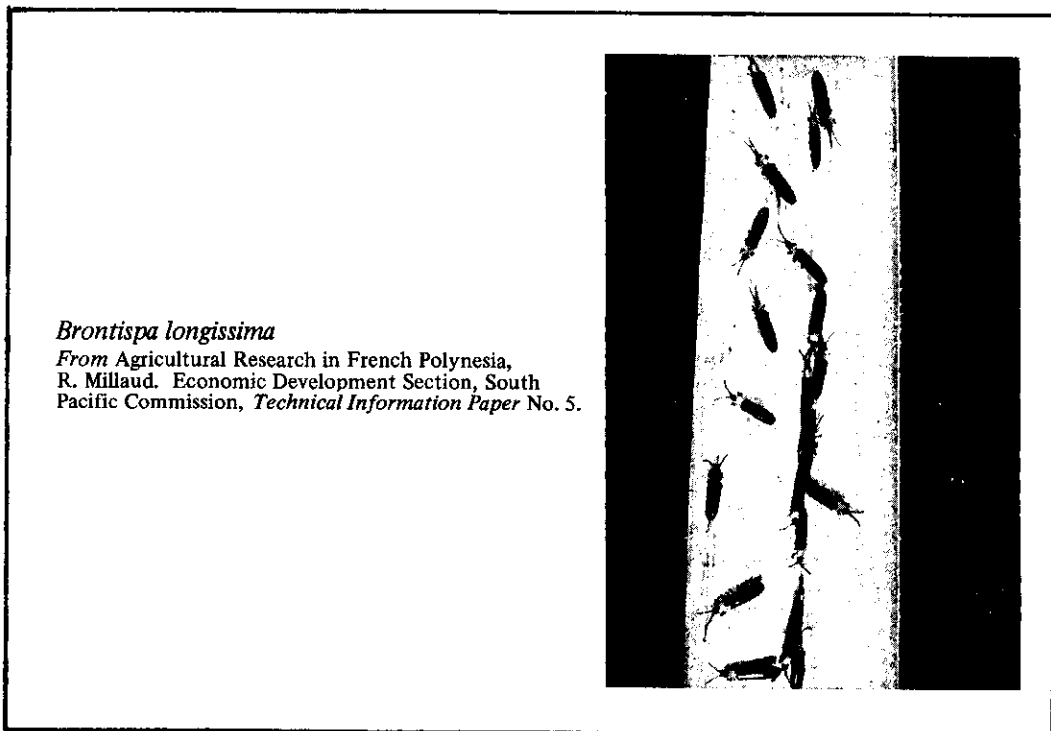
The ant in question is a pine forest ant, *Formica rufa*.

NEW PROBLEMS

The first two items report the spread of two very important pests to Western Samoa and are based on information supplied in January 1981 by Terry Bourke, the FAO Plant Protection Adviser there.

1. The coconut hispine, *Brontispa longissima*

This is a beetle which feeds on the inner surfaces of unopened palm leaves. The damage can be severe on young palms and when the leaves unfold they have the appearance of having been scorched by fire.



In August, 1980, specimens submitted from Leauva'a, Upolu Island, Western Samoa were identified as *Brontispa longissima*. The beetles were causing heavy damage to 5 - 6 year-old palms there. It is uncertain how the insect entered Western Samoa but presumably it came from American Samoa, possibly in or on infested coconut material. From the damage caused it seemed likely that it had actually been present since the middle of 1979.

Surveys carried out during August and September 1980 showed the insect to be established in discrete pockets over an area of approximately 20,000 acres between Leauva'a and Leulumoega and inland to the Aleisa road. Since then it has continued its spread westward and at the same time the individual pockets have increased in size. Measures were taken to prevent its spread out of the infested area by restricting movement of coconut material which could transport the insect.

An eradication campaign based on aerial application of insecticide to large palms and hand application to small palms was considered and would have cost at least WSS 1.5 million. Because of the cost, doubt whether the insect could be successfully eradicated, disruption which would have been caused to people and animals within the area requiring treatment, possible side effects on other insect pests of coconuts and toward other crops which would also be sprayed, and the possibility of *Brontispa* being re-introduced, it was decided not to attempt eradication but to proceed with a control programme.

This programme will be based on:

- (a) The importation of *Brontispa* parasites.
- (b) The hand treatment of young, infested palms and those immediately surrounding them with insecticide so as to reduce the number of infested palms as well as the number of *Brontispa*. (This treatment would continue until parasite release could be started).
- (c) The imposition of quarantine restrictions to delay the introduction of *Brontispa* to Savai'i Island.

In the first instance the eulophid, larval/pupal parasite *Tetrastichus brontispae* will be introduced from both Solomon Islands and New Caledonia. Other parasites (e.g. *Haeckeliamia brontispae*) could be introduced at a latter stage. Cultures of *T. brontispae* are to be supplied by Solomon Islands Ministry of Agriculture and Lands and by ORSTOM. The introductions will be processed through a new quarantine insectary and then bred up in a new insectary/greenhouse building for field release.

2. The Giant African Snail, *Achatina fulica*

In 1980 adult snails were discovered at three sites in Western Samoa, all on Upolu Island, in and around Apia. The first discovery was at the Apia Wharf in October when two snails were found adjacent to second-hand cars previously imported from American Samoa. The second was at the well known Aggie Grey's Hotel, where eight snails were collected from a restricted area of flower gardens and flower boxes.

The third and most important discovery was at the Vaitele Industrial Zone in early November. An area of approximately two and a half acres is involved. The snails are thought to have been brought in or on containers of empty bottles which were returned from American Samoa.



Giant African snails (*Achatina fulica*) and cannibal snails (*Euglandina rosea*), left, from *South Pacific Bulletin* 24, 4, 1974)

No further snails have been sighted at either the Wharf or Hotel sites and both areas have been baited with metaldehyde-cement block baits and garden metaldehyde baits. Baiting and regular inspection continues at both these sites.

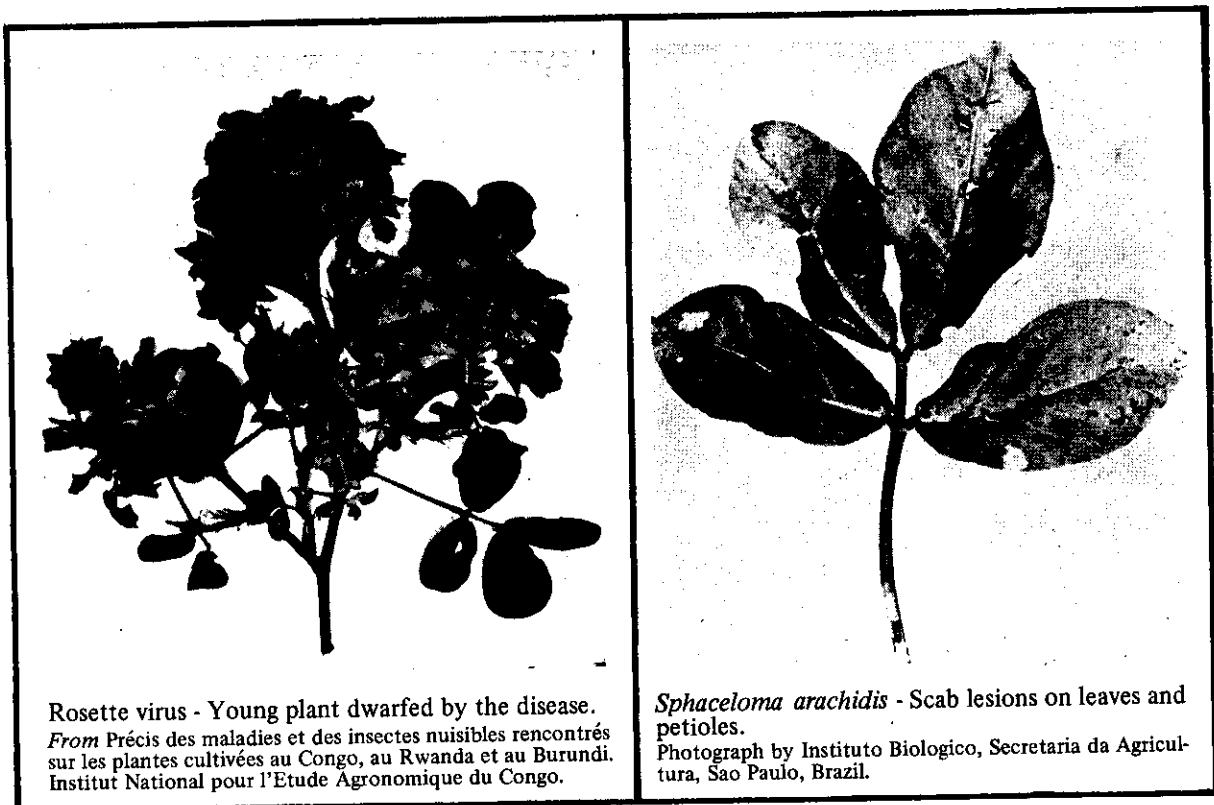
The infested area at the Vaitele Industrial Zone was quarantined and a programme of hand collection of snails, collection and destruction or disposal of all refuse, cutting or weedicide spraying of all long grass and other vegetation, baiting (metaldehyde-cement block baits) and regular spraying of the infested ground area with a methiocarb/water mixture, instituted. The area outside the known infested area was also baited and regularly inspected for dead or live snails. Movement of goods and vehicles out of the infested area was strictly controlled with all items being closely inspected to ensure that they were free of *Achatina* eggs and snails.

Further instances of snails being carried in or on vehicles arriving in Western Samoa from American Samoa have also been detected and appropriate action has been taken to guard against this.

3. Peanut rust

Peanut rust (caused by the fungus *Puccinia arachidis*) made its appearance in Fiji and Tonga during 1980 and is already causing much concern to growers. No completely rust-resistant varieties are known, the disease can cause quite heavy losses and control is difficult.

The rust was found in Papua New Guinea in 1972 and Eric McKenzie of DSIR, New Zealand found it widespread in Solomon Islands during his recent SPC sponsored plant disease collecting trip there.



Rosette virus - Young plant dwarfed by the disease.
From Précis des maladies et des insectes nuisibles rencontrés sur les plantes cultivées au Congo, au Rwanda et au Burundi. Institut National pour l'Etude Agronomique du Congo.

Sphaceloma arachidis - Scab lesions on leaves and petioles.
Photograph by Instituto Biologico, Secretaria da Agricultura, Sao Paulo, Brazil.

Two other peanut diseases to be kept out of the region (reproduced with the original acknowledgements from the SPC publication *Exotic plant pests and diseases* by B.A. O'Connor)

Although the rust is wind-borne and may have blown into the region, seed-borne spread is also possible, so all recommended plant quarantine measures should be taken to prevent its further spread. The Plant Protection Committee for the South East Asia and Pacific Region

recommends that only small quantities of seed should be brought in; they should be treated with a thiram seed dressing and grown initially in post-entry quarantine. Apart from rust there are several other fungus and some important virus diseases to be kept out of the region.

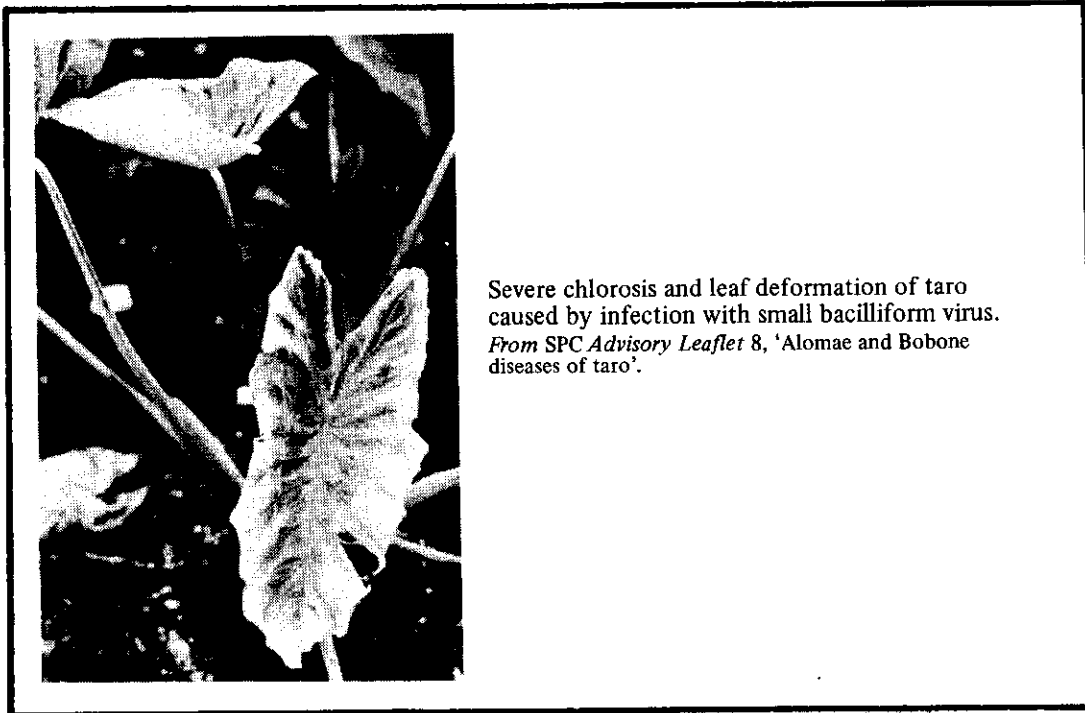
Reports of the distribution and incidence of peanut rust in the region would be welcome so that we can monitor its progress.

4. The insect *Thrips palmi*

The insect *Thrips palmi* has been reported as present in New Caledonia by Messrs P. de Boissezon and L.O. Brun. This thrips, which is thought to be of considerable economic importance in India, feeds on many different plants; in New Caledonia it has mainly attacked cucurbits.

5. Small bacilliform virus particles

In plant quarantine in Brisbane, Australia small bacilliform virus particles have recently been detected in two ornamental *Cyrtosperma* plants imported from Honiara, Solomon Islands. (D.R. Jones, Dorothy E. Shaw and D.H. Gowanlock, *Australian Plant Pathology* 9, 3: 5-6). Similar virus particles are known to cause a disease of taro (see SPC *Advisory Leaflet* 8). A lethal disease, Alomae, caused by a combination of two types of bacilliform virus particles is present in Papua New Guinea and Solomon Islands. The detection of symptomless virus infection in *Cyrtosperma* and the growing popularity of ornamental aroids have important plant quarantine implications. Because of virus and other problems, movement of propagating material between countries should, in any case, be limited to small quantities for scientific purposes under the supervision of specialist officers of the agricultural services.



NEW BLOOD

Mike Bigger is on secondment from the UK Centre for Overseas Pest Research for a two year study of *Amblypelta cocophaga* and other insects affecting the establishment of plantations of the tree *Eucalyptus deglupta* in Solomon Islands. *Amblypelta* is perhaps better known to most of us as the nutfall bug which causes young coconuts to fall off prematurely.

Mike is preparing a series of illustrated leaflets on forest pests, five of which have already been published; they deal with *Oxymagis horni* and *Dihamnus* sp. on *E. deglupta*, Buprestid beetles on *Terminalia brassili*, *Badamia exclamationis* on *Terminalia calamansanai* and *Hyblaea puera* on teak.

WELCOME RETURNS

The United States Department of Agriculture (USDA) Plant Protection and Quarantine Service (PPQ) intends to set up a regional office for Asia, Australia and New Zealand which will be serviced from Guam. USDA's main objective in setting up this and other regional offices is:

'Pest exclusion by strengthening our quarantine efforts away from our shores rather than depending totally on the interception at ports of entry, detecting as fast as possible those pests that get through these defenses, and taking necessary actions to eradicate the pest before establishment and spread. The trend, in short, is to shift from regulation enforcement to compliance. The move will allow PPQ to deal with causes rather than effects. By strengthening emphasis on the international sector, we can keep pests outside U.S. borders, ship pest-free merchandise, inspect high-risk shipments, facilitate traffic flow and monitor foreign pest conditions.'

But the service will also 'provide liaison with governmental and non-governmental organisations in cooperating countries on quarantine activities and in the exchange of technical and scientific information and experts.'

We look forward to cooperation with the Guam office, especially, as Marshall Kirby is likely to be on the staff. Marshall worked as a nematologist in Fiji while attached to the Peace Corps and was able really to put nematology on the map in this part of the world. Very many publications and much useful practical advice stemmed from his work in the region and we will be pleased to see him back again.

We are equally pleased to hear that Peter Maddison, a veteran of the SPC/FAO Rhinoceros Beetle Project and the UNDP/FAO/SPEC Survey of Agricultural Pests and Diseases, is now on the staff of the Entomology Division, DSIR, New Zealand. We can look forward to using his knowledge of insects in the Pacific for a long time to come.

CAREFUL HOW YOU SPRAY

Doug Clarkson, plant pathologist in Papua New Guinea, has been trying out fungicides for the control of Taro Leaf Blight. He reports that fentin hydroxide caused a rapid and severe phytotoxic reaction. Captafol is another fungicide that has been reported to be phytotoxic to taro.

It looks as if we had better follow the advice of Grahame Jackson in SPC *Advisory Leaflet* No. 3 and use copper fungicide when chemical control of this disease is indicated!

VISITORS

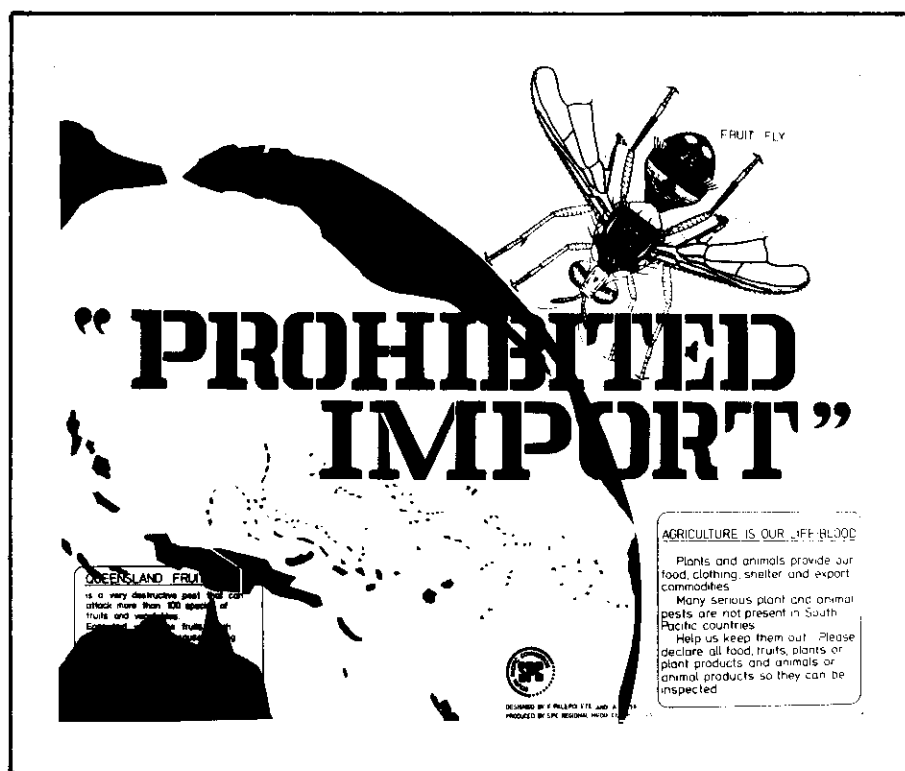
SPC sponsored a visit by Dr M. Lenz (Division of Entomology, CSIRO, Australia) to Western Samoa in order to have his advice about the control of a termite species in tree plantations there. The termite was originally thought to be *Neotermes rainbowi*, a species known to be a pest of coconut palms and cocoa trees on some Pacific islands. In fact the insect turned out to be *Neotermes samoanus*, an endemic rather than an introduced species.

The termite is widespread on Upolu and Savai'i but restricted to native forest and to older plantations of exotic trees. It probably only attacks trees with pre-existing fungus rots and must therefore be regarded as a secondary pest. In the native forest, loss due to fungal rots and

termites has to be accepted. It remains to be seen how serious losses will be in exotic plantations and Dr Lenz stresses the need for careful monitoring and for good management practices to minimise the damage. He made a series of recommendations to this end.

While in Samoa Dr Lenz also made some recommendations about the dry-wood termite, *Cryptotermes domesticus*, which is the 'greatest potential problem to utilising indigenous timbers'.

DSIR staff at Mt Albert Research Centre, Auckland, New Zealand were fortunate in November to hear Dr M.A. Bateman of CSIRO, Australia, talk about his experiences with fruit fly eradication in New South Wales and in Easter Island. A team led by Dr Bateman was successful in eradicating a 1971 outbreak of the Queensland fruit fly, *Dacus tryoni*, on Easter Island, using a combined treatment of malathion, protein hydrolysate and male attractant. A reinfestation two years later was similarly eradicated. Dr Bateman was en route to Niue, accompanied by P. Dale of the New Zealand Ministry of Agriculture and Fisheries, to have a preliminary look at the feasibility of eradicating fruit flies from that island. Fruit flies can cause serious damage to fruit and vegetables and are one of the problems which hinder inter-island trade in these commodities.



An SPC poster featuring the Queensland fruit fly.

A REMINDER

A 'Society for Plant Protection in the Caribbean' has recently been established and we hear that it plans to begin a newsletter. We wish both the Society and the Newsletter every success and perhaps some of the plant protection problems of island countries in that part of the world will be similar to ours. No doubt one common problem will be persuading people to send in items for the newsletter! Which reminds me that:

News of regional plant protection interest is needed for our next edition. We want to hear about:—

Changes or additions to plant protection staff.

Changes or additions to legislation (e.g. plant quarantine or pesticide legislation).

News of new research programmes, recent important research findings, etc.

News of aid programmes in plant protection.

Recent publications on any aspect of plant pathology, entomology, nematology, weed control, vertebrate pests etc.

New records of, or important outbreaks of, pests, diseases and weeds.

New biological control agents introduced for testing.

New local recommendations for pest, disease and weed control.

News of training courses held or to be held.

News of meetings, seminars etc.

News of local staff in training overseas and of visiting scientists.

Such information should be sent to the SPC Plant Protection Officer,

Box 2119, Suva, Fiji.

AGRICULTURE

ISSUED IN THIS SERIES

1. Annual Conference of O.I.E. held in Paris, 13th-18th May 1968. Report of South Pacific Commission Observer: September 1968. *Livestock Production and Health*
4. 'A' Level: Australia's Notification on Bovine Pleuropneumonia Regulations. March 1968. *Plant and Animal Quarantine*
5. Study Tour to Noumea, Brisbane, Territory of Papua and New Guinea and British Solomon Islands Protectorate. March 1969. *Tropical Crops*
6. 'A' Level: Agricultural Education - Bulletin No. 1. April 1969. *Agricultural Education and Extension*
9. 'A' Level: Agricultural Education - Bulletin No. 2. May 1969. *Agricultural Education and Extension*
10. 'A' Level: Agricultural Education - Bulletin No. 3. November 1969. *Agricultural Education and Extension*
11. Agricultural Extension Workshop - Western Samoa. November 1969. *Agricultural Education and Extension*
12. Asian-Pacific Weed Science Society. December 1969. *Tropical Crops*
13. The Status and Potential of the Chilli Industry in the Solomon Islands. December 1969. *Tropical Crops*
22. Breadfruit Diseases in the South Pacific. June 1970. *Tropical Crops*
23. Second World Consultation on Forest Tree Breeding. June 1970. *Forestry*
24. Agricultural Research in the South Pacific. July 1970. *Tropical Crops
Livestock Production and Health*
25. Crown-of-Thorns Starfish. July 1970. *Fisheries*
26. Counter-Attack - Crown-of-Thorns Starfish. September 1970. *Fisheries*
28. Asian Coconut Community. January 1971. *Tropical Crops*
29. O.I.E./F.A.O. Regional Conference on Epizootics in Asia, the Far East and Oceania. January 1971. *Livestock Production and Health*
30. Plant Pest Control. January 1971. *Tropical Crops
Plant and Animal Quarantine*
31. The Effect of Cultural Method and Size of Planting Material on the Yield of *Colocasia esculenta*. February 1971. *Tropical Crops*
33. Weed control. August 1971. *Tropical Crops*
34. Taro. August 1971. *Agricultural Research*
35. Transmission of Virus Samples. August 1971. *Plant and Animal Quarantine*
37. Training Programmes for Out-of-School Rural Youth. March 1972. *Agricultural Education and Extension*
43. The Fifth FAO Regional Conference on Animal Production and Health in the Far East. December 1972. *Livestock Production and Health*

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| 47. Useful References for Animal Production and Agricultural Extension Workers of the South Pacific Commission territories. March 1973. | <i>Animal Production</i> |
| 50. South Pacific Agricultural Extension Survey - 1967. April 1973. | <i>Agricultural Education and Extension</i> |
| 52. Fruit Cultivation. June 1973. | <i>Tropical Crops</i> |
| 54. Shellfish Poisoning in the South Pacific. February 1974. | <i>Fisheries</i> |
| 55. Special Project - Vegetable Production in the South Pacific. January 1974. | <i>Tropical Crops</i> |
| 56. Comments on Experiments Recently Undertaken in some Pacific Islands on certain varieties of Vegetables. March 1974. | <i>Tropical Crops</i> |
| 58. Some Aspects of Pasture Research and Development. April 1974. | <i>Livestock Production</i> |
| 62. Potential of Animal Feed Production in Western Samoa. November 1974. | <i>Livestock Production and Health</i> |
| 63. Names of Food Plants in Niue Island (South Pacific). November 1974. | <i>Tropical Crops</i> |
| 64. Some Effects of Temperature on Pasture Germination and Growth. April 1975. | <i>Livestock Production and Health</i> |
| 65. The Marketing of Fresh Vegetables. May 1975. | <i>Vegetable Production</i> |
| 66. Special Project on Vegetable Production - Results of 1974 Variety Trials. June 1975. | <i>Tropical Crops</i> |
| 67. Principal 1974 Vegetable Growing Results for the Pirae Agricultural Research Station, Tahiti (French Polynesia). June 1975. | <i>Tropical Crops</i> |
| 68. Evaluation of Broiler (Meat Chicken) Performance. September 1975. | <i>Livestock Production and Health</i> |
| 71. Preliminary Information on the Intestinal Parasites of Livestock in Tongatapu, Tonga. March 1976. | <i>Livestock Production and Health</i> |
| 72. Expérimentation fourragère en Polynésie française. Mars 1976. (<i>Will not be issued in English</i>) | <i>Livestock Production</i> |
| 73. Vegetable trials in 'Motu' environment, Huahine (French Polynesia). March 1976. | <i>Tropical Crops</i> |
| 76. Results of 1975-76 soya bean trials in certain South Pacific Territories. October 1976. | <i>Tropical Crops</i> |
| 80. Special project for the development of vegetable production in the South Pacific. April 1978. | <i>Vegetable Production</i> |
| 82. Red ring disease and palm weevil - threats to the coconut palm. July 1979. | <i>Plant Protection</i> |
| 83. Coconut disease caused by <i>Marasmiellus cocophilus</i> in Solomon Islands. October 1979. | <i>Plant Protection</i> |
| 84. Plant Protection News. January 1980. | <i>Plant Protection</i> |
| 85. Using the predatory ant, <i>Oecophylla smaragdina</i> , to control insect pests of coconuts and cocoa. June 1980. | <i>Plant Protection</i> |
| 86. Plant Protection News. August 1980. | <i>Plant Protection</i> |
| 87. Trials for village Solar Driers in the South Pacific. August 1980. | <i>Agriculture</i> |