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Plant Protection

PLANT PROTECTION NEWS

Compiled by
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NEW PROBLEMS

Several new pest distribution reports have been made to SPC since the last 'News'.

1. The armyworm, *Spodoptera (Laphygma) exempta*

This has been reported from Solomon Islands for the first time by entomologist, Jim Stapley, who has provided the following report:

'The identity has been confirmed by the Commonwealth Institute of Entomology from specimens sent to them.

'The insect was first seen on March 17th at Tenavatu Farm on Guadalcanal, a holding farm for cattle. It was found within a few days at various other locations in the same region along the north coast of Guadalcanal. Within a week, it had declined in numbers from 1 million per acre when first seen to less than 50,000. Within 10 days, it had totally disappeared.

'Subsequently, armyworms were reported from other islands including Kolombangara, Malaita and Gizo. Armyworms from Malaita turned out to be both *Spodoptera exempta* and *S. mauritia*, those from Gizo only *S. mauritia* and those from Kolombangara only *S. exempta*. Specimens are still being found but none have so far been found in the original location at Tenavatu Farm.

'It is believed that the armyworms must have been in the country for some time but had recently increased in numbers leading to their detection. As this species is found both in Australia and Papua New Guinea, it is likely that the moths travelled to the Solomons by wing.'

6539

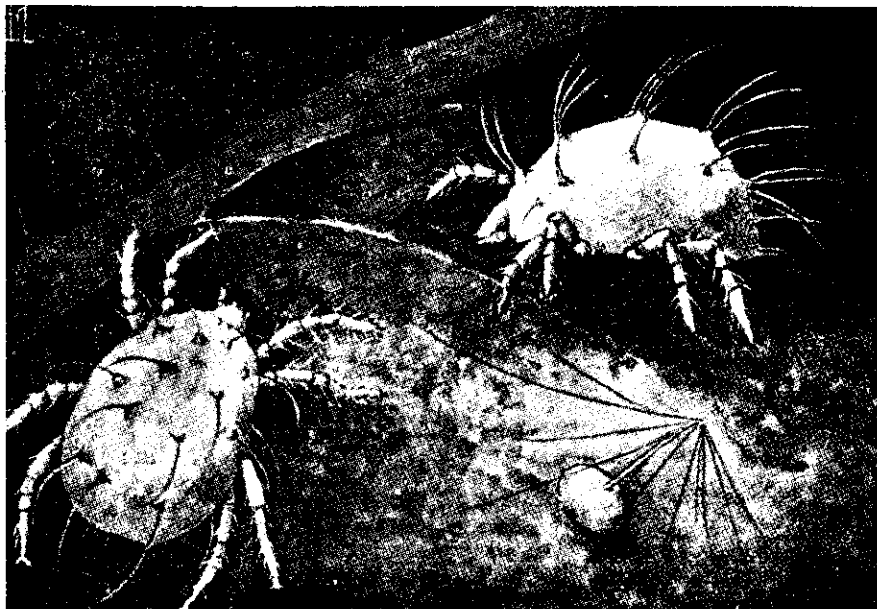
2. Citrus red mite, *Panonychus citri*

This has been reported from Cook Islands for the first time and in a recent visit to Rarotonga, C.H. Wearing from Entomology Division, DSIR, New Zealand, surveyed citrus orchards in the vicinity of Totokoitu Research Station to determine its local spread. He reports as follows:

'It was present on one commercial property and this was close to another where it had been found earlier in the year. It has, therefore, spread just beyond the Research Station but it is still very restricted in its distribution. Eradication would not be possible. One factor in this is its unknown host distribution on the local flora. Citrus red mite can therefore be considered established on Rarotonga.

'There is already evidence of good numbers of local predatory mites and insects feeding on the newcomer. I shall be instituting a programme to try and ensure that these beneficial species are used fully in control. The pest status of citrus red mite in Rarotonga is impossible to assess at this early stage until the impact of beneficial predators can be determined.

'Citrus red mite is mainly a leaf-feeding species but it does occur on the fruit.'



Panonychus citri - Adults and egg on leaf
Originally from *The Citrus Industry*, Vol. 2, L.D. Batchelor
and H.J. Webber. University of California Press
From *Exotic Plant Pests and Diseases*, South Pacific Commission, 1969

3. Sweet potato weevil, *Cylas formicarius*

This important pest has been recorded for the first time in New Caledonia by entomologist Luc-Olivier Brun of ORSTOM. The identification was confirmed by the Museum of Natural History in Paris.

BLACK LEAF STREAK OF BANANAS RESISTANT TO BENOMYL

Until recently the fungicide benomyl in an oil water emulsion was recommended for control of black leaf streak (BLS) caused by the fungus *Mycosphaerella fijiensis* (see SPC *Advisory Leaflet 1*). It was recognised that resistance to this fungicide might eventually occur.

With this eventuality in mind, the FAO Plant Protection Adviser in Western Samoa, Terry Bourke, set up a field trial comparing several different fungicide treatments including the standard benomyl recommendation.

It became clear during 1980 from both experience on the trial and on commercial plantings that benomyl was no longer giving satisfactory disease control. Benomyl applied to plants becomes transformed into a breakdown product MBC (also known as carbendazim) and MBC is responsible for much of its fungitoxicity. Laboratory work done by plant pathologist, Bob Fullerton, at DSIR in New Zealand, showed that isolates of the BLS fungus from various parts of Western Samoa were tolerant to MBC. There was thus field and laboratory evidence that benomyl could no longer give satisfactory control of the disease there.

The matter was thoroughly discussed at a meeting in Western Samoa attended by representatives of the Department of Agriculture, the Samoan/German Crop Protection Project, the University of the South Pacific, DSIR, FAO and SPC. A new recommendation for the control of BLS was made using the fungicide tridemorph in an oil water emulsion. This treatment had been shown to be very effective in the Samoan trial.

The new treatment will be carefully monitored in the trial where it will be compared with new fungicides for possible future use. It is important that this type of research continues locally; much of such work done outside the region is by large commercial concerns and is either not accessible or not immediately applicable to our conditions.

Countries where benomyl is still effective against BLS and other diseases should consider using strategies to prevent or delay the appearance of resistance. A continuous regime of benomyl spraying must be avoided and could be replaced with a programme in which benomyl is either mixed with, or alternated with, other fungicides.

RHINOCEROS BEETLE CONTROL

SPC's Regional Workshop on Biological Control, held in 1979, recommended that other and perhaps more virulent strains of *Baculovirus oryctes* be screened against the beetle. Bernhard Zelazny, formerly of the FAO/SPC Rhinoceros Beetle Project, is now in the Philippines with an FAO Coconut Research and Development Project. They have started some work recently on the efficacy of different strains of the virus.

To do this work it is necessary to be able to distinguish the different strains readily. One way of doing this is by endonuclease analysis and this requires both expensive equipment and considerable experience. If progress is made in locating some more effective strains they could certainly then be tried out in the Pacific.

NEW DISTRIBUTION MAPS

Some new and revised distribution maps of diseases and pests were published in October 1980 by CMI and in December 1980 by CIE. While filing them, plant protection services may have noticed some reports of concern to the SPC region.

The revised CMI map 450 of *Didymella bryoniae* (cause of gummy stem blight of cucurbits) has reports of this fungus not shown on the previous map. They are from French Polynesia, Pitcairn Islands and Tonga. The source of the report for Pitcairn Island is given as K.M. Graham's 1971 book *Plant diseases of Fiji*, although where the original report came from is not clear. A previous Plant Protection News (SPC *Information Circular 86*) mentioned some Pitcairn Islands' plant protection problems but not gummy stem blight.

In the new CIE map 411, *Atherigona oryzae* (rice stem-fly, corn seedling maggot) which attacks rice, maize, sorghum and other grasses, is reported from Federated States of Micronesia (Caroline Islands), Papua New Guinea, Tonga, Vanuatu (Espiritu Santo) and Western Samoa (Savai'i).

The new map 416 of *Thrips nigropilosus* (a pest of pyrethrum and chrysanthemum) reports the insect in Fiji.

In a revised CIE map 77 of *Cryptotermes brevis* (a dry wood termite found in seasoned timber), Kiribati (Fanning Island) and New Caledonia are now listed as hosting the insect.

NEW BLOOD

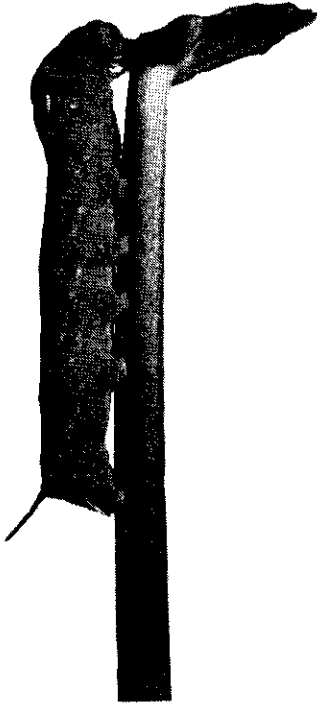
Entomologist J.A. Sutherland is now with the Department of Primary Industry in Papua New Guinea where he will be mainly concerned with pests of subsistence crops and with pesticide application and safety. He formerly worked in Thailand on a UK Overseas Development Administration 'Pesticide Application Research Project'. While there, he established a centre for the evaluation of agricultural sprayers. He prepared two very useful booklets, published by the Centre for Overseas Pest Research, entitled *Non-motorised hydraulic energy sprayers* and *Mistblowers*.

Entomologist J.R. Nechols whose special interest is in biological control has joined the University of Guam Agricultural Experiment Station. Among other things, he hopes to study the sweet potato weevil, *Cylas formicarius*, and wants to locate and possibly import biological control agents for it.

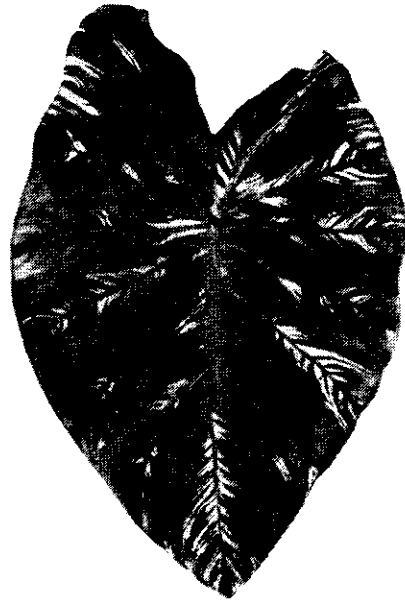
Plant Quarantine Officer Bob Weller from Australia will be working for two years with the quarantine division of the Department of Agriculture and Rural Development in Vanuatu. A new quarantine station was built and equipped at Tagabe during 1980 by ADAB.

NEW SPC PUBLICATIONS

A well-illustrated handbook *Diseases and Pests of Taro* by Grahame Jackson, plant pathologist in Solomon Islands, was published in 1980. As well as being immediately useful we hope it will serve to stimulate interest in the plant protection problems associated with locally important and traditional crop plants.



The taro hornworm,
Hippotion celerio

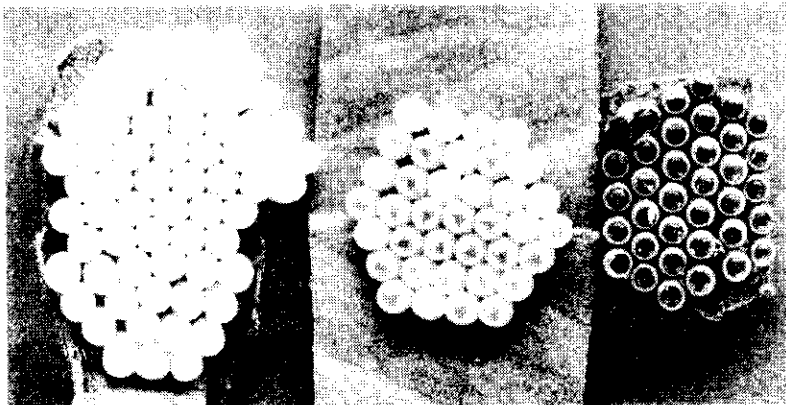


Vein banding symptom caused
by dasheen mosaic virus

From the SPC publication *Diseases and Pests of Taro*

Also now available is the revised (1981) edition of the SPC *Pesticide Handbook*.

A new SPC *Advisory Leaflet* (No.13), written by Clare Butcher and published in 1981, deals with the 'Green Vegetable Bug', *Nezara viridula*. This is the first leaflet to be produced in collaboration with the Entomology Division of DSIR, New Zealand; others are in the pipeline including some by staff of the Plant Diseases Division.



Green vegetable bug eggs.

Left: freshly laid and unparasitised
Middle: ready to hatch
Right: parasitised

*

Photograph from SPC
Advisory Leaflet 13

BIOLOGICAL CONTROL

A book entitled *Microbial Control of Insect Pests* compiled by J. Kalmakoff and J.F. Longworth has been published by the New Zealand Department of Scientific and Industrial Research to record the lectures and practical classes presented at a UNESCO/UNEP/ICRO Regional Training Course held in New Zealand in 1977. It is available from:

The Publications Officer
Science Information Division
DSIR
P.O. Box 9741
Wellington
New Zealand

priced at NZ\$28.50 plus postage.

CUT FLOWERS AND QUARANTINE

This is the title of a leaflet issued by the Australian Plant Quarantine Service. It explains the quarantine risks associated with importing cut flowers and the measures taken in Australia to minimise the practice.

COCONUT QUARANTINE

There is much to interest agriculturists in the SPC region in the 'Report of the Fifth Session (1979) of the FAO Technical Working Party on Coconut Production, Protection and Processing'.

Unfortunately, however, some participants apparently believed that there was an SPC convention on quarantine and that there was a prohibition on entry of coconuts from outside the SPC region (see page 66). This is not so.

It must be made clear that plant quarantine law and the associated regulations are the sole prerogative of individual countries. The South Pacific Commission, although often asked for advice, has no authority to impose any form of plant quarantine.

SPC recommends to countries that they follow the guidelines of the FAO Plant Protection Committee for the South-east Asia and Pacific Region as found in PPC/SEAPR 1978 *Information Letter 121* entitled 'Recommended measures for regulating the importation and movement of plants'. Some SPC member countries are signatories to the Plant Protection Agreement for the South-east Asia and Pacific Region and together with SPC (in observer status) have attended PPC/SEAPR meetings and helped to formulate the guidelines. Pacific Island countries are well aware of the importance of the coconut to their economies and in many cases, especially on the atolls, to their very existence, so they take a particular interest in the guidelines concerning this plant.

INCINERATION OR MACERATION?

Technical and pollution problems are associated with incineration of quarantine waste. A macerator/sterilising system may be an economical, pollution-free alternative. With the current interest in a South Pacific Regional Environmental Programme this is something countries may wish to consider. An excellent introduction to the subject has been given by B.C. McLaren in a Commonwealth Department of Health, Australia publication *Animal Quarantine* 7(1): 20-22, 1980.

PROPERLY LABELLED

Fiji quarantine officers are now wearing distinctive, silver, light-weight, plastic badges to identify them at airports, ports of entry and in their dealings with the public. The badges are a really useful addition to the uniform and part of continuing efforts by Balram Singh, Chief Quarantine Officer, to improve the quarantine services in Fiji.



Fiji quarantine officers' badge

ENTOMOLOGICAL NEWS FROM SOLOMON ISLANDS

Entomologist Jim Stapley reports that they are hoping to step up the release of baculovirus against the coconut pest *Scapanes australis* in Western Solomons. The release of infected beetles into the field has recently been shown to be a promising control measure. This is the same virus used successfully elsewhere against the rhinoceros beetle *Oryctes rhinoceros*. Chemical control of *Scapanes* involved the use of gamma-BHC.

In rice the effect of predatory mirids (*Cyrtorhinus*) on the brown plant hopper, *Nilaparvata lugens*, has been studied and they can give very effective control. Possibilities of biological control of the leaf roller, *Susumia exigua*, have also been studied and the role of Braconid, Chalcid and Elasmid parasites has proved to be insignificant.

Solomon Islands are considering the introduction of a weevil, *Elaeidobius*, for the pollination of oil palms and are studying results from the introduction of this insect into Papua New Guinea.

PLANT PROTECTION PROJECT FOR TOKELAU

Dr Edwin Dharmaraju of the University of the South Pacific reports that the United Nations Development Programme has provided funds for his work on the coconut stick insect *Graeffea crouani* in Tokelau. The project involves laboratory breeding of the egg parasites *Paranastatus nigriscutellatus* and *P. verticalis* at the University's School of Agriculture in Western Samoa and their subsequent field release by agricultural staff in Tokelau.

VISITORS

Several of the recent visitors to the region have been concerned with plant quarantine matters:

Bob Ikin, a Plant Quarantine Officer with the Department of Health, Canberra, Australia, visited both Tonga and Fiji in May 1981. (Both of these countries benefit greatly from Australian aid in plant quarantine.) In Tonga, his practical help in making the fumigation facilities at the airport fully operational was most appreciated. In Fiji, he held discussions on the facilities to be supplied under an aid programme that includes a post-entry plant quarantine station and equipment for fumigation at Lautoka, Nadi and Suva.

Also in Fiji is Peni Enoka from Tuvalu who arrived at the end of May 1981 for a six-month period of on-the-job training with Chief Quarantine Officer Balram Singh and his staff.

Oliver Stout also passed through Fiji in May for discussions with SPEC, SPC and UNDP before going on to New Zealand. Based at DSIR's Mt Albert Research Centre in Auckland, he will be putting the final touches to his Plant Quarantine Schedules which are being published as part of the UNDP/FAO Survey of Agricultural Pests and Diseases Project.

Not all visitors were concerned with plant quarantine. Dale Bottrell, Pest Management Specialist with the Consortium for International Crop Protection, and from the University of California, paid his second visit to the region. He was here to make preliminary arrangements for a possible training course in plant protection sponsored by the U.S. Agency for International Development and the German Foundation for International Development. As well as visiting Tonga for discussions with Niels Keyserlingk of the Tongan/German Crop Protection project and with the SPC Plant Protection Officer, he was able to learn something of the problems of regional travel when he was stranded for several days more than he intended in both Tonga and New Zealand.

CPPC, SPPC, SPC and SPPPC?

The Caribbean islands already have a Plant Protection Commission (CPPC), which was established in 1967. Now the first meeting of a newly established Society for Plant Protection in the Caribbean (SPPC?) has just been held in the Dominican Republic, in November 1981. They are already receiving the SPC Plant Protection News and we look forward to receiving their newsletter.

Among the pests and diseases of regional significance to the Caribbean, and ones discussed at the meeting, are Moko disease of banana, smut and rust disease of sugarcane, leaf cutting ants and coffee berry borer. Some of those we've got and some we haven't; but they are all of interest to us.

Should we form a South Pacific Plant Protection Commission (SPPPC)?

FOR THE RECORD

Previous issues of Plant Protection News have appeared either in the SPC *Information Circular* series or in the *South Pacific Bulletin* or in both. In the *South Pacific Bulletin* for the third quarter 1980 (Vol. 30, No.3) an article about the SPC's Third Regional Meeting on Plant Protection was erroneously headed Plant Protection News. This has led to numbering problems so here is the publishing history of Plant Protection News for the record:

1. 'Plant Protection News' in the *South Pacific Bulletin*, 29(2): 35-39, 1979. This was the first of the series and only appeared in the *Bulletin*.
2. 'Plant Protection News' as SPC *Information Circular 84*, January 1980. This subsequently appeared in the *South Pacific Bulletin*, 30(2): 11-14, 1980.
3. 'Plant Protection News' as SPC *Information Circular 86*, August 1980. With a slightly amended introduction this subsequently appeared in the *South Pacific Bulletin*, 30(4): 27-30, 1980.
4. 'Plant Protection News - Papua New Guinea hosts Plant Protection Meeting'. This appeared only in the *South Pacific Bulletin*, 30(3): 41-43, 1980, and was erroneously headed Plant Protection News.
5. 'Plant Protection News' as SPC *Information Circular 88*, February 1981. The introduction to this one says that 'it is the fourth Plant Protection News and the third to be published both as an SPC *Information Circular* and in the *South Pacific Bulletin*'. Because of the error noted above this statement is not correct. This Plant Protection News with a suitably amended introduction should also eventually appear in the *South Pacific Bulletin*.

It is hoped that most readers would be more interested in the actual 'News' than in the publishing sequence, but some may have noted the anomaly.

It can be seen from the list at the back of this issue that SPC *Information Circulars* Nos. 12, 22, 30, 33, 82, 83, 84, 85, 86 and 88 have dealt with plant protection matters.

In order to bring plant protection to the notice of a wider public, articles on the subject have also been regularly prepared for publication in the *South Pacific Bulletin*. This publication is not always seen by agricultural officers so those articles from 1976 onwards are listed as follows:

RECENT ARTICLES ON PLANT PROTECTION IN THE SOUTH PACIFIC BULLETIN

1. Plant Protection and the South Pacific Commission, 26(1): 29-34, 1976.
2. Rhinoceros beetles in Papua New Guinea, 26(3): 38-41, 1976.
3. Virus against coconut rhinoceros beetles in Fiji, 27(1): 27-34, 1977.
4. SPC Advisory Leaflets on plant protection, 27(4): 40, 1977.
5. Biological control of insects, 28(1): 5-7, 1978.
6. Sixth Asian-Pacific Weed Science Society Conference, 28(1): 23-27, 1978.
7. Plant quarantine officers meet in Suva, 28(1): 34, 1978.
8. South Pacific Commission represented at Regional Plant Protection Meeting, 29(1): 39-42, 1979.
9. The need for plant quarantine, 29(2): 7-11, 1979.
10. The guava threat in Fiji, 29(2): 28-30, 1979.
11. Plant Protection News, 29(2): 35-39, 1979.
12. National and international action in plant quarantine, 29(3): 18-21, 1979.
13. SPC holds workshop in biological control, 29(4): 30-31, 1979.
14. SPC training in pesticide application, 29(4): 40-44, 1979.
15. SPC plant quarantine posters, 29(4): 46-50, 1979.
16. A plant protection workshop, 30(1): 28-32, 1980.
17. Plant Protection News, 30(2): 11-14, 1980.
18. Plant Protection News - Papua New Guinea hosts Plant Protection Meeting, 30(3): 41-43, 1980.
19. Plant Protection News, 30(4): 27-30, 1980.

MORE NEWS

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 Office, 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 Cropping 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> |

