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PLANT PROTECTION NEWS

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PLANT PROTECTION TEAM AT FULL STRENGTH

The UNDP/SPC Project for Crop Protection in the South Pacific (RAS 86/037) is run by the South Pacific Commission with funding from the United Nations Development Programme, and from the British Development Division in the Pacific. FAO is a cooperating agency providing technical assistance, and collaborative projects are being developed with other agencies such as: ACIAR, AIDAB, CABI, CFTC, CTA, EEC, GTZ and IRETA.

With the recent appointment of the Information Officer the Project team is complete. The members are:

Bob Macfarlane - Team Leader and SPC Plant Protection Officer

Bob has been with SPC since July 1986; his background was described in *Information Circular No. 95*, 1986.

Grahame Jackson - Plant Health Officer

Grahame will be familiar to most plant protection workers in the region. Grahame has a Ph.D from Imperial College, London. He worked for 12 years as Plant Pathologist in Solomon Islands, and for three and a half years as Crop Improvement Officer on the UNDP/FAO-SPC Project for Strengthening Plant Protection and Root Crops Development in the South Pacific (RAS 83/001). In 1985 he received the Donald L. Plucknett research award from the International Society for Tropical Root Crops.

Grahame will be providing advice and assistance with all aspects of plant pathology and also managing the tissue culture laboratory for the safe transfer of crop germplasm.

Plant Health Officer
Grahame Jackson

Brian Thistleton - Biocontrol Officer

Brian worked for twelve years as entomologist at Kuk Agricultural Research Station in the Highlands of Papua New Guinea. During the last three years of his time in PNG he was leader of the Highland Food Crops Research Team. Brian has a Ph.D from the University College of North Wales, Bangor.

LIBRARY
SOUTH PACIFIC COMMISSION

In his new post, he will be transferring natural enemies of insect pests and weeds between countries, and will also train counterpart staff to monitor the effectiveness of these introductions.

Peter Walton - Information Officer/Librarian

Peter is well known to many people in Solomon Islands, where he worked for three years as librarian at Dodo Creek Research Station. He has a degree in Scandinavian literature and language, and a post-graduate diploma from the College of Librarianship Wales (University of Wales) at Aberystwyth. Before going to Solomon Islands, Peter worked at the Library of the Royal Society of Medicine in London for five years.

Peter will manage the Plant Protection Information Service, develop computer databases on plant protection in the Pacific, compile bibliographies, and edit *Plant Protection News*.

Samila Devi - Laboratory Technician

Samila has worked in the tissue culture laboratory in Suva since 1984, originally with the UNDP/FAO-SPC Project for Strengthening Plant Protection and Root Crops Development in the South Pacific (RAS 83/001). Samila has an Ordinary Diploma in Industrial Laboratory Technology from the Fiji Institute of Technology. She is responsible for producing and maintaining tissue cultures for distribution in the region.

The team is based at the SPC Centre in Suva and works with 22 Pacific island countries to improve their plant protection capabilities. Work programmes have been agreed and activities have begun.

LOCUST OUTBREAK IN PAPUA NEW GUINEA

Dr B.N. Muthappa (Chief Plant Protection Officer, Dept of Agriculture and Livestock) and Malcus Arura (Entomologist, DAL) have reported an outbreak of locusts *(Locusta migratoria* and *Austracris* spp.) in the Markham Valley in Morobe Province in Papua New Guinea. Hopper bands were first observed in February 1988 and small swarms of adults are now also present. Large areas of the Markham and adjacent Ramu valleys are planted with susceptible crops, particularly sugar, but to date (May) damage has been mainly to kunai grass *(Imperata cylindrica).*

Because of the potential for rapid population build up and crop damage when locusts are in their gregarious phase, the Department of Agriculture and Livestock, with the support of the National Disaster Centre and the assistance of the Papua New Guinea Defence Force, is combating the outbreak with sprays of malathion.

There have been two previous plagues of *L. migratoria:* on Goodenough Island, Milne Bay Province from 1966-67 and in the Markham and upper Ramu valleys from early 1973 to November 1976.

BROWN TREE SNAKE THREATENS MICRONESIA

Quarantine officials in the countries of northern Micronesia have mounted a major public awareness campaign for the brown tree snake, *Boiga irregularis,* which recently arrived in Guam. The snake is venomous and has killed cats, dogs, chickens, wild birds and fruit bats. Although the venom is not lethal to humans, it can cause a serious allergic reaction. The snake has also caused power blackouts by short-circuiting transformers and power lines. Snakes are 45 cms (18 ins) long on hatching, and when sexually mature, at three years old, are between 1.5 and 2.4 m (5-8 ft) in length.

It is thought the snake travelled to Guam in a consignment of logs from the Philippines. It has also been sighted in Saipan (Northern Mariana Islands), Oahu (Hawaii) and Diego Garcia in the Indian Ocean. This snake, or any other for that matter, could also be transported in used cars, tyres, logging or earthmoving equipment, containers or any other cargo. Quarantine officials should be on the alert.

PESTICIDE LABELS IN SOUTH PACIFIC ISLANDS : WHO ARE THEY FOR?

An (edited) letter from Terry Bourke

The Western Samoa Suicide Awareness Committee has recently discussed the content and form of labels on pesticides entering Western Samoa. On reflection, and after having studied a few pesticide labels, I am sure many people would begin to wonder just who these labels are for. Are they for the many bureaucrats who have made the in-country registration of pesticides an art form? Are they for chemical companies who probably feel that they have to cover all legal aspects of purchase, intended use, actual use, disposal, etc? Or are they for the farmer (who often finds the information presented so confusing, bewildering and extensive that he usually ignores all or part of it)?

The following aspects of labelling are of concern:

Legibility. On some labels, the printing is so small as to be illegible.

Danger symbols. The skull and cross bones used as a danger symbol on New Zealand and Australian labels has no relevance in Western Samoa. It is either not recognised or confusing to some farmers. Another symbol is obviously needed. But is there a need for a danger symbol at all?

Content of labels. Most labels contain information on first aid/emergency medical treatment, the product itself, safety precautions, directions for use, application rates and conditions for sale; this is important.

Label to be in national languages. The majority of pesticide labels in Western Samoa are in English, others are in English and Samoan, one in Samoan only, and yet others in English plus a second, or even a third language, none of which are used in Western Samoa. Obviously, there is a need for the label to be in both Samoan and English, but is there a need for the whole label to be in both languages? Perhaps only those sections of the label which deal with first aid/emergency treatment, safety precautions and directions for use need to be in both languages. Perhaps the chemical companies would wish to see the conditions of sale also in both languages.

On a regional basis how can these requirements be met by chemical companies exporting to numerous countries in the region?

Labels on pesticides exported from New Zealand cost NZ$ 2.00-3.00 each, when the smallest print run of 500 is produced. How should the chemical companies approach the need to have all national languages and English (or French) included on the label? I suggest three possibilities:

1. Labels in the appropriate language could be pasted on the container, either before export or after import. The former may be more expensive but the latter may have legal complications.

2. A small fold-out booklet containing all national languages could be included as a part of the main label. Such a booklet does not necessarily mean that a farmer will turn to the relevant pages.

3. Separate leaflets containing all national languages could be given out when the product is purchased. However, these could easily be lost or destroyed, or kept separate from the pesticides, by both the farmer and the retailer.

Perhaps the use of pictograms (simple representative symbols), as being developed by FAO, GIFAP (International Group of National Associations of Agrochemical Manufacturers), and chemical companies, may assist.

It would be interesting to hear what other people around the region think about this subject.

T.V. Bourke, General Manager
Pacific Agricultural Consultancy Service Ltd
P.O. Box 2264, Apia, Western Samoa

BIOCONTROL OF COCONUT FLAT MOTH

The coconut flat moth, *Agonoxena argaula*, is a serious pest of coconut in Fiji, Niue, Tonga and Vanuatu, and biocontrol projects have started (see *Information Circular No.108*, 1987).

In Tonga, two parasites, *Apanteles oreilia* and *Brachymeria fijiensis*, give some control, but further parasites are required. Guenther Rapp from the Tongan-German Plant Protection Project collected 38 *Bracon* sp. adults from Fiji and sent them to Tonga in November 1987; 28 of these survived and were released. In late March, Guenther told us that there was evidence that *Bracon* was breeding at the release site on the island of 'Eua.

In Vanuatu, the only common parasite is a *Brachymeria* species. SPC is assisting with the supply of Bracon sp. and *Apanteles* ? *oreilia* from Fiji. Three shipments of *Bracon* have been sent to Jean-Paul Morin at Saraoutou Oil Crops Research Station on Santo. So far Jean-Paul has not managed to breed the parasite in captivity, but he has released a small number of adults. Further shipments of *Bracon* and also *Apanteles* will be sent.

In the near future the SPC Biocontrol Officer will take these parasites to Niue and release them.

MILE-A-MINUTE WEED TO BE SLOWED DOWN

Vanuatu has requested a project to biologically control mile-a-minute weed, *Mikania micrantha*. SPC has arranged for this work to be done by the CAB International Institute for Biological Control (CIBC) in the United Kingdom, with funding from the British Overseas Development Administration.

It is planned to introduce a thrips, *Liriothrips mikaniae*, which has been identified in Trinidad by CIBC as a promising biocontrol agent. The thrips have been collected from Trinidad and are now in culture at CIBC, where Steve Greenwood is making sure that crops of economic importance are not attacked by them. If the results of these tests are satisfactory, Steve will take the thrips to Solomon Islands later this year and will set up experiments to assess its effectiveness. The SPC Plant Protection Service will be involved with these studies and with the distribution of this biocontrol agent to other countries in the region, including Vanuatu.

Dieter Schroeder, from the CIBC European Station, visited Solomon Islands in February to make an assessment of the *M. micrantha* problem and discuss details of the project with the SPC Biocontrol Officer and others involved.

BIOCONTROL OF GREEN SCALE ON COFFEE IN PAPUA NEW GUINEA

Green scales, *Coccus viridis* and *C. celatus*, are the most serious pests of coffee in Papua New Guinea. Several years ago the PNG Coffee Industry Board contracted CIBC to carry out a survey of the natural enemies of the scales in Africa. Many parasites were found, but two, *Metaphycus stanleyi* and *M. baruensis* (a new species described as a result of this survey), were giving very

high rates of parasitism. This occurred even in the presence of ants which tend the scales for honeydew and protect them from natural enemies.

It is intended to introduce both these parasites into PNG. Strict quarantine procedures have been developed by the authorities in PNG and CIBC to avoid introduction of coffee pathogens from Africa. Initially, this involved quarantining the parasites at CIBC, U.K., where they were bred on green scales sent from PNG and cultured on citrus, which is not a host of the coffee pathogens. This method proved to be impractical and a simpler method involving no breeding in the United Kingdom was approved. Parasite mummies are surface sterilised and then sent from Kenya to London. There they are checked for pathogen spores by staff of C.A.B. International Mycological Institute and, following a second surface sterilisation, continue their journey to PNG.

Two consignments of *M. baruensis* were received in December at Kuk Agricultural Research Station in the Highlands, where the project was being run by Brian Thistleton and Roy Masamdu. When Brian left Kuk to join SPC in February, Roy took control of the project. He reports that the cultures are flourishing and will start to release the parasites soon.

BANANA SKIPPER BIOCONTROL IN PAPUA NEW GUINEA

The banana skipper, *Erionota thrax*, is a native of South-East Asia. In recent years it has become established in Guam, Hawaii and Mauritius, and in each of these it has been successfully controlled by the introduction of parasites. *E.thrax* was first recorded in PNG in 1983, but by 1987 populations reached pest levels in several areas of the country. Don Sands (CSIRO) and Malcus Arura (PNG Department of Agriculture and Livestock) have recently started a project, with ACIAR funding, to look at prospects for biocontrol of the pest in PNG. An egg parasite, *Ooencyrtus erionotae*, is already present and probably came with the pest. There is a rich fauna of native skippers (Hesperidae) in PNG and other parasites of *E. thrax* will have to be screened against some of these before introduction.

BIOCONTROL OF WHITE PEACH SCALE IN WESTERN SAMOA

Don Sands and Wilco Liebregts (ACIAR) report that the white peach scale, *Pseudaulacaspis pentagona*, is now under control in Western Samoa following the introduction of two parasites. One of these, *Encarsia diaspidicola*, is giving most control. The other parasite, *E. berlesi*, which has been very successful in Europe, is of much less importance in Western Samoa.

The project in Western Samoa was originally started by GTZ in 1986 with CSIRO giving technical support. After a period of funding by AIDAB, the project is now being run by CSIRO, ACIAR and the Department of Agriculture, Forests and Fisheries, and will probably continue until mid-1989.

BIOCONTROL OF FRUIT PIERCING MOTH

Research into parasites of the fruit piercing moth, *Othreis fullonia*, by Don Sands continues. Some promising egg parasites have been discovered in Papua New Guinea. Don plans to take these to Australia later this year where they will be quarantined before release in Australia and Western Samoa.

In Micronesia, Dr Muniappan of the University of Guam also has a project on the fruit piercing moth. He is concentrating on biological control of the pest in Ponape (Federated States of Micronesia), Saipan (Northern Mariana Islands), Guam and American Samoa.

SPIRALLING WHITEFLY NOW IN PAPUA NEW GUINEA

Fred Dori, Entomologist with the Department of Agriculture and Livestock in Papua New Guinea, reports heavy infestations of the spiralling whitefly *(Aleurodicus dispersa)* on guava and mango leaves in the Port Moresby area in October 1987. This is the first record for PNG. There have been no reports from other areas of the country. Specimens will be sent to CAB International Institute of Entomology for confirmation.

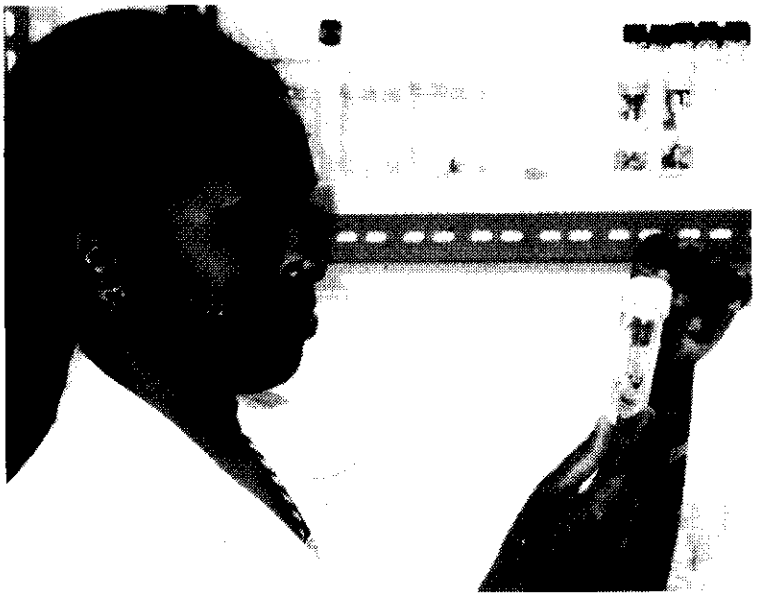
Biocontrol officer, Brian Thistleton checking for the presence of parasites of spiralling white fly on guava

TAROS, TRIED AND TESTED (or *What's Available as a Tissue Culture)*

The SPC Plant Protection Service now has many tissue cultured, disease-free, root crop cultivars available for countries to test. In this and future issues of *Plant Protection News* information will be given on the collection. This issue will be devoted to taro.

It is very easy to obtain any of the cultivars; send an import permit from the quarantine authorities, together with the request, to us at :

The Plant Protection Service, South Pacific Commission, Private Mail Bag, SUVA, Fiji.



Laboratory Technician, Samila Devi, examines a tissue culture plantlet for infection

Plantlets will be sent as sterile cultures growing in agar or liquid medium. If countries have problems in growing plants after they have been taken out of their bottles, then they can be sent suckers from plants grown in the quarantine house at Koronivia Research Station. In this case they will be fumigated with methyl bromide or dipped in an insecticide. A phytosanitary certificate will accompany the consignment in either case.

All the taro offered by SPC have been tested for viruses at the Institute of Horticultural Research (formerly the Glasshouse Crops Research Institute), Littlehampton, England, by Dr Alan Brunt.

Usually two or three plantlets of each of the cultivars will be sent, more if they are available. Notes will be given (either in English or French) on how to handle the plants, but please let us know both when the plants are received, and later, if the plants survived the transfer to soil. Remember - those plants that died can be replaced.

The characteristics of some of the taro are well known; this is particularly true for cultivars from Fiji, Hawaii and Niue, but less so for those from Vanuatu. If people would like to add to the descriptions given below for their countries' taro, then please do so.

COOK ISLANDS

Old Niue. Probably the same as *Niue* in Western Samoa and *Tausala ni Samoa* in Fiji. Best taro for dryland and is also grown in paddies and on raised beds. Young leaves are edible.

Matarei. Good taste, medium size corms. Leaves edible. Usually grown in raised beds or paddies. The smell during cooking is stronger than that of other taro.

Maga Nonu. See notes below under **Niue.**

FIJI

Samoa. Very good taste, yields moderate, does better on hill slopes than flat land. The favoured taro of Fiji.

Tausala ni Samoa. The taro of commerce (*Niue* of Samoa and Cook Islands), good yield and taste.

Toakula. Moderate yield, early maturing, but susceptible to shot-hole disease, and often develops post-harvest *Pythium* rots. Good taste. (Known as *Pula Fa Kula* in Niue and *Manaura* in Cook Islands, where yields are higher when grown in paddies or on raised beds compared to dryland, but wetland crops very susceptible to *Pythium*). Young leaves are edible.

Samoa hybrid. A seedling selection from cv. *Samoa.* Higher yield than *Samoa,* and does well on flat land as well as hill-slopes. Looks very much like *Samoa* and has similar taste.

Vavai loa and *Vavai dina.* Not high yielding, but favoured for their taste. Corms are branched. *Vavai loa* has green stems, whereas those of *Vavai dina* are purple.

Vutokoto. Early maturing, similar to *Toakula.* Leaves sometimes used as a green vegetable.

Tausala ni mumu. A wetland cultivar grown especially for its leaves.

Dalo ni Tonga. A cultivar with a very good taste (known as *Lauila hinaii* in Tonga where it is the favoured taro). It has moderate yield and a branched corm.

Hawaii or Dalo via. A late maturing taro and can be left for over one year before harvest. Has many suckers and the highest dry matter content. The corms are yellow and yields are moderate. The leaves are eaten. Has resistance to *Pythium* rots; in Cook Islands known as *Veo* and has resistance to rot even, in paddies and on raised beds.

Dalo ni Wai. A so-called 'wild' taro; it has no corm, but the leaves are eaten.

NIUE

Fase fa uli. A favoured taro, excellent flavour and good yield.

Maga nonu. Large corms, late maturity and numerous suckers. Corms sometimes branched. Good taste. A popular taro.

Pogi fa uli. Very large corms, low sucker number. Planted for competitions, but also makes good puddings!

Pula fa kula. Large corms with yellow-green flesh.

Pula fa lanu. Green flesh, large corms. Probably the *Toakula* of Fiji. Less fibrous than other taro and well liked by children.

Maga faikai. Large corms, late maturity. Some corms branched. May be the same as *Nao nao* of Cook Islands. Good taste.

Maga tea. Branched corms, many suckers, late maturity. Good taste, makes excellent puddings! A popular taro.

Paku fa tea. Yellow flesh colour, large corms and early maturity. Good taste, especially when cooked in the embers.

Pula fa tea. Green flesh, large corms. Many suckers, growing from runners.

VANUATU

All the Vanuatu taro have been selected from the collection of 150 cultivars on the basis of high yield in three seasons' trials on Espiritu Santo and low damage from *Papuana* beetle attack. The collection is still under evaluation.

Akasten. Recommended for both dry and wetland cultivation. Large corms, which develop above ground.

Matawolul. Good for laplap (pudding). A dryland taro.

Naololo. A dryland taro.

Navenanihirig. Recommended for both dry and wetland cultivation. Good taste when roasted in the embers.

Tarpartanpat. Good for laplap. A dryland taro.

Towumay. A wetland taro with branched corms.

Weifenua. A dryland taro.

Buntaforetwe. A dryland taro.

Nowerak. A dryland taro.

Sacuse. A dryland taro, good for laplap and baking (leaf wrapped and cooked in a stone oven).

Intelpeyar. A wetland taro.

Nokwis. A dryland taro.

Penarura. A dryland taro.

HAWAII

Lehua. A favourite taro of Hawaii, and the main poi cultivar, grown both in dry and wetland situations. Good corm size and taste. Flesh is light purplish-lilac.

Kai kea. Another important poi taro, grown under wetland conditions. Corms of medium size, but never rot and do not become watery. The taste is excellent but the cooking time is twice that of other taro. The leaves are not eaten. Many suckers, which can be left to regrow after harvest of the main corm.

White moi. Good taste, takes longer to cook than other taro, grown for poi and as a table taro. Large, hard corms that do not rot. An upland taro, though sometimes grown in wetland situations.

Fig.1. Taro leaf infected by bacterial blight

BACTERIAL BLIGHT OF TARO

Fig. 2. Bacteria invading the leaf vein

Wet weather sometimes promotes the appearance of unusual diseases and recently Bob Macfarlane came across a disease of taro in Palau that is a good example of this. The disease, which is shown in Fig.1, causes large areas of rot between the main leaf veins. It is probably caused by a bacterium, and both infection and spread of this pathogen are greater when there is a lot of rain.

By coincidence, the latest issue of *Tropical pest management* (1987, 33(4): 353-355) has an article by Derek Tomlinson, Department of Agriculture and Livestock, Papua New Guinea, on a bacterial leaf disease of taro that has been recently found in the country. Symptoms are not given, so it will be interesting to hear from Derek if they look like the photograph reproduced here. It is suggested that the Palau disease is caused by a bacterium because it is similar to that described on taro and from *Xanthosoma* in Costa Rica by workers at CATIE (Tropical Agricultural Research and Training Centre). The bacterium *Xanthosoma campestris* was identified as the cause. A very similar disease was seen in a plot of *Xanthosoma* at Togitogia Research Station, Western Samoa, in 1985. In this case the tissue between the veins was so decayed that the plant was splitting apart.

The bacterium enters the leaves at the margins where water often accumulates. From there the interveinal tissues are colonised as the bacterium moves along the

vascular tissue. Fig. 2 clearly shows the necrosis that results; in places the leaf is beginning to rot as the bacterium moves from the veins into the adjacent leaf tissues.

If readers see similar symptoms on taro or *Xanthosoma*, let us know and we will try and get the bacterium identified. This is not an important disease, fortunately, but one of interest to plant pathologists.

CONFUSED FRUIT FLIES

In March this year 120 delegates from Asia, the Pacific, Europe and America attended the First International Symposium on Fruit Flies in the Tropics held in Kuala Lumpur. The Pacific was represented by Tonga, New Zealand, Australia and the SPC Plant Protection Officer. The Tongan delegates were 'Ofa Fakalata and Konrad Engelberger. 'Ofa presented a paper on the distribution of the various fruit flies in the Kingdom and Konrad presented a poster display on the work in Tonga to develop fumigation methods to control *Dacus xanthodes* in watermelon.

One major topic at the symposium was the work being done at the Queensland Department of Primary Industry by Dick Drew to sort out the taxonomy of fruit flies in the Asia and Pacific region. The taxonomy of the Oriental fruit fly, *D. dorsalis*, is confused. Dick's solution was to split the species into a complex of many new species. In Papua New Guinea, for example, Dick believes there are at least three species of the complex and that none of them causes significant damage to commercial crops. Similar situations have arisen in most countries in which *D.dorsalis* has been recorded.

Also at the symposium were excellent presentations on the field control and eradication of fruit flies and on post-harvest treatments. All in all it was a most worthwhile symposium and all the Pacific delegates learnt a great deal.

NEW PUBLICATIONS

Tropical fruit flies of Australasian and Oceanian regions

Dr Dick Drew of the Department of Primary Industries, Queensland, has published a new book entitled *The tropical fruit flies of the Australasian and Oceanian regions*. The book provides information on the taxonomy, distribution, hosts, biology and attractants for all fruit flies of the Pacific. The book will be the standard text on Pacific fruit flies for many years to come and plant protection departments in all Pacific countries are recommended to obtain a copy.

The book is available from: *The Editor, Memoirs of the Queensland Museum, P.O. Box 300, South Brisbane, Queensland 4101, Australia*, at A$35.00 per copy.

Cocoa Research Seminar in Solomon Islands

The proceedings of a research seminar on cocoa have been published by the Ministry of Agriculture, Solomon Islands. The seminar, held in Honiara in February 1985, drew together all sectors of the cocoa industry in Solomon Islands: Ministry officials, commercial plantation managers, the SI Copra Board, and officials from the SI Development Bank. The seminar was originally intended as an internal review of activities of the Ilu Cocoa Research Unit on Guadalcanal. However, the seminar became more comprehensive than that, reviewing all cocoa research in Solomon Islands. Representatives from Papua New Guinea, Vanuatu and Western Samoa also attended.

Of particular interest to those involved in plant protection are papers by the then Entomologist, Bob Macfarlane, on insect and rat pests of cocoa (pp. 43-51), and by the Plant Pathologist, Ruth Liloqula, on cocoa diseases (pp. 53-62). Cocoa research carried out by Levers Solomons Ltd at Yandina concentrated on black pod disease, *Phytophthora palmivora* (pp. 97-102). Papers prepared by the overseas delegates also discuss pests and diseases (Vanuatu: pp. 65-75; Western Samoa: p. 77; Papua New Guinea: pp. 79-84).

Proceedings of the Cocoa Research Seminar, Honiara, Solomon Islands, February 12-14, 1985. Edited by P.R. Linton, J.B. Abington and Peter Walton. Honiara, Solomon Islands: Dodo Creek Research Station, 1986.

Biological control of weeds

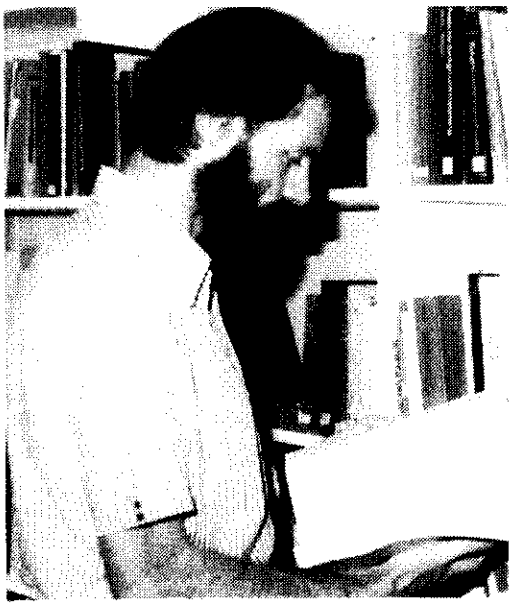
Contrary to information given at the Regional Crop Protection Workshop in Apia, Western Samoa, 8-12 September, the publication by Inkata Press of K.L.S. Harley and I.W. Forno's book, *Biological control of weeds*, has been delayed until early in 1990. Still lots of time therefore to save up your dollars and cents!

In the meantime, however, a book of the same name edited by M.H. Julien of the CSIRO Division of Entomology is available. Published in 1987 by the CAB International Institute of Biological Control (CIBC), *Biological control of weeds : a world catalogue of agents and their target weeds, 2nd Edition*, is described as 'the most complete work of reference available on the biological control of weeds'. The information is divided into four lists of organisms. For each entry the target weed, agent, year of first release, status and degree of control for each country and research unit involved are given . The book includes 577 references. The cost (including postage) is GBP 13.50 to purchasers outside the UK, and US$ 23.50 in the Americas. Available from: *Book Sales, C.A.B. International, Farnham Royal, SLOUGH SL2 3BN, England.*

INTERESTING ABSTRACTS

Schreiner, I. and Nafus, D. Accidental introductions of insect pests to Guam, 1945-1985. *Proceedings, Hawaiian Entomological Society* (1986) 27: 45-52 (En.).

In the period between 1945 and 1985, 30 species of insects, excluding mosquitoes and beneficials, are known to have been accidentally introduced to Guam. Of these, eleven were introduced between 1945 and 1955 (1.1 per year), seven more between 1955 and 1970 (0.5 per year), and seventeen since 1970 (1.1 per year). The number of introductions roughly corresponds to the amount of traffic to and from Guam during the period in question. Prior to 1975, most of the intro-ductions probably arrived from Asia or other islands in Micronesia, but since 1975, Hawaii appears to be the source of at least half of the new introductions. *(Original abstract)*



Information Officer Peter Walton searches the literature!

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Original text: English

AGRICULTURE

ISSUED IN THIS SERIES

1. Annual Conference of OIE 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. OIE/FAO 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
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