Pacific Pest Info
Pest & Quarantine Information
SPC Plant Protection Service

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1. Entomology Update

Sada N Lal – PPS Entomologist

PPS Entomologist visited French Polynesia in mid-April to discuss collaboration work on biological control of Glassy Wing Sharpshooter (GWSS). GWSS was accidentally introduced into French Polynesia from California and is a growing concern to neighbouring Pacific Islands.

Biological control of flat moth in the Cook Islands continues with further shipments of the bioagent *Bracon* sp. sent for field release. Flat moth control in Rarotonga is improving, but the pest has spread to outer islands. It is causing extensive damage to coconut palms on Aitutaki.

Rhinoceros beetle is becoming to be a problem again in those island countries where it is present, especially Samoa, Tonga, Tuvalu, Fiji and Wallis and Futuna.

PPS helps with bio-control of the beetle in affected islands by supplying and setting up pheromone traps and in capacity building training of field staff in beetle management.

In addition a public awareness campaign is now underway to inform rural communities to be aware of beetle damage on coconut trees and to seek their help in beetle control. Rhinoceros beetle control is not new to the Pacific as a successful control campaign was very effective in the 60's and 70's. The present media campaign informs communities to destroy breeding sites of the beetle and to maintain good sanitation in coconut groves. The campaign begins in June for Samoa.

A visit to Taveuni Island in north eastern Fiji by PPS Entomologist and Fiji counterpart Mr. Moti Lal, revealed extensive beetle-damage on the island. Cyclone Ami in early January compounded the problem with many coconut trees destroyed. Northern Fiji took the brunt of the cyclone. Rhinoceros beetle damage is now very severe in that part of the country and PPS is helping to bring it under control by setting pheromone traps and releasing the biocontrol agents.

In taro beetle management the EU-ACIAR project is now extended to Kiribati and Vanuatu. Kiribati was visited by a short-term consultant Dr. Richard Milner of CSIRO and accompanied by SPC Extensionist, Mr. Stephen Hazelman, to set up *Metarhizium* persistent trial. The trial will be monitored by Kiribati counter part Mr. Nakabuta Teuriaria. In Vanuatu a field experiment has been set up to evaluate potential insecticides and test effectiveness of *Metarhizium* in the field. Mr. Fereti Atumurirava, new PPS Taro Beetle Technician, travelled to Vanuatu in early April to assist with setting up of the trial there.

2. Solomon Islands Ministry of Agriculture & Lands joins the information superhighway

Christina Tuitubou – Librarian, SPC Library, Suva

Accessible and affordable information is the lifeblood of agriculture. SPC's recent work with the

Ministry of Agriculture and Lands (MAL) will dramatically change the way Solomon Islanders find the best of the world's agricultural information and more importantly will reduce the time the information takes to reach them.

MAL now has a new electronic library replacing the agricultural library that was housed at Dodo Creek and was destroyed during civil unrest. While many items cannot be replaced information service is up and running again thanks to the enthusiasm of Ministry and SPC staff.

The Director General of SPC, Ms. Lourdes Pangelinan, officially handed over the new electronic library to MAL officials when she was in Honiara end of May attending the Council of Regional Organisations in the Pacific (CROP) meeting.

All the equipment necessary for the state-of-the-art information facility plus on-going training and support in IT management including new books have been provided through a combination of SPC core funds as well as funding from the European Union (EU) through SPC Plant Protection Service.

Most agricultural staff in Honiara are now linked to a computer network allowing them access to the Internet. The Ministry has also secured a domain name – agriculture.gov.sb. Besides their own personal email addresses the Ministry can now develop their own website and publish information on-line.

The electronic library is at the heart of the information development. The Solomon Islands is the first Pacific Island country to have it's own tailored electronic library.

Greenstone, developed as freeware in New Zealand, is the chosen software to operate the electronic cataloguing for the Library. Staffs from SPC and the Solomon Islands are hard at work scanning, digitising and populating the electronic library. Pacific literature is the first on the list of materials, but will slowly take in more as the library expands and users demand different types of information. This new-age library will be up-to-date, be strong in Pacific information, and include materials written by Solomon Islanders for the Solomon Islands. A bonus from this new-age library is that it is easily transportable – soon officers out in the Provinces will have their own copy of the whole electronic Library on a CD-ROM.

Fred Peters is the new Information Officer heading operations at the agricultural electronic library. Farmers can come into the Library and use it much as they have over the past years. Books and paper copies of the information materials will be available as before. But these days if Fred can't find the information he can

contact others quickly for help. SPC is but one of the agricultural organisations he can contact by email and we can all send the information back electronically.

SPC Suva IT Manager Ms. Marie-Jose Quintard spent two-weeks in early March working with Fred Peters to set up the system. MAL is acknowledged for their commitment to the project when Fred Peters was appointed as full-time staff to manage the information system.

In the true spirit of collaboration amongst regional organisations the Forum Fisheries Agency (FFA) was approached by Marie-Jo to explain the set up at MAL and to secure their technical support if needed.

To date close to FD$50,000 has been spent by SPC to set up the electronic information system. There will be more staff training in the months to come as well as supplying consumables and digitising literature as SPC, with EU funding under the Plant Protection in the Pacific (PPP) project, continue to help set up the agricultural library. Once strengthened and sustainable the new-age information system will become a beacon of triumph and success, of how individuals and oganisations can pool their resources together to help a Pacific neighbour.

3. Samoa Emergency Response Plan for Pest and Disease Outbreaks

Sidney Suma – PPS Biosecurity Officer

Drafting the general emergency response plan for pest and disease outbreaks was the main objective accomplished when the Biosecurity Officer visited Samoa in May. This activity was carried in collaboration with the Samoa Ministry of Agriculture, Forestry, Fisheries and Meteorology (MAFFM) and the AusAID funded Samoa Quarantine Improvement Project (SQIP). The draft Generic Emergency Response Plan document is based on the regional approach and other similar plans developed for PICTs by SPC or through other bilateral aid programmes. All parties were widely consulted during the course of the drafting of the ERP document. The development of general emergency response plans for agriculture pest and disease outbreaks is a major activity of the EU funded Plant Protection in the Pacific (EU-PPP) project and is keen to work with PICTs who are recipients of bilateral aid and their donor partners in improving biosecurity (quarantine) services in the region.

The visit also allowed the Biosecurity Officer to conduct a few exercises in import risk analysis and other quarantine and trade related activities. The quarantine awareness campaign conducted by the Samoa Quarantine Improvement Service was very extensive. Mr. John Burton, Team Leader of SQIP organised this activity with the help of SQIP consultants Ms Bonny Vogelzang (Plant Protection Specialist) and Dr. Joanna McKenzie (Animal Health Specialist).

4. 6th International workshop on Chromolaena management

Warea Orapa – PPS Weed Extension Officer

The Chromolaena Working Group of the International Organisation of Biological Control (IOBC) held its 6th International workshop in Cairns, Australia, from 6–9 May 2003. Participants came from South Africa, East Timor, Indonesia (West Timor), Papua New Guinea, Guam, and Australia. International organisations represented at the meetings were CABI Bioscience and the Secretariat of the Pacific Community (SPC). SPC Plant Protection Service was represented by, Mssrs Konrad Englberger (Coordinator, Plant Protection Micronesia), Warea Orapa (Weed Management Officer) and Sada Lal (Entomologist). Papers were presented by Englberger describing the work undertaken in Micronesia and by Orapa on the biological control work in PNG and the status of chromolaena in the Pacific.

Chromolaena (*C. odorata*) is a scrambling perennial shrub of South and Central American origin, which forms dense tangled bushes from 1.5 to 3 meters in height, occasionally reaching a maximum of 6 meters as a climber on other plants. Its growth habit is injurious to perennial crops and is a serious threat to pastures, as grazing animals will avoid the toxic foliage of chromolaena. The weed is a serious invader of disturbed natural areas and its presence is known to delay forest regeneration by up to seven years in India. Chromolaena thrives best in seasonally dry conditions and so is a fire risk in those areas after it flowers and dies back. In wetter areas chromolaena can continue to grow throughout the year.

In the Pacific islands chromolaena occurs in Guam, Federated States of Micronesia, Palau, Papua New Guinea (PNG), and recently appeared in Majuro in the Marshall Islands. It was found in the Innisfall area south of Cairns in North Queensland, Australia, in 1994. Chromolaena arrived in PNG prior to 1970, possibly during World War II, and is now present in 10 lowland provinces but it is still spreading quickly.

The weed was recently found at Aropa Airport in Bougainville close to the Solomon Islands. It is absent from Vanuatu, Fiji and all Polynesian countries.

The workshop participants reported on the global efforts to combat chromolaena. Biological control research is active in South Africa where a different biotype of the weed is the problem and natural enemies found effective on the chromolaena biotype prevalent in South East Asia and West Africa have been ineffective. Two biological control agents, the moth *Pareuchaetes pseudoinsulata*, and the stem galling fly *Cecidochares connexa* have been released in several countries including Palau, PNG and Indonesia. Efforts are being made to release the gallfly in Guam and the FSM. PNG is considering the importation and release of additional biological control agents from South Africa, where research on the management of chromolaena is active. Attempts at eradication have started for Marshall Islands and in Australia up to A$1.5 million has been spent on an eradication programme since 1994 with up to 6000 man days during the first 3 years.

Recommendations made at the workshop:

i. Introduce *Cecidochares connexa* into Central and Western Africa,
ii. Regional organizations such as SPC support and produce public awareness material on chromolaena for identification and control measures,
iii. All information produced by countries and organisations be linked to the chromolaena website (currently hosted by the University of Queensland),
iv. Expand the focus of the Chromolaena working group to include other weeds in the subfamily Eupatoriae (eg. *Mikania*, *Praxelis*, *Ageratum*, *Ageratina*, *Austroeupatorium*, etc.).
v. That countries having problems with invasive Eupatoriae to consider the use of host-specific fungi as biological control agents;
vi. New research be conducted on other damaging natural enemies of chromolaena like the moth *Mescinia* nr *parvula*, and especially those with a soil-diapause stage, and
vii. An email list for invasive Eupatoriae be set up and nominated Mr. Wayne Parasram of the Plant Protection Research Institute, Agricultural Research Council, South Africa, to develop it.

The 7th International Chromolaena workshop will be held in 2007 and East Timor volunteered to host.

5. Taro Beetle Management Project

Emil C Adams – PPS Publications Officer

Identifying the best combination of practises to combat taro beetle is the objective of the regional Taro Beetle Management (TBM) project. The project is an initiative of SPC Plant Protection Service and the Technical Coordinators of the project met in Nadi end of May to review work progress and plan further work.

Taro beetle is a serious pest of dalo in Fiji and other Pacific countries where it is found. It is a direct threat to Fiji's multi-million dollar taro exporting industry to New Zealand and Australia. It poses a serious threat to Pacific neighbours where the beetle is not present and taro is the major cash crop.

In Fiji the beetle is not found in the two main taro growing regions of Savusavu and the island of Taveuni, in the Northern Group. However, it is widespread along the east coast of the main island of Viti Levu including the outer islands of Ovalau and Levuka.

All movement of dalo from Viti Levu and Ovalau to the outer islands and the island of Rotuma are strictly prohibited.

The pest lives in the soil and burrows inside the taro corm leaving behind a maze of tunnels. Beetle-damaged taro cannot be exported or sold to local supermarkets. Badly damaged taro cannot even be used for home cooking. The corm begins to rot soon after beetle damage.

In Fiji taro beetle damage accounts anywhere from 4 to 25 percent of total taro crop. To smallholder farmers this is a big chunk of their livelihood taken away.

EU under the Pacific Regional Agricultural Development Project (PRAP), initially funded TBM, which ended in mid-2000.

In 2002 the Australian Centre for International Agricultural Research (ACIAR) began funding the project. However, the project is now extended to include Kiribati and Vanuatu. The extension is made possible with funding assistance from the European Union (EU).

Both EU and ACIAR are now co-funding the Taro Beetle Management project.

Sada Nand Lal, Entomologist with SPC Plant Protection Service, coordinates the project.

Roy Masamdu, Principal Entomologist for PNG's National Agricultural Research Institute (NARI) supervises TBM activities in PNG. In PNG, the beetle is a pest to 15 economic plant species including taro. The main control method being looked at in PNG is a natural enemy of the beetle. It is a fungus that occurs naturally in the soil called *Metarhizium*. The fungus grows on and kills the beetle. Present trials will find out how much of the fungus can be applied per plant to reduce beetle damage. This is a promising and sustainable method of controlling plant pests.

EU encourages the use of natural enemies of pests or biological control, which are much safer to the environment.

In Fiji the biological control methods is being tested against pre-identified pesticides to find the best combination of control practices. The first results from these trials will be available late June 2003. Under a previous regional insecticide-screening project, no conclusive results were obtained. The main objective of these trials is to identify a selective insecticide effective against taro beetle.

Mr. Moti Lal, Principal Research Officer at Koronivia Research Station, supervise activities for the taro beetle project in Fiji. Beetle-ravaged Navua, in eastern Viti Levu, is the site of the chemical evaluation trials now underway. Residue analysis is part of the chemical trials where corms will be tested for the presence of insect ides. Fiji will also be testing the *Metarhizium* fungus, where the beetle isn't as complex as in PNG.

In Vanuatu there are five known taro beetle species and taro beetle is a major constraint to taro production. The plan is to compare biological and chemical control trials.

In Kiribati only one known species of the beetle is found and is confined only on the main island of Tarawa. The beetle was introduced some 60 years ago.

The occurrence in the soil of the *Metarhizium* fungus is the main constraint to using this natural enemy of the beetle. Attempts to mass produce the fungus in the tropics is now being looked at with assistance provided by Dr. Richard Milner formerly of CSIRO but now a private consultant to the taro beetle project. Dr. Milner is supplying the *Metarhizium* fungus from Australia. He travelled earlier in the year to assess the natural occurrence of the fungus in Kiribati. He found very little beetle activity in Tarawa. However, soil samples extracted and sent to Australia for analysis confirmed the presence of the fungus in atoll soils.

In the absence of any immediate recommended measures to eradicate taro beetle farmers in Fiji are targets of public education messages urging them not to move planting material from affected areas. This measure is to quarantine the pest and to prevent it from spreading to new areas.

SPC Plant Protection Service and Fiji Ministry of Agriculture, Sugar and Land Resettlement (MASLR) technical and extension staff held farmer field days and disseminated extension materials as public awareness to show damages to taro caused by the beetle and to emphasise to farmers not to move out any taro planting materials from affected areas.

Similarly Pacific island countries where the beetle is not found should enforce strict quarantine measures at their national borders to prevent any introduction of taro planting material from countries where the beetle is found.

Banana is another host for the beetle and likewise national quarantine services should strictly prohibit the importation of banana-related planting material.

SPC Plant Protection Service, through EU and Australia funding, is providing the technical expertise and administrative support for the regional project. The development of an environmentally sustainable biological control system for taro beetle is the goal of the project.

6. 2003 Quarantine Training in Micronesia

(Abstracted from a report prepared by Konrad Engleberger, Coordinator - Plant Protection Micronesia)

Eighteen participants from five Micronesian countries learned basic quarantine operations and enforcing quarantine law in a 2-week training held in Guam, 9-17 April, 2003. There were two venues for the training, Department of Agriculture and University of Guam.

The 2003 Quarantine Training was organised by SPC Plant Protection Micronesia Coordinator, Mr. Konrad Englberger. A similar training was also carried out in 2002. The training used both presentations and

demonstrations to deliver content. A live brown tree snake was shown, presentations made on animal diseases and practical training exercises at airports and seaports.

The participants moved to the second venue at the University in the second part to learn basic level entomology, plant pathology and weed extension.

To gauge their knowledge of the training participants were administered pre- and post-training tests. A remarkable increase in quarantine and general plant protection knowledge was evident in the results from the post-training test.

Organisations and agencies involved in conducting the training included the FSM National Government, US Fish and Wild Life, United States Department of Agriculture, Guam Department of Agriculture and University of Guam.

Breakdown of participants attending the 2003 Quarantine Training:

FSM	-	3
Guam	-	4
Palau	-	2
Marshall Is	-	2
CNMI	-	7

SPC Plant Protection Micronesia Project covered airfares and per-diem for participants from FSM, Palau and Marshall Islands. The seven participants from Commonwealth of the Northern Mariana Islands (CNMI) were covered by their own Government.

Participants gave an overall assessment of 'very good' to the quarantine training.

7. Farmer-focus extension communications

Emil Adams – PPS Publications Officer

In a recent extension exercise with Cook Islands farmers on the main island of Rarotonga three agricultural problems were singled out, all of equal significance to farmers: plant pests and diseases, lack of agricultural information and high production costs. Farm management skills and lack of research activities were the other two major problems in agriculture.

This participatory extension exercise was facilitated by PPS Extentionist, Mr. Stephen Hazelman, at the Cook Islands Department of Agriculture Head Office in Arorangi end of May. A draft report on the major findings of the exercise is available.

Rarotonga has the right climate and soil for the production of small cash crops, thus, the top cash crops identified by farmers were: papaya, tomato, head cabbage, capsicum, cucurbits, beans, bananas and sweet potato.

Papaya, or Nita in Cook Islands, is a major export crop and farmers identified the following pests as very problematic: scales, thrips, mites and the fungal disease anthracnose. For tomatoes white flies and fruit-piercing moth top the list of pest problems. Farmers identified white flies again plus diamond-back moth and fruit rot as major problems for head cabbage. White flies again were a major problem identified by farmers for capsicum, in addition to mealybugs and the bacterial leaf disease. The same for the cucurbits – cucumber and watermelon – white flies, mealybugs and viruses, cucumber mosaic in particular. Leaf miner, bean pod borer and rose beetle were major pests for beans.

Rarotongan farmers identified TV as their preferred medium to receive agricultural information provided the programmes were timely and well presented. This reflects the popularity of TV to disseminate information in the Pacific region. Secondly, farmers found 'farmer field days' as the best forum to receive agro-technology. This is in agreement with the classical diffusion of innovation model where personal communication (hands-on practical experience) is necessary for the end-user to make an informed decision about adopting a new technology. Extension leaflets became the third choice as a medium for farmers to receive information. Interestingly, and to some extent reflecting the current environment enjoyed by farmers on the more developed island of Rarotonga, on-line publishing and accessing information using the Internet were also pointed out as very popular for farmers to receive information.

The participatory extension exercise is a very useful extension tool to identify problems from a particular interest group's point of view. The method emphasizes a bottom-up approach where group members are consulted for their input before arriving at a consensus.

This method is used extensively in PPS to identify farmer problems and to provide assistance tailored towards target groups. PPS annual work plans are formulated based on the outcomes of these participatory exercises carried out in the PICT countries.

8. Pest List Database comes to Vanuatu

Dick Vernon – PPS Information and Extension Coordinator

The Ministry of Agriculture, Quarantine, Fisheries & Forestry and SPC Plant Protection Service worked together to introduce the Pest List Database (PLD) to Vanuatu. The PLD is an information system that stores data on pest occurrences within a country, and which has as a main purpose the production of an instantaneous 'List of Pests' for any agricultural commodity for which trade is planned.

The workshop was opened by the Acting Director General, Mr. Amos Moses, and started with an open session attended by representatives of the Government and the private sector. In this session the PLD system was presented to this wider audience who had an opportunity to discuss its purpose and impact.

The results of previous pest surveys, data from publications and past Vanuatu Quarantine and Information Service findings were used to stock the system with Vanuatu pest occurrence records: the database starts with over 2,000 such records covering 948 pest species. Mr Benuel Tarilongi, Director, VQIS, is arranging for the further input of data. At the time of writing a team of SPC plant protection specialists is conducting a pest survey of Vanuatu, which should yield important additional information on the country's pest status. When that is done the system should contain occurrence records of most agricultural pests that have been recorded in the country, and as such it will be a useful tool for plant protection extension, research and quarantine staff. Another function is to record pest interceptions by VQIS, for which it provides a monthly internal administrative report and country reports that can be sent to trading partners to easily let them know the interceptions of pests on their exports.

SPC acknowledges the permission of the Director of Agriculture, Tonga, to make use of Mr Mana'ia Halafihi, Head of Information Section, as a resource person for this workshop. Mr. Halafihi is an experienced manager of the PLD system in his own country. The workshop brings to eight the number of Pacific Island countries using the system. Information about the PLD can be obtained from the PPS Website www.spc.int/pps or from Makelesi Kora at makelesik@spc.int

9. Second Hawaii Annual Fruit Fly Area Wide Pest Management Progress Review and Conference

Ms. Ema Tora-Vueti – PPS Fruit Fly Management (FFM) Coordinator

The second Annual Fruit Fly Area Wide IPM Progress Review conference was held 28-30 April in Hawaii. The purpose of the conference was to inform stakeholders of the progress of the Fruit Fly Area Wide programme, identify future work areas and develop strategies for the next phase of the programme.

There were a wide range of presentations, including programme management, research findings on field control techniques, biological and ecological studies for fruit flies, and development of new technologies for fruit fly rearing. Representatives from United States Department of Agriculture (USDA), faculty members of the University of Hawaii and other US Universities and the private sector attended the conference.

Dr. Charles Garnier, Director of Agricultural Research, French Polynesia and FFM Coordinator attended the conference. They both presented topics on French Polynesia Fruit Fly Eradication Program and the Pacific Fruit Fly Management respectively. The benefits from the conference has resulted in USDA's interest, through the Hawaii Pacific Basin Agricultural Research Center (PBARC), in working with SPC and PICTs on common issues such as the Area Wide IPM and pest control. A large number of contacts for researchers in the area of pest control were generated from this conference.

10. Quarantine media awareness target athletes to SPG 2003

Emil Adams – PPS Publications Officer

Samoa, Tonga, Cook Islands and Niue are taking out 1-minute spots on national TV for quarantine awareness. The TV spots are specifically targeting athletes, offic ials and visitors planning to visit Fiji for the 2003 South Pacific Games. Estimates of up to 5,000 Pacific islanders are expected to be in Fiji for the two-

week regional sporting event, which starts on 28th June. The TV spots are scheduled to air one week before athletes start to leave. Food and food products are high on the list of quarantine risk items and the messages will tell travelers to leave food behind, discard them using quarantine bins at airports or declare them to quarantine. Wooden souvenirs, beads, body oils, headpieces, necklaces and other items to be used for cultural entertainment are also targeted as they may carry insect pests.

Airing of the special TV spots on national TV is part of a regional effort to take the quarantine message to a more diverse Pacific audience. In March this year Fiji Quarantine and Inspection Division in collaboration with SPC Plant Protection Service launched the SPG Quarantine Awareness Campaign. The campaign was launched at a gathering of Pacific Agricultural Ministers who were in Fiji attending the FAO Agricultural Ministers of the Pacific meeting. Public awareness materials produced for the campaign included posters, leaflets, t-shirts and the Fiji Quarantine Video. These materials have been distributed to Heads of Quarantine for their own national quarantine awareness programs. The goal of the regional effort is to have a more informed public on the risks associated with the movement of quarantine items.

European Union (EU), through the Plant Protection in the Pacific (PPP) project, is helping fund the regional quarantine awareness programme.

11. FAO Employment Opportunity

The position of Senior Officer (P5) for the International Plant Protection Convention (IPPC) Secretariat has recently been listed on the FAO web site (http://www.fao.org - click on employment then professional vacancies). The Senior Officer plays a major role in coordinating the work of the Interim Commission for Phytosanitary Measures (ICPM) and the development of International Standards for Phytosanitary Measures (ISPM). FAO is looking for an officer with a broad range of experience of IPPC issues and standards and highly developed organisational skills. Deadline for applications: 23 June 2003.

12. PPS Staff travel calendar

Dates	Country	Staff	Purpose
26 May-04 June 03	Vanuatu	Nacanieli Waqa	Fruit fly Vanlure trials
01-14 June 03	Niue	Sada N Lal	IPM/Entomology work
01-14 June 03	Niue	Bal Narayan	IPM/Entomology work
01-22 June 03	Vanuatu	Jacqui Wright	Disease survey
01-22 June 03	Vanuatu	Richard Davis	Disease survey
01-22 June 03	Vanuatu	Takaniko Ruabete	Disease survey
01-05 June 03	Niue	Steve Hazelman	IPM Follow-up
09-12 June 03	Samoa	Steve Hazelman	FAO Meeting
07-15 June 03	French Polynesia	Dick Vernon	PLD Support Meetings
16-21 June 03	Cook Islands	Dick Vernon	PLD Support Meetings
10-17 June 03	Samoa	Emil Adams	Rhino beetle awareness campaign
19-30 June 03	Tuvalu	Salend Kumar	Extension Training
19-30 June 03	Tuvalu	Nilesh Prasad	Extension Leaflet Production Training

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