

**PROJECT ON REGIONAL MANAGEMENT OF FRUIT FLIES  
IN THE PACIFIC: RAS/97/331 (RMFFP)**

**Funded by: AusAID, UNDP  
New Zealand Government**

**Implemented by: FAO  
Executed by: SPC**

**PROJECT ON PEST MANAGEMENT IN THE PACIFIC  
COMPONENT 2: FRUIT FLY MANAGEMENT**

**REPORT AND RECOMMENDATIONS**

**from combined**

**FOURTH STEERING COMMITTEE MEETING**

**and**

**RMFFP PROJECT REVIEW**

**Raffles Gateway Hotel, Nadi  
21-23 November 2000**

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The Fourth and last Steering Committee Meeting of the FAO/AusAID/UNDP/SPC Project on Regional Management of Fruit Flies in the Pacific (RMFFP) took place at the Raffles Gateway Hotel in Nadi, Fiji Islands, on November 21-23, 2000. The meeting was combined with the Tripartite Review of the Project, a requirement from UNDP. A comprehensive report has been compiled and handed to the participants before the meeting. Two external reviewers were invited to attend the combined meeting: Dr. Gordon Hooper (private consultant from Australia) and Dr. Roger Vargas (research scientist, USDA-ARS Pacific Basin Agriculture Research Center, Hilo, Hawaii). The report from the two reviewers has been produced separately.

The main purposes of the combined meeting were to:

- Assess progress of the project since the Third Steering Committee Meeting in February 2000.
- Make recommendations on future activities to carry out in relation to the work plan developed in October 2000.
- Carry out an overall review of the Phase 3 of the Fruit Fly Project (RMFFP, May 1997 to December 2000).
- Introduce to participants the Pest Management in the Pacific Project into which fruit fly activities will be, by January 2001, fully integrated as “Component 2: Fruit Fly Management”.

The approach in reporting and reviewing activities was different from the usual approach in that instead of reporting against objectives, reporting and discussion was done against six broad themes, or strategic objectives, which cut across different objectives and outputs of the RMFFP Project Document:

- Protection of Horticulture: quarantine surveillance, emergency response planning, eradication programs.
- Increased Production: protein bait spraying, fruit bagging, brewery waste yeast modification, socioeconomic study.
- Enhanced Trade: removal of trade constraints, forced hot air technology, non-host status, export markets.
- Improved Technical Capacities: training, laboratory establishment and refurbishment.
- Information: status reports, WEB site, Pest Advisory Leaflets, other publications.
- Management Issues: collaboration with partner organizations, financial statement, steering committee meetings, Solomon Islands programme, Junior Scientific Officer (JSO) concept.

The participants invited to the combined meeting were representatives from donor agencies (UNDP and AusAID attended; NZODA excused), the executing agency (SPC Plant Protection Service), the implementing agency, until 30 April 2000 (FAO), the external reviewers, a consultant resource person (Allan Allwood, Chief technical Advisor of the Project until 30 April 2000), and representatives from the four Subregions: Papua New Guinea, Vanuatu, New Caledonia, French Polynesia, Fiji Islands (host country represented by the chairman of the meeting), Kiribati, Palau (could not attend), Nauru,

Cook Islands and American Samoa. The complete list of participants and their addresses is annexed.

### **Agenda 1: Welcome and Opening**

As the chairman of Fiji Islands MAFF Chairman for Fruits and Vegetables was not available, the meeting was informally open by the chairman, Dr. Ken Cokanasiga.

### **Agenda item 2: Adoption of Agenda**

The UNDP representative (Asenaca Ravuvu) requested that the meeting be referred to as a Tripartite Project Review instead of a Terminal Project Review. The reason is that a Terminal Review under UNDP involves specific requirements such as a listing of all project equipment, letters for handing over of equipment etc. Since not all these conditions have been met, it was suggested that the Terminal Review involving administrative procedures be done later in 2001. The review will nevertheless remain, in essence, a terminal review of the technical achievements of the RMFFP. Other than this, the agenda was adopted with minor changes to the sequence of presentations.

### **Agenda item 3: Introductory Remarks**

The purpose, scope and format of the review were covered by Dr. Hooper, who emphasized the value of the effectiveness of adopting a regional approach. The RMFFP Coordinator (L. Leblanc) went on to briefly summarize the history of the RMFFP-FFM, since its beginning in 1990, covering the objectives of the three phases of the Project.

### **Agenda item 4: Presentation of terminal review report**

As stated before, progress, achievements, problems and possible solutions were covered by broad themes instead of objectives. The written report covering the broad themes is presented in Section 1 of the terminal report handed during the review. A detailed listing of achievements against objectives and outputs constitutes Section 6 of the terminal report handed during the review.

#### **4-a: Increased Production**

This section refers to Immediate Objectives 1,3, and 4. A presentation was done by Luc Leblanc on damage caused by fruit flies in PICTs and how methods to prevent or reduce such damage have been promoted and adopted in PICTs, including protein bait spraying, fruit bagging, and modification of brewery waste yeast into protein bait. The socioeconomic study carried out by Andrew McGregor was also briefly discussed.

Representatives from PICTs have provided brief comments on field control practices and issues related to fruit fly control relating to their countries.

Bagging has been extensively tested and demonstrated in PNG. Public awareness has been conducted on fruit bagging in schools, churches, NGO's and during agriculture shows. The impact of the awareness campaigns has however not been assessed.

Plastic bags are extensively used on guava trees. In Mainland PNG, farmers bag banana bunches to improve their quality and protect them against fruit flies and other pests. As this species is a new introduction to East New Britain, there is a need to promote bagging in that province to cope with the new pest problem, as bananas is a main staple there. South Pacific Brewery is interested in commercial production of bait from waste yeast. Benefits to small holder farmers from fruit fly control should be assessed. [**Recommendation 23**]

In Kiribati, protein bait spraying is not used and bagging has not yet been tried. They request that the RMFFP-FFM assists Micronesian countries in running a workshop on fruit fly management on atolls with emphasis on bagging and identifying ideal varieties of plant leaves to use as bagging material. [**Recommendation 15**] A special request was also made for assistance in conducting a survey of Christmas Island to find out whether or not melon fly is still present there. This is of significance not only to Kiribati, but also to the neighboring Northern Group of Cook Islands and to French Polynesia. The survey should also include limited trapping on the Phoenix and other Line Islands, if they are covered by the ship that travels from the Gilbert Islands to Christmas, as these islands have never been surveyed for fruit flies. FAO has plans to carry out a rat survey in the Line Islands and has shown interest to also support fruit fly survey at the same time. [**Recommendation 1**]

In Vanuatu, imported bait is expensive and unaffordable to farmers. Cheap bait will soon be on the market with the new waste yeast conversion plant at Tusker Brewery. Bagging has been recommended and demonstrated to village farmers. The unavailability of paper in remote areas is however a limiting factor, which can partly be overcome by using tree leaves. It was pointed out that fruit fly damage is not the only constraint to fruit production. Fruit piercing moth is in fact an equally serious pest that needs to be managed.

In New Caledonia, bait spraying is used for fruit fly management only by large-scale commercial farmers. It has been demonstrated at village level, but interest in using it has been limited. The Territory government is not directly involved in day to day extension, which is handled by the Fruit Growers Association. The brewery does not show much interest in converting waste yeast into fruit fly bait. Assistance is needed from the RMFFP-FFM in demonstrating to the brewery the benefits from waste yeast conversion, and the process involved.

Protein bait spraying is used in the eradication programme against Oriental fruit fly in Tahiti and Moorea and against Queensland fruit fly in the Marquesas. Although there are few fruit growers in French Polynesia, some citrus farmers use bait spraying for fruit fly control. They have requested from the Department of Agriculture for training in fruit fly control.

Farmers use protein bait spraying in Cook Islands as a component of the quarantine pathway for papaya export to New Zealand. Extension is now emphasized as a necessary component of research programmes, but there is at present no regular radio or TV programs on fruit flies and their control.

Bait spraying is applied weekly as part of the eradication programme against mango fly in Nauru. It is well accepted by the population, but there is much criticism against nailing blocks to trees, thought to be responsible for death of breadfruit trees, which is actually caused by the ongoing drought. The new papier mâché blocks developed by Aventis CropScience will overcome the problem. There is not much potential use for bait spraying other than for the eradication programme, because food is mostly imported.

In Fiji, technical knowledge about fruit flies is very good both at the quarantine and research levels, but knowledge at the extension level is very limited, except in the Nadi area. Although the government is much concerned with trade facilitation, the threat by fruit flies to food security has not been well addressed so far. There is a pressing need to train extension officers on fruit flies to upgrade their knowledge. **[Recommendation 2]**

Mr. Allwood commented that bait spraying has often been overemphasized as the main focus of fruit fly control at all levels. In village situations, it has limited potential unless it is applied as a community effort, otherwise bagging is more practical and should be recommended. There is clearly a need to promote more bagging in villages in all PICTs. Bait spraying is more likely to be adopted and used by smallholder commercial farmers. Dr. Lloyd emphasized that in the new PMP project there will be a strong extension component to adequately address these issues. **[Recommendation 23]**

Technical documentation on Fipronil as a new insecticide for protein bait spraying was distributed to the participants. It is recommended that countries get Fipronil quickly registered, at least for experimental use, and ideally for commercial use, in preparation for its availability for fruit fly management. BactroGel, the Fipronil-based gel for fruit fly control, is about to be registered in Australia for fruit fly control. It was announced during the meeting that Mr. Richard Bull has been promoted as the Global Manager of Fipronil development for fruit fly control throughout the Pacific. **[Recommendation 4]**

#### **4-b: Protection of Horticulture**

This section refers to Immediate Objectives 1, 2, and 4 and was presented by Ema Tora Vueti. Topics covered were an overview of the status of quarantine surveillance in all PICTs, the development of emergency response planning and the status of the eradication programmes in Palau, Nauru (presented by Allan Allwood) and French Polynesia (presented by Rudolph Putoa). Their presentations and the issues raised are summarized here.

**Nauru:** The Republic of Nauru is a small island (21Km<sup>2</sup>), of which 14.2Km<sup>2</sup> has been mined out for phosphate. The eradication programme targeted four introduced exotic species: Oriental fruit fly, Pacific fruit fly, melon fly and mango fly. The eradication treatment consisted of nailing to trees blocks dipped in a mixture of male lure and Fipronil insecticide to attract and kill male flies. Combined with blocking, weekly applications of protein bait sprays targeted female flies. Thirteen blocking campaigns were conducted between October 1998 and October 2000.

The progress in eradicating the four species was presented as graphs that show the decrease in the number of flies collected weekly, the weekly percentage of traps that collected each species, and the number of flies emerging per Kg of host fruits sampled.

Melon fly was quickly eradicated mainly because of the drought that reduced wild host fruits (*Momordica charantia* and *Coccinia grandis*) to very low levels. Oriental fruit fly was also quickly eradicated by the powerful effect of methyl eugenol as an attractant. Both species were last trapped in early 1999 and Nauru was declared free of them in December 1999. It took longer to eradicate Pacific fruit fly, which was last trapped in February 2000, and declared eradicated from Nauru during the CRGA meeting in Nouméa in November 2000, while the Steering Committee meeting was taking place. Mango fly still subsists in small numbers. The main constraints to its successful eradication is that it breeds mainly on *Terminalia catappa* and *Guettarda speciosa*, and both are abundant throughout the islands, including the difficult to reach mined out topside.

After a review of the programme by Allan Allwood in September 2000, it was recommended: 1. to pursue the eradication until the end of 2000 and review the programme again to take decisions on further action [**Recommendation 3**] 2. to introduce the new papier mâché blocks to replace the fibreboard blocks (done in December), and 3. to improve the application of protein bait spraying.

Besides the successful eradication of three species, landmark achievements were the adoption by the Nauru government of an Agriculture Quarantine Act and the commitment to set up a quarantine inspection service, the availability for the first time in over 15 years of fresh fruits, especially mangos, and the decision to set up a nursery for fruit trees at Nauru Secondary School.

The cost of the whole programme, funded by RMFFP, Crawford Funds and New Zealand Government, is about AUD 300,000, including travel and per diem for training 38 staff from PICTs and 3 staff from SPC. The actual eradication cost is AUD 240,000, taking into account labour cost in Nauru.

**French Polynesia:** Oriental fruit fly was first detected in July 1996 on the Presqu'île on Tahiti (Southeastern end), and by January 1997, it had spread over the whole island. Six male annihilation campaigns were conducted in 1997 by nailing to trees coconut husk blocks dipped in a mixture of methyl eugenol and Malathion. Six campaigns were not sufficient to eradicate the target species, which subsisted in small pockets and spread again all over Tahiti and Moorea during 1998. Campaigns resumed in April 1999, and 4 campaigns took place in 1999 and five in 2000. In total, 512,000 blocks were set up in 1997, 327,800 in 1999 and 455,000 in 2000 (first four campaigns). During each campaign, 17 and 7 teams of 3 operators were mobilized for three weeks, on Tahiti and Moorea, respectively. The cost of each campaign is about USD 100,000 which covers purchase of chemicals and rental of helicopter (excludes cost of labour). Protein bait spraying has been applied by a mobile team equipped with a cistern and, since recently, knap-sack sprayers.

Flies are still trapped in Tahiti and Moorea over extensive hot spot areas. Aventis CropScience has kindly accepted to provide, free of charge, 150,000 papier mâché blocks, used in the October 2000 campaign, as a replacement to the coconut husk blocks treated with Malathion. [Initial results from the December campaign look promising]. A second load of blocks has been provided free of charge for the January campaign.

In Raivavae, efforts to eradicate Pacific fruit fly by hanging cotton wicks dipped in methyl eugenol and Malathion have reduced number of trapped flies to 1-2 per week. The same species was detected on Rurutu in May 2000. This is a concern because Rurutu produces oranges for markets on Tahiti. Papier mâché blocks will be used in the next campaigns.

**Palau:** Oriental fruit fly has been detected in September 1996. A feasibility study conducted in 1999 recommended its eradication estimated to cost about USD 1.1 million. The largest portion of the cost is for helicopter rental. The value of investing in the eradication programme was confirmed by a socioeconomic study carried out in early 2000. Delays in initiating the eradication have mostly been due to delays in approving the use of Fipronil by the Environmental Quality Protection Board (EQPB) and delays in providing funds for the programme by the government. [**Recommendation 14**]

**Discussions:** Some lessons learnt from the experience in eradication programmes were emphasized. It is important to understand the biology of the target species for eradication. The difficulty in eradicating Pacific fruit fly on Raivavae was also experienced on Nauru. It may partly be due to a weaker attraction to methyl eugenol. Hot spots where residual populations still breeding should be identified and receive special treatment by intensified blocking and protein bait spraying. Climatic hazards can in some circumstances play in favor of eradication. Melon fly eradication in Nauru was facilitated by the drought. In the 1960's the successful eradication campaign against Oriental fruit fly in Guam and CNMI started immediately after a major typhoon that had destroyed most fruits and reduced fruit fly populations to low levels. A lot of funds have been spent on eradication programmes, but it is important to adequately support quarantine surveillance as an early warning system to detect and act quickly in eradicating exotic fruit flies. [**Recommendation 22**]

The issue of the possible need for an environmental impact assessment by EQPB in Palau was raised. It was reassured that there is no need for such studies. The use of papier mâché blocks was approved by EQPB on the basis that they are of small size and disintegrate quickly. Dr. Hooper pointed out that an impact study of Fipronil on aquatic ecosystems had already been carried out in Australia and a copy of the report was provided to EQPB. There is interest to test and use Fipronil to control fruit flies in United States, but it is not easy to be registered.

#### **4-c: Enhanced Trade**

This section refers to Immediate Objectives 1 to 4. Ema Tora Vueti covered the subject, including the status of fruit fly colonies in the Pacific, the research on heat tolerance testing, the development of hot forced air (HFA) technology for fruit treatment, and the use of non-host status as an inexpensive method for fruit export. Figures on the export value of fruits from the Pacific were presented to emphasize the benefits from post-harvest treatment research. The development of dual treatment, involving the simultaneous treatment of two different commodities, is a new avenue being explored for treatments during periods of low fruit availability.

The status and constraints of export markets by representatives of countries with HFA facilities were briefly discussed. New Zealand is, for the moment, the only export market for HFA treated fruits. Fiji Islands export substantial amounts of papayas, mangos and eggplants to New Zealand. Contrarily to original expectations, eggplant has become the dominant export product over papaya. In total, the export value of these three commodities, between 1996 and June 2000, has been FJD 3.8 million. Clearance has been given in early 2000 for the export of HFA-treated breadfruit, although exports have not started yet.

New Caledonia's HFA unit has been certified and confirmatory tests done for several commodities, but farmers have yet to intensify fruit production to meet the demand for export.

In Cook Islands, HFA-treated papaya has been a lucrative export since 1994. Currently, 3-5 tonnes are exported weekly to New Zealand, and market prices are good. Mangos are also exported between December and February and eggplants between June and September. Confirmatory tests are required for dual treatment of papaya and eggplant during the winter, when fewer fruits are available. Export of Birdseye chillis on a non-host status is a very good business, as the market price in New Zealand is NZD 22.00/Kg.

Countries have had ongoing difficulties in getting a satisfactory response from AQIS Australia, even though confirmatory test results are convincing. New Caledonia has faced delays because AQIS has been re-structured several times over the years, causing delays in processing requests. Fiji Islands had its results from confirmatory tests on papaya first rejected because of insufficient number of viable eggs used in confirmatory tests. A minimum number of 30,000 is required. Tests had to be repeated twice before results could be finally re-submitted, and a response from AQIS is still awaited. AQIS has however recently created a Biosecurity Unit to consider more effectively and fairly ways to accept treated commodities.

Japan government is also a notoriously difficult trade partner. Dr. Lloyd pointed out that the New Chairman of PPPO, Dr. Chris Hood, has dealt with the Japanese government for many years and should share his experience during the forthcoming PPPO meeting (March 2001). [**Recommendation 5**]

One aspect often overlooked by countries that want to export fruits is that commodity pathways must be developed and accepted by importing countries before export can commence. It was also emphasized that results and requests had often been submitted somewhat prematurely, with little accompanying background literature. In the future, the data should be accompanied with the country's status report on fruit fly and quarantine surveillance situation.

#### **4-d: Improved technical capacities**

This section refers to Immediate Objectives 1 to 5. Ema gave the presentation, with a summary of achievements in training and establishment or refurbishment of fruit fly facilities.

Participants expressed their desire to have further training through refresher courses and practical attachments. The Kiribati requested to include Micronesian countries other than Palau and FSM in training courses. **[Recommendation 15]**. In Cook Islands, staff who have received training in trained in Nauru have recently resigned, and two other staff recently went on study leave. There is therefore a need to train new staff. In PNG, there is a need to organize training for farmers on fruit fly management methods.

The issue of post-graduate training for fruit fly scientists was also raised. It was pointed out that, under Objective 5 of the RMFFP, there was provision to provide two post-graduate scholarships, as long as recipient governments can share the scholarship cost. This was never implemented because governments were not prepared to commit themselves. There are potential risks to consider when sending out staff. Care must be taken to ensure that backup staff remain in place to continue fruit fly operations and avoid disruption in the programme. It is often preferable that the student does field work in the country.

It was appropriately emphasized that refresher courses are important not only for fruit fly staff, but equally for extension staff. It is also the responsibility of research staff to deliver results and their applications to extension services. **[Recommendation 2]**

PPS is developing a generalized Emergency Response Plan for all pests and plant diseases and is planning sub-regional training courses during 2001, using fruit flies as high-risk pests to demonstrate the ERP process. This will be an opportunity to also run fruit fly refresher training sessions.

#### **4-e: Information**

This refers to immediate objectives 2 and 3, and was presented by Luc Leblanc. The main topics covered were the compilation and publication of country status reports, management of data under databases, the publication of pest advisory leaflets, scientific papers and extension material, the development of a regional fruit fly reference collection, and more particularly a demonstration of the fruit fly web site: [Http://www.pacifly.org](http://www.pacifly.org).

The need for centralization and archiving information was emphasized. The example of Solomon Islands was quoted, where Dodo Creek Research Station, including its library, was recently burnt during the crisis. Fortunately, duplicates of the reports had been kept in the SPC library and copies can be sent to Solomon Islands Ministry of Agriculture. It is therefore recommended that duplicates of reports, and electronic copies if possible, be sent to the RMFFP-FFM. **[Recommendation 7]**

An elaborate fruit fly database was developed at Queensland DPI, using the now obsolete R-Base programme. There is a necessity that QDPI releases the database to SPC in a usable form, ideally in Microsoft Access. **[Recommendation 6]**

The achievement of the fruit fly web site was commended. It was recommended that more feature stories be included and information be put up to date regularly.

#### **Agenda item 5: Management issues**

This section was presented by Luc Leblanc. Topics covered were the collaboration with Governments, NGOs, private sector, and research institutes, a summary of the financial statement, the use of Steering Committee meetings for project coordination, the situation in Solomon Islands programme, and the Junior Scientific Officer (JSO) concept (presented by Allan Allwood).

Financial Statement: The statement of expenses was presented. There is a substantial leftover funds from the Chief Technical Advisor and FAO Mission Costs budget lines sitting at the FAO office in Bangkok. These funds will be returned for use by the RMFFP-FFM. Overall there are over USD 70,000 unspent under FAO controlled funds. UNDP has confirmed that these could be re-phased and used in 2001. Furthermore, UNDP has offered to provide an extra USD 100,000 for the FFM in 2001. The Committee has recommended that the leftover funds be carried over to 2001 and that request is made for the extra USD 100,000. **[Recommendation 26]** It was pointed out that a detailed statement was not included in the terminal report draft provided to participants. It is included in the final version of the terminal report released with the present report.

Steering committee meetings: In the original conception of Steering committees, countries selected to attend the meeting were requested to contact other countries from their sub-region and gather and present input from each country during the meeting. At each meeting the issue of the high cost of communication to contact and consult all countries in the sub-region has been raised. During the fourth meeting, it was suggested that countries provide their reports directly to RMFFP-FFM, that would dispatch reports to the countries invited to represent their sub-regions. This must however not be a factor that prevents communication between countries, invariably leading to presentation of country reports instead of sub-regional reports. One possible way to overcome this problem may be hold sub-regional fruit fly meetings to discuss issues concerning the entire subregions, whenever sub-regional trainings are taking place. A comprehensive list of contact addresses, phone, fax and email of all fruit fly workers in the Pacific should be distributed to all PICTs to encourage communication. **[Recommendations 12 and 13]**

Solomon Islands situation: Essential fruit fly activities (trapping on Honiara, sample sorting and maintenance of colonies of three species) have still been maintained despite the aggravated crisis and social unrest. The part-time casual labourer has recently been promoted to full-time technician. Fruit fly and taro beetle activities are coordinated by Dr. Brian Thistleton (part-time consultant). The crisis and social unrest has caused a complete breakdown in quarantine surveillance in the Western Province. There is an urgent need to resurrect surveillance because of the real risk of spread of major pest fruit flies from Mainland PNG, particularly Asian papaya fruit fly and banana fly (now widespread in East New Britain). Special care should be taken that no host material be brought into Honiara by travelers coming on direct flights from Port Moresby. A trip to the Western Province in early 2001 to re-establish trapping sites is needed. **[Recommendation 8]**

JSO concept presentation: The Junior Scientific Officer (JSO) concept was introduced by the RMFFP in 1997 to Papua New Guinea, to ensure sustainability in the

programme. The problem with using United Nations Volunteers (UNVs) is that they stay only for 2-3 years in the countries and their experience goes away with them when they leave. The advantage of hiring and training national graduates is that the experience gained is retained in the country. It was therefore decided to use only one UNV in PNG, instead of two as originally planned, and use funds for the second position to hire three young graduates. The JSOs were intensively trained by the UNV. The system has worked out so successfully that NARI has introduced a cadetship programme inspired by the JSO concept. The JSOs have performed so well that NARI has offered them NARI employee contracts.

Dr. Lloyd cited other alternative models that have been used by SPC-PPS to ensure sustainability. In FSM, the national counterpart to the Plant Protection in Micronesia (Mr. John Wichep) has half of his salary paid by the FSM government and half paid by PPM, with commitment that the government will take him on a full-time basis at the end of the Project. In PNG, the salary of Roy Masandu (taro beetle) is an equal contribution by NARI and SPC and he has a NARI position.

### **Agenda item 6: Country inputs / reports**

#### **SUB-REGIONAL GROUP 1-**

#### **PNG, Solomon Islands and Vanuatu**

**Papua New Guinea:** Mr. Sar briefly summarized the history of the PNG Fruit Fly Project, the biggest project so far undertaken by NARI. Quarantine surveillance has recently been phased down and will be taken over fully by quarantine (NAQIA) in early 2001. Permanent traps are nevertheless maintained in almost every province. Maintaining traps in Western and West Sepik Provinces is indispensable for early warning by detecting pest species coming from Southeast Asia via Irian Jaya.

The backlog in sample sorting at Griffith University is a worry, because it does not allow to rapidly detect new fruit fly introductions to a Province. To overcome this problem, it is recommended that most sorting be done in PNG and that flies not be counted, but presence or absence of species in samples be recorded on data sheets, and that material that can't be identified be sent to Griffith University. This system, used in Vanuatu since 1997, allows samples to be processed very quickly. [**Recommendations 9 and 10**].

Host fruit surveying is ongoing and will focus more on selected crops such as mango and banana. Market surveys of a dozen commercial fruit species have been done in East New Britain.

The recent invasion of banana fly in East New Britain is a great concern to the Province, as bananas are a main staple food crop. An extensive survey to determine its distribution in the province is urgently required.

A lot of PNG farmers are interested in fruit fly control. Farmers are willing to purchase protein bait if it is affordable. One commercial farmer in the Central Province has requested assistance to develop fruit fly IPM practices in the orchards. Commercial citrus farmers in Eastern and Western Highlands and a banana farmer in Morobe Province have also requested for assistance from the Project. Interest by farmers is

such that the PNG Fruit Fly Project should start investigating waste yeast conversion into fruit fly bait.

Laboratory colonies of *B. papayae* and *B. cucurbitae* are maintained at Bubia. It is however hard to find fruits infested with APFF and melon fly is not easy to rear. Technical advice from the RMFFP-FFM is requested [**Recommendation 11**]. Mango fly colonies are still maintained at Kerevat and banana fly colonies at Laloki will soon be re-established in the newly renovated rearing facility.

As part of the Pest Risk Analysis component of the ACIAR Project, over 1000 copies of a questionnaire were handed to airlines and shipping companies and distributed to travelers to find out how much fresh produce is carried by travelers from one province to another.

There has been emphasis on public awareness. Project staff have visited schools to talk about quarantine and demonstrate fruit bagging. Banana bagging is commonly used in Mainland PNG. It should be promoted in East New Britain, where banana fly was recently introduced. Because of interest in schools, plant protection should be included in school curriculum in PNG (and other PICTs). The school textbook recently produced by SPC-PPS for Fiji schools should be introduced to PNG. [**Recommendation 24**]

**Vanuatu:** Fruit fly activities started in early 1994, and have been conducted by two UNVs and three national staff. An adequate trapping network (63 sites) covers all provinces. Flies are no longer counted, but the presence or absence of each species in samples is noted. This was cited as a model to follow for other PICTs. . [**Recommendation 10**]. For host fruit surveying, 3796 samples have been collected so far, covering 255 species in 1790 genera and 78 families. No new host species have been recorded recently. Surveys now focus on high-risk commodities, especially capsicum, chilli, tomato, bittergourd and banana. In 2000, 270 samples have been collected, 7.8% of which yielded fruit flies. Heat tolerance testing on *B. trilineola* has been finalized in March 2000. Colonies of this species are still maintained for host status testing. Nineteen varieties of crops are non-hosts to *B. trilineola*. Quarantine pathways for their export have been documented and submitted to New Zealand. Varieties tested in 2000 are Sweet Slice cucumber and Tahitian lime. More than 5 trips were done to outer islands for fruit fly work in 2000. The government has budgeted 1.1 Million Vatus for fruit fly work in 2001. One major achievement has been the training of farmers from Aniwa, Anatom, Futuna, Tanna and Santos as part of the RMFFP-ICARE special project. A unit for waste yeast modification has been purchased for Tusker Brewery with funds from RMFFP and ACIAR.

**Solomon Islands:** Refer to Agenda item 5. As previously mentioned, re-establishment of trapping in the Western Province is a priority. [**Recommendation 8**]

**SUB-REGIONAL GROUP 2- Niue, American Samoa, Pitcairn Islands, Samoa, Fiji, Tonga, Tuvalu, Tokelau, Cook Islands**

**Fiji Islands:** Trapping and host fruit surveys are still continuing for surveillance. Preliminary work is going on for waste yeast conversion at Carlton Brewery, and field tests will soon be carried out by the fruit fly team on guavas. Future work will also

include the use of BactroGel for fruit fly control. Host status testing for market access has been done on zucchini, red chilli, bittergourd and jakfruit. Green and ripe tomato, pumpkin and passionfruit will be tested in 2001. The ERP is now well documented and has been demonstrated in Nadi. Dummy runs are planned in Nausori for 2001.

**Cook Islands:** An adequate trapping network is still maintained for surveillance. Host fruit surveys are not done now, due to a reduction in staff. Laboratory colonies of *B. melanotus* and *B. xanthodes* are still maintained. There have been problems of low percent egg hatch in *B. melanotus* colonies, as low as 20-30%. Old food yeast was one suspected cause for this low egg hatch. New enzymatic yeast has been received and will hopefully rectify the problem. **[Recommendation 11]** With Pacific fruit fly, on the other hand, egg hatch is consistently high: 80-90%. HFA unit is still used for export of papayas and eggplants to New Zealand, and mango export will soon be starting. Birdseye chillis are still exported to New Zealand on a non-host status. 160 tonnes were exported between January and mid October 2000.

**Tonga:** Quarantine surveillance is still maintained. Assistance is requested from RMFFP-FFM in compiling their country status report. The fruit fly research team is still experiencing difficulties in rearing *B. kirki*. They are seeking assistance from RMFFP-FFM to rectify this problem. **[Recommendation 11]** The identity of *B. kirki* and its host range and the reasons for differences in difficulty in rearing the species are not clearly understood. The possibility of DNA studies on the species was raised. According to Prof. Dick Drew, *B. kirki* is morphologically similar throughout its range. Before considering expensive DNA studies, some background work is suggested. The incidence of the species in different hosts should be further studied in the countries where it occurs. The host varieties sampled must also be recorded. Difficulties in rearing the species in Tonga may also be due to ambient laboratory conditions. Because it mates in the middle of the day, increasing light intensity by adding artificial fluorescent light above the cages may stimulate mating. It may also help if cages are taken outside the laboratory and exposed for 1-2 hours to fresh air and daylight every day.

**Tuvalu and Tokelau:** The new species closely related to *B. passiflorae* has not yet been formally described. There is enough trapped material to accurately describe the species, but no host fruit surveying has yet been done. Assistance from RMFFP-FFM is requested in this sense. **[Recommendations 19 and 20]**

**Niue:** Quarantine surveillance is still going on and an ERP draft is in place. They request from RMFFP-FFM assistance in further ERP training. There is also a need to introduce protein bait spraying in Niue.

**American Samoa:** The fruit fly programme in American Samoa, initiated in 1996, is perceived as very important by the government, even though they are not exporting fruits. Both Quarantine and Land Grant Program are closely collaborating to run the fruit fly activities. The quarantine risk of introducing species from Hawaii is perceived by the government as a high concern. A trapping network is in place on the main island. Public awareness is needed about the purposes and benefits from trapping. Outer islands are not presently covered because of transportation constraints. It is a priority to resume trapping on the outer islands, as it is where breadfruit mealybug was first detected in American Samoa. Protein bait spraying has not yet been tested in American Samoa.

One difficult constraint is the very strict US regulations that prevent importing new products such as BactroGel. A request was made that American Samoa staff be sent to neighbouring Samoa to learn more about fruit rearing methods. [**Recommendation 15**]

**Samoa:** Quarantine surveillance is adequate, with 25 trapping sites on Upolu and 11 sites on Savaii, and large-scale host fruit surveying. Assistance is requested from RMFFP-FFM in training on the use of protein bait spraying and especially brewery waste yeast conversion. [**Recommendation 15**] They also want more information about the suppliers for fruit fly equipment. [**Recommendation 13**] Meyer lime, Tahitian lime and sapodilla have recently been tested and found not to be hosts to fruit flies in Samoa. Results have been approved by New Zealand but export can not yet start. Complete pest lists in Samoa are required for these three crops.

### SUB-REGIONAL GROUP 3-

### **FSM, Marshall Islands, Kiribati, CNMI, Guam, Palau, Nauru**

**Kiribati:** Trapping has started in June 1996 on Tarawa. Trapping was more recently extended to cover Butaritari and Banaba. Breadfruit trees severely suffer from a fungal disease on Butaritari, which symptoms have not been observed in other PICTs. Very young fruits are attacked and fall off on Butaritari, while fungal diseases attack fruits at a much later stage in other PICTs. Surveying in August 2000 has shown that fruit flies are not playing a role in spreading the disease. On Banaba, it was important to confirm that mango fly is the only species present, as expatriates, especially Chinese, used to reside there when phosphate was being exploited. Mango fly is widespread over Gilbert Islands and melon fly presence on Christmas needs to be confirmed. [**Recommendation 1**] Host fruit surveying has started in April 2000. Of 287 fruits collected and set up (lots of breadfruits), none have yielded mango flies. There is public awareness about fruit flies and their damage and agriculture staff have learnt how to recognize fruit flies and run traps. The main constraints to quarantine surveillance are limited transportation, as Kiribati is served by a single airplane and ships are irregular. An ERP is in place to cope with introductions of exotic fruit flies.

**Marshall Islands:** Limited quarantine surveillance is maintained by trapping on Majuro by quarantine staff under the supervision of the Plant Protection in Micronesia.

**Palau:** The representative from Palau could not attend the meeting. The main request is for assistance by RMFFP-FFM in the planning exercise for the eradication of Oriental fruit fly, a pre-requisite for the government to consider funding the eradication programme. [**Recommendation 14**]

**Guam and CNMI:** Quarantine surveillance is functional on Guam and being re-established in CNMI after several years of inactivity. The CNMI government has requested RMFFP-FFM in training their agents on fruit fly management. [**Recommendation 15**]

**FSM:** Quarantine surveillance is still maintained on Pohnpei through trapping and regular host fruit surveys by a technician employed by College of Micronesia's Land Grant Program. The technician keeps close contact with the Plant Protection in Micronesia project, which controls fruit fly funds.

**Nauru:** The fruit fly eradication programme has been well documented. Campaign 14 will start in December and the new papier mâché blocks will be used. Public awareness is needed to introduce the new blocks, that will put an end to the unfairly criticized practice of nailing blocks to tree, erroneously thought to be the cause for death of breadfruit trees. One urgent matter to resolve is that positions for quarantine inspection staff be officially gazetted by the government, so that quarantine services can finally become active. An ERP for the country should also be soon formulated, based on the fruit fly eradication experience. One significant indirect benefit from RMFFP-FFM will be the establishment of a nursery at Nauru Secondary School to grow and disseminate seedlings of fruit trees.

#### **SUB-REGIONAL GROUP 4-**

#### **New Caledonia, French Polynesia, Wallis and Futuna**

**New Caledonia:** The Territory has funded and run its own fruit fly program since 1991. Surveillance and emergency response are the responsibility of quarantine while research is handled by CIRAD at Pocquereux Research Station. About 50 trapping sites are still maintained for surveillance. Flies are still counted, but starting in 2001, only the presence or absence of each species in samples will be recorded. **[Recommendation 10]** Small-scale sampling of high-risk commodities, 100-150 samples per year, is still done. Although there is no ERP specifically against fruit flies, the Territory has gained experience by conducting an eradication programme against banana bunchy top disease. At Pocquereux, the two main research components presently are the determination of cold tolerance by the three species, to develop cold treatment for citrus fruits, and the tolerance to heat treatment by fruits. One main focus for future research will be to investigate population thresholds in the field to determine when control is required.

An HFA unit for fruit treatment was purchased by the Territory government two years ago and is run by the Fruit Growers Association, but exports are still modest, due to still limited interest by farmers. Mango export is expected to commence in early 2001. A pathway for litchi export on non-host basis will be audited in November 2000. There is long term interest for export to Japan by farmers, but access will be very hard since Queensland fruit fly is on Japan's black list of unwanted fruit fly species. Non-host status results for Tahitian lime have been submitted to AQIS three years ago, and there is still no response. **[Recommendation 5]**

**Wallis and Futuna:** Fruit fly activities have been very limited in 2000. They are requesting for support and encouragement from RMFFP-FFM to maintain quarantine surveillance **[Recommendation 17]**

**French Polynesia:** Fruit fly research started in 1990 with trapping and host fruit surveying for *B. kirki* and *B. tryoni*. Oriental fruit fly was discovered on Tahiti in July 1996, and its eradication is still a main focus activity for the government (discussed under section 4b). The ban of methyl bromide is a serious concern, as commodities destined to outer islands are fumigated in Tahiti. There are unfortunately very few alternatives to methyl bromide fumigation. Cold treatment is a possibility. Radiation treatment and newer methods have been developed in Hawaii, but are unaffordable to

PICTs. It was pointed out, though, that methyl bromide treatment can, for the moment, still continue to be used for quarantine purposes as long as the countries have signed the Montréal protocol. **[Recommendation 18]**

#### Agenda item 7: Discussions focussing on Tripartite Terminal Review

As a requirement from UNDP, views by the RMFFP-FFM on appropriateness of RMFFP design and concept to the government priorities, relevance of the implementation and execution modalities and lessons learnt have been documented in details in the terminal report and presented by Luc Leblanc. Elaborate coverage of these issues constitute section "04-assessment" of the terminal report and in the Tripartite Report compiled by the UNDP representative.

#### Agenda item 8: Recommendations of the Third Steering Committee Meeting

Recommendations from the previous Steering Committee meeting (February 2000) were reviewed. The status of their implementation constitutes section "05-Steering" of the terminal report and is reproduced in annex to this report. Most recommendations have been at least partly implemented, and recommendations 7, 10 and 11 have been carried over as recommendations from the fourth meeting.

#### Agenda item 9: Future Developments

Dr. Lloyd presented the new "Pest Management in the Pacific" umbrella project (1999-2003), which will ensure the continuation of fruit fly activities in the Pacific under a Project fully embedded in SPC-PPS. Fruit fly activities will fall under "Component 2: Fruit Fly Management" of the PMP. The six other components of the PMP are Project Management Services, Taro Beetle Management, Methyl Bromide Alternatives, Plant Protection in Micronesia, Cook Islands-Niue-Tokelau, and Information and Extension. The concept of an overall umbrella project was the requirement of donor organizations to rationalize and consolidate donor contributions in the Pacific. The overall structure of the PMP and details on FFM are included in section "09-PMP-FFM" of the terminal report.

#### Agenda item 10: Presentation by Reviewers

Dr. Roger Vargas thanked the RMFFP-FFM for having invited him as a reviewer. He has visited the national fruit fly programmes in Fiji Islands and Vanuatu. He has been much impressed with the achievements and the close cooperation between countries. The eradication programmes initiated under the RMFFP-FFM umbrella are major achievements. PICTs should be encouraged to fully take over the responsibility of maintaining quarantine surveillance. A wealth of valuable data has been generated, and these should be combined and published. He was impressed with the approaches used for fruit fly control in the Pacific and recommended that these be integrated into an IPM programme. As Hawaii will soon initiate an area-wide control programme, there will potentially be opportunities for Pacific Islanders to visit Hawaii. USDA-PBARC will open a new research Center in Hilo, to better address fruit fly problems in Hawaii, expand activities on other pest insects, and provide support to manage fruit flies in the other

American Territories, such as Guam and CNMI. A stronger linkage between the fruit fly programmes in PICTs and USDA-PBARC is much desirable.

The output delivery by RMFFP-FFM has been very impressive considering the relatively modest budget on USD 1.7 million. He quoted the Guatemala, where the eradication programme against one species has cost USD 30 million.

Dr. Gordon Hooper has visited the national programme in PNG and was impressed with the level of competence and hard work achieved by the Junior Scientific Officers. His recommendations are mostly to expand and pursue the present fruit fly activities. He re-emphasized the importance of formally publishing the valuable data accumulated under the Project over the years.

In the ensuing discussion, the need to carry out a Pest Risk Analysis to assess the risk of introducing exotic fruit flies into a PICT was emphasized. [**Recommendation 25**]

### **Agenda items 11-12: Recommendations of the meeting and endorsement of the 2001 workplan**

The fourth Steering Committee meeting recommended that:

- 1) RMFFP/FFM and FAO to provide assistance to carry out host fruit surveying and trapping in Christmas Island and other Line Islands, and Phoenix Islands Group in Kiribati to confirm the absence of exotic fruit flies and to determine fruit fly fauna present.
- 2) PICTs to continue to carry out refresher training on fruit fly management for Extension, Quarantine and Plant Protection staff, due to the turn-over of staff. RMFFP/FFM to provide technical backstopping for these training, whenever requested.
- 3) Nauru eradication program should continue until end of 2000. A review to decide on continuing or stopping the eradication shall be conducted in early 2001 (January).
- 4) RMFFP/FFM to facilitate the use of Fipronil and other insecticides alternative to Malathion in collaboration with Aventis CropScience (Australia) and PBARC and to obtain information on the costs of BactroGel and BactroMAT.

- 5) RMFFP/FFM to facilitate through SPC PPPO or otherwise, the negotiation for use of Non-Host Status and Forced Hot Air Treatments for exports to Australia, USA and Japan.
- 6) RMFFP/FFM to revive negotiations on the access to R-Base Database on fruit flies in the PICTs, which is currently held by QDPI for PICTs. There is a need to match the data in R-Base Database and those existing in the PICTs. A letter of agreement with Griffith University should be made for the release of data on fruit flies in Solomon Islands, Vanuatu and Papua New Guinea kept by the University.
- 7) PICTs be encouraged to deposit National reports on Agriculture, plant protection and fruit flies in the SPC Library with authorization on accessibility for all PICTs.
- 8) RMFFP/FFM to assist the re-establishment of the Quarantine Surveillance systems in Western Province in Solomon Islands to detect Asian papaya fruit fly and other exotic fruit flies.
- 9) PNG, with technical assistance from RMFFP/FFM, rationalize and review trapping system, justifying the proposed sites based on quarantine risk.
- 10) PICTs to adopt the presence/absence method for recording trapping data, instead of counting all flies from each sample, in their surveillance systems and Vanuatu to provide a model form used for this activity.
- 11) RMFFP/FFM to provide assistance for rearing of fruit fly species that are difficult to rear in PNG (melon fly), Cook Is (*B. melanotus*), Tonga (*B. kirki*), and other countries where requested.
- 12) To improve regional communication for Steering Committee Meeting, there should be meetings to discuss fruit fly issues with participants whenever they attend other sub-regional trainings or meetings. In addition, the SPC-RMFFP/FFM to co-ordinate the collection of reports from PICTs where there are

communication difficulties and distribute to the sub-regional representatives prior to Steering Committee Meetings.

- 13) RMFFP/FFM to provide a list of contacts of people working in fruit fly programs in PICTs and also the list of suppliers of fruit fly related equipment and supplies. These lists should also be sent to the Heads of Agriculture in PICTs as well as fruit fly workers.
- 14) RMFFP/FFM to assist in the planning and implementation of the Palau Eradication Program.
- 15) Sub-regional training on fruit fly management to be held for Micronesian countries and Territories, particularly Commonwealth of Northern Mariana Islands (CNMI) and attachment training for American Samoa and Samoa on fruit fly management and protein bait spraying techniques, respectively.
- 16) RMFFP/FFM to continue to provide assistance in technical backstopping for the proposed activities for 2001 in PICTs, as reflected in the work plan for 2001.
- 17) RMFFP/FFM to actively encourage and assist Wallis and Futuna to maintain their Quarantine Surveillance programme.
- 18) RMFFP/FFM to provide advise and information on cold treatments and recommendations for alternative post-harvest treatments for in-country trade in French Polynesia.
- 19) RMFFP/FFM to assist Tuvalu and Tokelau carry out collection of more specimens through host surveying to confirm the taxonomic identity of species in the *B. passiflorae* complex.
- 20) RMFFP/FFM liaises with Prof. Drew of Griffith University, Brisbane, to encourage the completion and prompt publication of the taxonomic descriptions of the

species of fruit flies in the Pacific region in the *passiflorae*, *xanthodes* and *musae* complexes.

- 21) PICT Governments and Administrations assume the financial responsibility for national quarantine surveillance programmes as soon as possible, with technical support from the RMFFP/FFM and other major partners.
- 22) SPC, in consultation with national Departments of Agriculture, actively promotes the raising of the priority of Agricultural Disasters, created by the incursion of exotic fruit flies and other pests, to the same level of importance as that of Natural Disasters and that Agricultural Disasters be incorporated into the national Natural Disaster programmes to ensure adequate funding is available, when required.
- 23) RMFFP/FFM to promote the adoption of an integrated approach to fruit fly control including crop sanitation, bagging, protein bait spraying, conservation of parasitoids and area wide suppression in PICTs.
- 24) SPC to facilitate the introduction of plant protection school manual to school curriculum in other PICTs.
- 25) SPC to carry out a pest risk analysis to quantify the risk of entry of fruit flies into selected PICTs and to produce a video on the risk and impact of entry of exotic fruit flies to sensitize the government and the public.
- 26) Having considered the draft Work plan for 2001 and recommendations of this meeting on 21-23 November, 2000, the RMFFP Steering Committee endorses the work plan and recommends that the balance of funds for RMFFP 2000 be carried over into 2001, and that the provision made by UNDP of USD100,000 be used to support the projected work plan for FFM 2001.

### **Agenda items 13: Closing remarks**

#### **UNDP**

UNDP has been involved in the Fruit Fly project for ten years and has contributed a total of USD 1.5 Million. There are key features of the project that have helped ensuring its success, and these should be kept in mind in the future. The management and implementation mode of the RMFFP have been very good and should be kept in mind once fruit fly activities are fully integrated into the PMP Project. UNDP wants to congratulate SPC for its capacity and commitment to take over the fruit fly activities. It is confident that sustainability will be increased if there is a feeling of national ownership. The USD 100,000 for the year 2001, subject to cost sharing with AusAID, will be UNDP's final contribution, conditional to an agreement with UNDP Headquarters. UNDP is very proud to have been associated to the fruit fly project all these years.

### **AusAID**

Mr. Kelly thanked the RMFFP-FFM team (Luc, Ema and Maria) for their good work in organizing the meeting. Although it was his first trip to the Pacific, he will be looking after PMP-FFM in the next 2-4 years. Australia welcomes the opportunity to continue supporting fruit fly work in the Pacific. The Ministry has recently approved AUD 3 million to support PMP over the next 4 years. AusAID's technical advisory group will be coming to the field for annual monitoring and participate to Steering Committee meetings. All in all, it is a very positive worthwhile project to support.

### **FAO**

Although FAO's assistance has declined, it is pleased with the continuation of fruit fly work by SPC after Allan Allwood's departure. FAO will continue assisting the PMP-FFM on request, such as surveying fruit flies on Christmas Island in Kiribati.

### **SPC**

Dr. Lloyd has attended three of the four Steering committee meetings and has been impressed by the contributions by countries and the usefulness of collective views. This should be preserved under PMP. The fruit fly program has always been part of PPS activities, and other PPS components, such as the EU-PPPS and non-ACP country projects, have closely supported fruit fly activities. Regarding publications, it has been a tendency in the Pacific to keep minimal permanent records of results from very useful work. Results from the fruit fly project should be published. The possible growing support by USDA-PBARC should be fostered, especially in the US territories.

### **Annex 1: STATUS OF IMPLEMENTATION OF RECOMMENDATIONS FROM THIRD STEERING COMMITTEE MEETING 9-10 FEBRUARY 2000**

The Steering Committee recommended that:

1. RMFFP investigate the feasibility and costs of running separate meetings for the four sub-regional groups that make up the Steering Committee, combined with less frequent Steering Committee Meetings, in an effort to ensure that there is improved consultation on the fruit fly management needs of each PICT. The sub-regional meetings may have to piggyback on other sub-regional or regional technical meetings. **IMPLEMENTED.** It has been decided that Steering Committee Meetings will be run back-to-back with SPC meetings.
2. RMFFP implements the Work Plan for 2000, as submitted, with cognizance of the changes recommended below. **IMPLEMENTED.**
3. The Pest Advisory Leaflet on Fruit Flies in Vanuatu is translated into French. **IMPLEMENTED.**
4. The Work Plan for FSM is revised to reduce the activities to quarantine surveillance in all States, assessment of parasitoid establishment, and maintenance of two laboratory cages of mango fly for the purpose of rearing parasitoids. **IMPLEMENTED.**
5. The Work Plan for Solomon Islands be modified to focus on re-establishing quarantine surveillance in the Western Province islands, particularly in those islands adjacent to Bougainville, PNG, maintaining laboratory colonies at the Malaria Research Centre, undertaking relevant non-host studies, and field control using protein bait sprays and carrying out heat tolerance studies on the immature stages of *Dacus solomonensis*. **IMPLEMENTED.** Although political crisis has reduced activities to minimum level.
6. Solomon Island Government submits to SPC a proposal for quarantine surveillance for exotic fruit flies, with particular reference to the areas adjacent to the Solomon Islands-PNG border by 31 March 2000. **PARTLY IMPLEMENTED.**
7. RMFFP liaises with Prof. Drew of Griffith University, Brisbane, to encourage the completion and prompt publication of the taxonomic descriptions of the species of fruit flies in the Pacific region (particularly in Fiji, Samoa, Tuvalu, Tokelau, Vanuatu and Solomon Islands), whose identities are currently designated as '*Bactrocera* new species near ...' (e.g., *B. new species near paraxanthodes*). **MOSTLY IMPLEMENTED.** Manuscripts for Vanuatu & Solomon Islands submitted to journals. *B. passiflorae* complex will be done once host records are available.
8. Data on the distribution of banana fruit fly (*B. musae*) in Vanuatu, Solomon Islands and the island provinces of PNG be verified and published as soon as possible. **IMPLEMENTED.** Confirmed absent from Solomon Islands and Vanuatu by supporting ACIAR data. Comprehensive survey in East New Britain done.

9. Regular host surveys of ripe banana and plantain fruits be carried out in Vanuatu, Solomon Islands and the island provinces of PNG to substantiate the absence of banana fruit fly from these areas and as part of quarantine surveillance. **PARTLY IMPLEMENTED.**
10. PICT Governments and Administrations assume the financial responsibility for national quarantine surveillance programmes as of 1 January 2001, with technical support from the RMFFP and other major partners. **PARTLY IMPLEMENTED**, in some PICTs.
11. SPC, in consultation with national Departments of Agriculture, actively promote the raising of the priority of Agricultural Disasters, created by the incursion of exotic fruit flies and other pests, to the same level of importance as that of Natural Disasters and that Agricultural Disasters be incorporated into the national Natural Disaster programmes to ensure adequate funding is available, when required. **PARTLY IMPLEMENTED.** SPC Plant Protection Service and Animal Health in process of getting a general ERP for all pests and animal diseases in place. Planning underway to have regional workshops in 2001 for Polynesian countries, French Territories, Micronesian and Melanesian countries.
12. RMFFP continues to actively provide assistance to PICTs in developing their national and regional public awareness programmes related to fruit flies, their management and their importance to fresh fruit and vegetable production and quarantine. **IMPLEMENTED AND ONGOING.**
13. RMFFP provides technical advice and support for the current fruit fly eradication programmes in French Polynesia and Nauru and for the possible future programmes in Palau, Guam and Commonwealth of the Northern Mariana Islands (CNMI). The assistance is to include economic feasibility studies for eradication of oriental fruit fly in Palau and melon fly in Guam and CNMI. **IMPLEMENTED.**
14. As a flow-on from the successful Nauru Fruit Fly Eradication Programme, the establishment of a small plant nursery to supply improved varieties of tropical fruit trees to the people of Nauru be strongly supported and that UNDP be approached for funding support. **IMPLEMENTED:** Tree nursery will be established by Nauru Secondary School students, with involvement from Nelson Tamakin.
15. SPC support the setting up on an Agricultural Quarantine Service in Nauru, including the training of three Quarantine Officers funded by the RMFFP. **IMPLEMENTED.** Awaiting confirmation by Secretary of Department of Industry and Economic Development. Funding support from Plant Protection in Micronesia and RMFFP.
16. RMFFP prepares a cost estimate for emergency responses and eradication programmes on a per square kilometre basis and provides the costs of, and contacts for, quarantine surveillance supplies to the PICTs by 31 March 2000. **PARTLY IMPLEMENTED.** Overall cost estimates and budgets provided for Palau, French Polynesia, Nauru and Fiji Islands.

17. RMFFP contacts Rhône Poulenc Rural (Australia) [now Aventis CropScience] for information on the commercial availability and cost of Fipronil and the Fipronil/Xanthane Gum formulations and actively encourage the registration of these formulations for male annihilation and protein bait sprays for fruit fly management, respectively. **ONGOING**. The Fipronil gel formulation will soon be registered for commercial use in Australia.
18. RMFFP be responsible for regular technical editing and updating of information to be entered into the Pacific Fruit Fly WebSite, with inputs into the country pages being made by the PICTs. **ONGOING**.
19. The WebSite be modified to include pages on Success Stories and News Updates and a disclaimer to protect SPC and other contributors. **PARTLY IMPLEMENTED**.
20. PICTs investigate markets for fresh fruit and vegetables in a range of countries, as well as New Zealand, and that these investigations be done before establishing expensive facilities for forced hot air quarantine treatments. **PARTLY IMPLEMENTED**.
21. PICTs share the results of research into heat tolerances of immature stages of fruit flies and confirmatory quarantine heat treatments and the development of quarantine pathways or work plans for export of fresh commodities, to enhance the prospects for harmonization of treatment procedures and parameters, wherever possible. **IMPLEMENTED**.
22. In preparation for the possible introduction of forced hot air quarantine treatment technology into French Polynesia, RMFFP facilitates training of staff from French Polynesia in this technology in New Caledonia, subject to the agreement by the New Caledonia Chamber of Agriculture, or in other countries that have this technology, e.g., Cook Islands, Fiji, Tonga. **NOT IMPLEMENTED**, but may be carried out upon request by PICTs.
23. The Secretariat of the Pacific Plant Protection Organization (PPPO) facilitates access to Pacific Rim and other relevant markets for PICT fresh fruit and vegetables based on generic heat treatments and non-host status with authorities in the importing countries concerned. If appropriate, market access negotiations should involve other agencies such as the Forum Secretariat and its Trade Commissions and be addressed by raising the problems in gaining market access in the RPPO, ICPM and WTO forums. **PARTLY IMPLEMENTED**. Meeting with importing countries scheduled for March 2001, at PPPO meeting.
24. Samoa organizes training on fruit fly management for new staff from Samoa and American Samoa and from Niue and Cook Islands with support from the RMFFP, before 31 May 2000. The SPC Plant Protection Service will provide funding for participation from Cook Islands and Niue. **IMPLEMENTED**.
25. PICTs request staff, who have received overseas training on fruit fly management, to pass the newly gained knowledge onto other national staff, in order to improve

national technical capacity, to avoid disruption to programmes caused by staff turnover and to enhance the prospects of sustainability. **ONGOING.**

## **Annex 2: AGENDA OF MEETING**

### **Tuesday, 21 November, 2000**

1. Welcome and opening (Chairman)
2. Adoption of Agenda
3. Introductory Remarks
  - Purpose, scope and format of review (Dr. G. Hooper)
  - History, background and objectives (Luc Leblanc)

### ***Morning Tea***

4. Presentation of terminal review report
  - (a) Increased Production – Immediate Objectives 1,3, & 4 (Luc Leblanc)
    - Protein bait spraying
    - Fruit bagging
    - Brewery waste yeast modification
    - Socioeconomic study
  - (b) Protection of Horticulture – Immediate Objectives 1, 2 & 4 (Ema T. Vueti)
    - Quarantine surveillance
    - Emergency Response Plans
    - Eradication Programs

### ***Lunch***

- (c) Enhanced Trade – Immediate Objectives 1 – 4 (Ema T. Vueti)
  - Remove trade constraints
  - Forced hot air technology
  - Non-host status
  - Export markets
- (d) Improved Technical Capacities – Immediate Objective 5 (Ema T. Vueti)
  - Training
  - Laboratory establishment and refurbishment
- (e) Information – Immediate Objectives 2 & 3 (Luc Leblanc)
  - Status reports
  - Website
  - Pest Advisory Leaflets
  - Other publications

### **Wednesday November 22, 2000**

5. Management Issues – Immediate Objective 6 (Luc/ Ema)

- Collaboration with Governments, NGOs, private sector, research institutes (ACIAR, PBARC)
- Financial statement
- Steering Committee Meetings
- Solomon Islands programme
- Junior Scientific Officer (JSO) concept (presentation by Allan Allwood)

***Morning Tea***

6. Country Inputs/ Reports (Chairman)

***Lunch***

7. Discussions focussing on Tripartite Terminal Review Report on :

- Appropriateness of RMFFP design and concept to the government priorities
- Relevance of the implementation and execution modalities
- Lessons learnt.

8. Recommendations of the Third Steering Committee Meeting (Chairman)

**Thursday November 23, 2000**

9. Future Developments (Mick Lloyd)

- Arrangements for after 2000: PMP-FFM
- Future activities

10. Presentation by Reviewers

11. Recommendations of the meeting (Chairman)

***Morning Tea***

12. Endorsement of workplan 2001 (Luc Leblanc)

***Lunch***

13. Closing Remarks:

- UNDP representative
- AusAID representative
- NZODA representative
- SPC representative
- FAO representative

14. Summation by the chairperson

### **Annex 3: PARTICIPANTS**

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