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Collection, Access and Use of Agricultural Statistics in the Pacific Islands: Report of a Study

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Contents

Executive summary

Writing in August 1994, the Director of Agriculture and Forestry in Tonga, Haniteli 'O. Fa'anunu commented that whereas in the past, generation of statistical data was thought too costly in terms of the resources available:

> Today, we [in the Ministry] believe that without reliable data, no one, including ourselves sometimes, can be fully convinced of the true state of affairs in the agriculture and forestry sector. Indeed, I firmly believe that the quality of our statistical information and database reflects the reputation and credibility of the Ministry. (MAF 1994a, p. i)

This illustrates the principal concern with agricultural statistics: effective decision-making is predicated on good access to and use of credible, timely, up-to-date and appropriate information; without which credible decisions cannot be made.

Informal discussions among SPC staff, many of whom have considerable experience of working in the Pacific Islands, suggested there were a number of problems to do with accessing and using agricultural statistical information in the region. The problems concerned principally capture, content, access and use. In order to ascertain whether there was indeed a problem, its extent and what could be done about it, SPC received funding from the Australian Centre for International Agricultural Research (ACIAR) to carry out a scoping study. Six countries were visited during the study, and a questionnaire distributed and semi-structured interviews held with data users and data collectors. The study commenced in late October 2001, the country visits concluded 14 December and, following discussions with the Food and Agriculture Organization (FAO) and ACIAR, a draft report was presented to SPC in March 2002.

Findings

Principal findings from the survey conducted between October and December 2001 are that:

- Collection of agricultural statistical data is undertaken in the main by poorly-trained extension staff, whose ownership of the data is compromised by poor distribution of the findings, i.e. they receive little in return;
- Data from the subsistence and semi-subsistence sector is limited;
- Data collection and compilation is not always timely, and leads to doubts about the credibility of data, this despite 86% of those surveyed saying they found the data credible;
- Not all data are collected; some data that are collected are not needed as much as other that are not collected;
- Some improvement to the presentation of data could be made, the principal one being greater interpretation of data (narrative summaries);
- Limited distribution of statistical publications, especially within departments of agriculture, affected their availability and consequently their accessibility;
- Almost half of those surveyed used statistical resources daily or weekly;
- A majority, 68%, used in-house publications and databases often, but only 66% were familiar with and only 54% used their own agriculture department's statistical publications;
- Whereas 82% used printed publications, 43% preferred this format, with 49% preferring a computer database;
- A large majority of users – 88% – felt they were successful in their search for statistical information;

- Agricultural statistical units where they exist in the countries visited, are generally not well resourced (equipment, budgets) and staffed (and only two agricultural statisticians were identified, one only in an agriculture department);
- Despite a number of (recent) FAO-supported agricultural censuses and surveys, there is little residual technical capacity in the region, and consequently support and guidance in managing agricultural statistics is lacking; this is a particular problem for small countries;
- The importance of the role of agricultural statistics in effective decision-making is not reflected in the organisation and management of agricultural statistics within institutions.

Recommendations

Recommendation 1

An underlying theme of the findings is that agricultural statistics and their management is not accorded the importance considered appropriate within the Pacific region. In most institutions, effective management of statistics is not a priority (as evidenced by resource allocations); but it is needed. Therefore, to continue the discussion initiated under this study and to suggest a way forward, it is **recommended** that:

The preliminary list of Core Basic Agricultural Statistical Data[1] be considered at national and regional fora.

The purpose of this recommendation is to assess the validity and appropriateness of the data sets proposed, engender further discussion on the issue and inform future decisions on how SPC should respond to this. The expected outcome is a 'regional standard' for core basic agricultural data.

Recommendation 2

The next logical step is for institutions in the region to consider the extent to which they meet the standard. Therefore, it is **recommended** that:

Agriculture departments and other agricultural institutions in the region be encouraged to take stock of their information needs, audit their available statistical resources and review the way they are presented as a first step towards better management of agricultural statistics.

This recommendation addresses the need for improved co-ordination as well as issues to do with identifying information needs, data presentation and distribution, and data use. The expected outcome of this is a vision of an 'improved situation', one that addresses the extent to which institutions are in a position to meet these agreed minimum standards and what their immediate needs are.

Recommendation 3

The longer-term issue is the lack of technical support and training in the management and use of agricultural statistics in the region, as identified in the findings, and the need to promote the importance of agricultural statistics for effective decision-making. In other words, how and in what way can SPC help provide a solution. It is **recommended** that:

An agricultural statistical service within SPC be established, with core funding, to provide technical assistance and support to agricultural institutions within the region.

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[1] Presented as Annex 10.

Currently, SPC has no capacity to assist institutions in the region with their agricultural statistical needs. By establishing a core-funded, agricultural statistical service, it is accepted that this type of service will be needed in the long-term, and that some member countries, particularly small island states, will never acquire the level of technical expertise nor have the resources available to sustain their own statistical units. This recommendation addresses the need for training and capacity building.

An agricultural statistical service:
- must be offered within the context of long-term provision of information services and support for agricultural development *per se*, not as a time-based project;
- over and above the operational budget, must have access to appropriate development funds on a case-by-case basis;
- must be able to participate a various levels within a more flexible operational structure so that it can best contribute to the overall success of assistance provided by SPC to its member countries; and
- must be proactive, seeking out problems and opportunities wherever they may be found.

Setting up an agricultural statistical service – essentially an officer and an office – would be possible within the existing operational framework of the SPC Agriculture Programme, but the extent of its usefulness is debatable if the constraints identified in the report hold true. Thus, the most appropriate operational structure for the SPC Agriculture Programme is one that:
- is not so heavily dependent on project funding so that its very structure resembles the extent and focus of the funds sourced;
- that encourages greater operational flexibility so that new groups or teams can coalesce on a needs-basis, with group or team leaders chosen by the members; and
- one that works more closely with institutions (and not just departments of agriculture) in the member countries with regular contact maintained by 'country liaison officers'.

The Terms of Reference for the position of Agricultural Statistician are included as Annex 10. As requested, this also includes a definition of 'agricultural statistics'.

Acronyms and abbreviations

ACIAR	Australian Centre for International Agricultural Research
ADB	Asian Development Bank
ALO	Agricultural Liaison Officer (University of the South Pacific)
ANU	Australian National University
APAARI	Asia–Pacific Association of Agricultural Research Institutes
APARIS	Asia–Pacific Agricultural Research Information System (APAARI)
APU	Agricultural Planning Unit (Cook Islands)
ASPAC	Asia and Pacific Commission on Agricultural Statistics (FAO)
CCEA	PNG Cocoa and Coconut Extension Agency
CCI	Chamber of Commerce and Industry of Vanuatu
CCRI	PNG Cocoa and Coconut Research Institute
CTA	Chief Technical Adviser (UN system)
CTA	Technical Centre for Agricultural and Rural Cooperation
DAL	Department of Agriculture and Livestock (Papua New Guinea)
DARD	Department of Agriculture and Rural Development (Vanuatu)
FAO	Food and Agriculture Organization of the United Nations
FARS	Food, Agriculture and Rural Statistics (PARIS21)
FEMM	Forum Economic Ministers Meetings
FIBS	Fiji Islands Bureau of Statistics
FICs	Forum Island Countries
FIVIMS	Food Insecurity and Vulnerability Information and Mapping System (FAO)
GDDS	General Data Dissemination System (IMF)
GDP	Gross Domestic Product
HS	Harmonised System (designed for custom tariff purposes)
ICT	Information and Communication Technology
IMF	International Monetary Fund
ISIC	International Standard Industrial Classification of All Economic Activities
MAF	Ministry of Agriculture and Forestry (Tonga)
MAFF	Ministry of Agriculture, Fisheries and Forests (Fiji)
MAFFA	Ministry of Agriculture, Fisheries, Forests and ALTA (Fiji)
MASLAR	Ministry of Agriculture, Sugar and Land Resettlement (Fiji)
MIS	Management Information System
MNSDS	Minimum National Social Dataset (UN)
MPI	Ministry of Primary Industries (Fiji)
MOA	Ministry of Agriculture (Cook Islands)
NAQIA	National Agricultural Quarantine Inspection Agency
NARI	National Agricultural Research Institute
NCDS	National Centre for Development Studies (ANU)
OECD	Organisation for Economic Cooperation and Development
PARIS21	Partnership in Statistics for Development in the 21st Century
PICTs	Pacific Island Countries and Territories
PFTAC	Pacific Financial Technical Assistance Centre
PITIC	Pacific Islands Trade and Investment Commission (Forum Secretariat)
PNG	Papua New Guinea
RBF	Reserve Bank of Fiji
RBV	Reserve Bank of Vanuatu

REDI	Rural Economic Development Initiative (Vanuatu)
SCAINIP	Standing Committee on Agricultural Information Networking in the Pacific
SITC	Standard International Trade Classification
SPC	Secretariat of the Pacific Community
SPESS	South Pacific Economies: A Statistical Summary
SPFS	South Pacific Forum Secretariat
SPYN	South Pacific Yam Network
TCP	Technical Cooperation Programme (FAO)
TDB	Tonga Development Bank
TTFARS	Task Team on Food, Agriculture and Rural Statistics (PARIS21)
TORs	Terms of reference
UN	United Nations
UNDP	United Nations Development Programme
USA	United States of America
VCMB	Vanuatu Commodities Marketing Board
VQIS	Vanuatu Quarantine and Inspection Service
WAICENT	World Agricultural Information Centre (FAO)

1. Introduction

1.1 Background

Informal discussions among SPC staff, many of whom have considerable experience of working in the Pacific Islands, suggested that there were problems with accessing and using agricultural statistical information in the region. The problems fell into four main areas: capture, content, access and use.

Capture
- There is uneven capture of relevant data, i.e. data from some countries less likely to be available than from other countries (e.g. FAO member countries).
- Not all available data are captured (e.g. data in consultant and project reports, or derived from surveys).

Content
- Agricultural statistics are combined with statistics from allied sectors (e.g. fisheries and forestry mixed up with agriculture in data sent to SPC for inclusion in SPESS).
- Statistics are not current.
- Data are inaccurate (e.g. up to 30% variation in livestock production figures).
- Informal activities (the subsistence and semi-subsistence sector) are under-represented.
- There is little information on processing and manufacturing (value adding).

Access
- Identifying available statistics is not easy.
- Access to statistics is distributed and often opaque.
- Navigating the available statistics is difficult.
- There is no index by topic, e.g. food security status, poverty.

Use
- There is a lack of skills to use the available statistical information effectively.

The reason for the concern is that access to credible, up-to-date statistical information for the agricultural sector is essential. It supports the development of credible agricultural research, is the basis of effective decision-making at all levels, and can be used to measure impact of agricultural research and development in the region.

The Introduction to the Tongan publication, *1985–1993 Compendium of agriculture and forestry statistics*, noted that a World Bank mission in 1990 held the belief that 'official figures seriously understate the contribution of agriculture in the economy and exports of Tonga' (MAF 1994b). If this was true of Tonga, what might then be the situation in other countries of the region where data collection was not as extensive?

The extent to which the problems identified are a valid constraint to agricultural research and development in the region is not known. Without an understanding of this, solutions cannot be developed. SPC sought to address this knowledge gap by conducting a study to better understand the problem and identify opportunities for improvement. Since this could not be done by SPC in isolation from other institutions and networks within the region and outside, the study addressed this at the same time.

1.2 Study outline

To address SPC's concerns, and with them those of the region, an independent consultant, Peter Walton, was asked by the then SPC Resource Economist (and head of the Information and Resource Economics Programme), Reg Sanday, to help prepare a study proposal. This was submitted to the Australian Centre for International Agricultural Research (ACIAR) in May 2001, and approved shortly thereafter.

The study had working title: Access and Use of Agricultural Statistics in the Pacific.

The goal of the research was: To improve the quality and effectiveness of decision making in agricultural research and development in the Pacific Islands.

The research objective was: To improve the recording, dissemination, access and use of current and accurate Pacific Islands agricultural statistics.

The expected outcomes were:
- the extent and quality of Pacific Islands' agricultural statistical data and distribution methods determined;
- stakeholders and their agricultural statistical information needs identified; and
- opportunities to improve access to and use of agricultural statistical information in the Pacific Islands identified.

Following acceptance by ACIAR of the study proposal, Mr Walton was commissioned to carry out the work on behalf of SPC. The study commenced at the end of October 2001 with the country visits and lasted eight weeks (not consecutive); the draft report was presented to SPC on 18 March 2002. Mr Walton's terms of reference are included as Annex 1.

2. Methodology

2.1 Initial discovery

One week was allocated to prepare for the country visits. This included preparing a questionnaire, interview forms, developing a set of criteria to measure data quality, contacting countries and gathering documents.

Much time was spent trying to identify a set of criteria by which data quality could be measured. Searches of the Internet revealed that this was also a concern of statisticians around the world and had resulted in some progress, but none that really helped the Consultant at this stage. Consequently, the development of a set of criteria was put to one side but it should be noted that valuable input was received from the SPC Statistician.

The last regional study on agricultural statistics was undertaken as part of the FAO project, Development of Agricultural Statistics in Asia and Pacific (UNDP/FAO/RAS/86/035) which included Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia, Niue, Palau, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu (FAO 1992). Two recent regional FAO projects, both funded by the Government of Japan, appear to include the Pacific but do not in fact do so.

2.2 Selection of countries to be visited

In selecting the countries to visit, an attempt was made to represent the region equitably, i.e. that no sub-region is underrepresented in regional surveys, and that larger, high-island nations as well as smaller, low-lying atoll nations be represented. An attempt was also made to include a country where the collection of data was thought to be less well-developed and/or skewed (in a statistical sense), and one where the collection was thought to be well-developed and comprehensive.

Initial discussions with SPC resulted in a list of five countries: Fiji Islands, Kiribati, Papua New Guinea, Tonga and Vanuatu. Owing to the Consultant's own circumstances, Cook Islands was added to the list. Thus there are three Melanesian countries, two Polynesian and one Micronesian; two large countries, two medium-sized countries and two small countries. Indications were that countries with less than good and better than good collection of agricultural statistics were included. It is also true that country visits had to be fitted in to a very tight schedule of four weeks (excluding Cook Islands), and in part their selection was determined by airline schedules[1].

Country visits started on 30 October and concluded 14 December 2001.

2.3 Questionnaire survey

A questionnaire was designed to capture information on the use of agricultural statistics in the region (particularly for those countries that could not be visited). Owing to time constraints, the questionnaire could not be pre-tested, but there appeared to be no problems in having them completed successfully. A copy of the questionnaire is included as Annex 3 and the coding scheme that was used is found in Annex 4.

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[1] One airline was grounded at the start of the country visits and as a consequence flights to Vanuatu reduced to one a week; another airline's recent behaviour was unreliable which caused concern over flights to Kiribati.

2.3.1 Distribution

The questionnaire was given to country representatives at the Research Priority Setting Workshop in Nadi but it was observed that in all cases except Fiji, Cook Islands and Tuvalu, only those questionnaires that were distributed in country by the Consultant were completed. The questionnaire was not translated into French, as is the usual SPC practice; mostly this was because the translators were fully occupied but also because it was thought most that most of staff being targeted by the questionnaire would understand English (and they were free to respond to the open questions in French).

2.3.2 Extent of returns

By the end of the data collection period, 31 December 2001, a total of 61 questionnaires had been returned; a further seven questionnaires of which six were valid was received in mid-March 2002[2]. A summary of questionnaires returned is given in Table 1. All data were entered directly into SPSS v. 10 for analysis. The results of this are presented in the relevant parts of Section 3.

Responses to the questionnaire survey were received only from those countries visited – Cook Islands, Fiji Islands, Kiribati, Papua New Guinea, Tonga and Vanuatu – except for three from Tuvalu, and one from Solomon Islands completed while the respondent was in Papua New Guinea.

Table 1: Questionnaire returns by country

Country	n	%
Cook Islands	11	16.4
Fiji Islands	32	47.8
Kiribati	4	6.0
Papua New Guinea	3	4.5
Solomon Islands	1	1.5
Tonga	6	9.0
Tuvalu	3	4.5
Vanuatu	7	10.4
Total	67	100.0

The number of questionnaire returns from some countries is disappointing (in relation to the size of their agricultural sector) but can be explained by poor distribution in country, and lack of follow-up by the Consultant. The high returns from Fiji, Cook Islands and Tuvalu have to do with effective distribution within country by the ministries. In Fiji, many questionnaires were returned from provincial offices, thus the large number of extension staff completing the forms. This was useful in terms of gathering another perspective.

Lack of time precluded any further follow-up by the Consultant across the SPC region.

Table 2: Questionnaire returns by sub-region

Country	n	%
Melanesia	43	64.2
Micronesia	4	6.0
Polynesia	20	29.8
Total	67	100.0

Distribution of the results by sub-region is representative.

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[2] These questionnaires came too late to be included in the analysis, but are counted in Tables 1 and 2.

2.3.3   Sample representativeness

The term 'sample representativeness' is commonly used to describe those who responded to the survey and the extent by which they can be said to 'represent' the community as a whole.

Language

Respondents were asked to note the language used at work. Most used two languages with English being used by all respondents to some extent or another. The purpose of the question was to determine whether language might inhibit accessibility, especially for regionally-produced statistical resources. Based on these results, language in and of itself is not a barrier; however, technical language may well be a barrier (see Annex 7, responses to Question 19).

Table 3: Distribution by language

Language	n	%
English	61	59.2
Pidgin	6	5.8
Melanesian	16	15.5
Polynesian	16	15.5
Micronesian	3	2.9
Other (Hindi)	1	1.0
Total	103	100.0

Age and gender

All respondents indicated the age group they belonged to. None were under 25 years old; 11 (18.0%) were in the category 25–35; 24 (39.3%) in the category 36–45; and 26 (42.6%) were over 45 years old. The disproportionate number of 'over 45s' is accounted for by the survey being targeted at those more likely to use statistical information in their work, which tends to favour those in more senior positions (see Level below).

There is no ignoring the imbalance in favour of male respondents: 49 (84.5%) of respondents are male and only 9 (15.5%) female (58 out of 61 of those surveyed responded, or 95.1%). The reasons for this imbalance could be that there are fewer females in senior positions (very likely[3]), skewed distribution of the questionnaire (possible) or the propensity of males to complete questionnaires more avidly than females (unlikely). Whatever the reason, the result is a little disappointing.

Level in hierarchy

The level a respondent reached in the institution was self-determined and led to some conflicting responses, i.e. it is not possible to correlate the perception by a recent graduate that because they now occupy a research position they are on the same level (senior) as directors of agriculture and heads of sections. How widespread this misunderstanding is not known. The data indicates that 39 (65.0%) are in a senior-level position, 19 (31.7%) at middle level and 2 (3.3%) at junior level.

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[3] Although interestingly enough, the data shows that female respondents are disproportionately likely to be in senior positions (75.0%) compared to male respondents (63.3%).

Qualifications

The four categories of qualification were: none, certificate or diploma, first degree or postgraduate diploma, and Masters-level or higher. Of the 59 (96.7%) who responded, 20 (33.9%) hold a certificate or diploma, 21 (35.6%) hold a degree and 18 (30.5%) hold a Masters or higher qualification. Whereas the majority (55.6%) of those who think of themselves as being middle-level employees have certificates or diplomas, a far larger number (76.3%) in senior positions have a degree or higher qualification.

Area of work

Respondents were asked to give their area of specialisation. The largest number, 17 (27.9%), gave their area as extension; 8 (13.1%) animal health and production; 7 (11.5%) plant protection; 6 (9.9%) economics and marketing; and 5 (8.2%) information/communication. The remainder (29.4%) gave their area as land use planning, administration, plant breeding, agronomy/horticulture, policy and planning, training, farming, analytical chemistry and general research.

In order to gain a better understanding of the use of statistics by these respondents, the work actually undertaken by the respondents (as described) were used to determine a functional differentiation. This resulted in one large group which comprised all those who undertook crop and animal extension, information and communication, training, land use planning, marketing, and policy and planning. The focus of this group is more outward-looking than other groups: research (crop, animal, economic), quarantine, administration and farming. Table 4 presents the results.

Table 4: Distribution by function

Function	n	%
Outreach	39	63.9
Research	16	26.2
Quarantine	4	6.6
Administration	1	1.6
Farming	1	1.6
Total	61	100.0

2.4   Semi-structured interviews and discussions

Formal, semi-structured interviews were held with both data collectors and data users in the countries visited. Prior to beginning the country visits, forms containing lists of mostly open questions were designed to encourage discussion and to allow comparison of responses. Copies of both interview forms are included as Annex 5.

Table 5: Interviews conducted by country

Country	Days in country	Interviews			
		With collectors	With users	Total interviews	
		n	n	n	%
Cook Islands	2	1	3	4	9.8
Fiji Islands	3	3	2	5	12.2
Kiribati	2	2	3	5	12.2
Papua New Guinea	3	3	2	5	12.2
Tonga	3.5	5	4	9	21.9
Vanuatu	4.5	4	9	13	31.7
Total	20	18	23	41	100.0

In total, 41 formal, semi-structured interviews were conducted with people in six countries; 32 were male interviewees and 9 female. In some cases, it was not possible to conduct separate interviews, i.e. one on one; in these cases, the questions were used to structure discussion in a seminar format, and a consensus of responses noted (although there was always deference to senior staff where they were present).

To a large extent, the time available in each country determined the number of interviews that could be conducted. All responses have been incorporated into the findings in Section 3, Findings; and referred to in Section 4, Discussion.

2.5   Country visits and other activities

A brief summary of the country visits and other activities follows. Outcomes of meetings and visits are included in Section 3, Findings.

2.5.1   Research Priority Setting Workshop

At the invitation of SPC, the Consultant attended the introductory session of Research Priority Setting Workshop in Nadi, 28–30 October. With the assistance of the Senior Deputy Director General, a brief PowerPoint presentation was made by the Consultant outlining the study being undertaken, noting the role effective information management could play when considering priorities for research activities, whether at the regional or national level. Some access to country participants (from Fiji, Kiribati, New Caledonia, Samoa, Tonga, Tuvalu and Vanuatu) was gained and, though limited, was useful.

2.5.2   Papua New Guinea

Papua New Guinea was visited between 30 October and 2 November. The main contact point in Papua New Guinea was the Department of Agriculture and Livestock (DAL). Unfortunately, at the time of the visit, a ministerial reshuffle had just taken place[4], and naturally minds and bodies were occupied with more urgent matters, principally the need to revise the national budget in the light of the reshuffle. Nevertheless, a meeting was held with the Deputy Secretary and three of his officers: Director of Information Services, Scientific Editor and Chief Statistician. Long discussions with the three officers on a one-to-one basis were held after this meeting, which allowed for the exploration of a range of issues; some highly relevant, some with tangential relevance.

A few other institutions were visited in Port Moresby – in some cases simply by walking in off the street – and questionnaires distributed. These included the National Agriculture and Quarantine Inspection Service (NAQIA), PNG Copra Marketing Board, and PNG Internal Revenue Commission. Officers at the Bank of Papua New Guinea (the central bank) were unavailable for interview, but documents were obtained. Subsequently, some questionnaires and an interview were conducted at the National Agricultural Research Institute (NARI) in Lae. Time was a major constraint in Papua New Guinea, and even if arrangements had been in place properly for the visit, it would have been difficult to have undertaken the kind of survey necessary in the region's largest country in the three days available.

2.5.3   Kiribati

On the other hand, the time available in **Kiribati** – two days, 13–14 November – was sufficient to gain a good appreciation of the situation there. Discussions were held with the Chief Agricultural Officer, Head of Extension, Information & Training, Head of Plant

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[4] That is, on the evening of 30 October, the day of the Consultant's arrival in PNG.

Protection/Quarantine and Training Officer/ALO within the Agriculture Division of the Ministry of Natural Resources Development, and with the Republic Statistician and Kiribati Copra Co-operative Society.

2.5.4   Cook Islands and Vanuatu

An opportunity arose to undertaken some survey work in **Cook Islands**, even though this country was not originally one of the five selected. Two and a half days, 19–21 November, were used to hold discussions with staff of the Ministry of Agriculture, including the Secretary, Senior Planning/Policy Officer, Policy & Planning Officer and staff at Totokuito Research Station. Additionally, formal discussions were held with the Government Statistician, and informal discussions with the Director of Cook Islands Premium Noni and various national library staff. Cook Islands had recently completed its Agriculture Census and was awaiting the printing of the final pages of the census report.

The mission continued directly to **Vanuatu** for an extended stay, 23–29 November, because of the lack of aircraft. With hindsight, this was probably for the best, because the extent of data being collected and issues arising from the discussions were considerable. Within the Department of Agriculture and Rural Development (DARD), meetings were held with the Director, Senior Agricultural Programmes Officer, Farming Systems Officer and Market Information Officer. Discussions also took place with the Chief Veterinary Officer, Vanuatu Quarantine and Inspection Service; Project Officer, SPYN/TaroGen; Government Statistician; Project Officer, Rural Economic Development Initiative of the Ministry of Provincial Affairs; and officers of the Ministry of Trade, Chamber of Commerce, Farm Support Association, Reserve Bank of Vanuatu and Vanuatu Commodities Marketing Board.

2.5.5   Tonga and Fiji

The visit to **Tonga** took place from 3–7 December and commenced with a meeting with the Deputy Director of the Ministry of Agriculture and Forestry (deputising for the Director who was in the Outer Islands). Subsequently, a large number of interviews and discussions took place with staff of the Ministry including the Head of Planning (and Co-ordinator of the 2001 Agricultural Census), Head of Extension, Head of Information, Principal Assistant Secretary (Administration), Deputy Head of Quarantine & Quality Management, Senior Economist, and Officer-in-Charge Marketing Survey. Outside of MAF, meetings were held with the Acting Government Statistician, and staff of the National Reserve Bank and Tonga Development Bank. Tonga had just completed the collection of data for the 2001 Agriculture Census and was in the process of preparing a summary report.

Collecting data and interviewing people in **Fiji** was conducted over three days, 12–14 December. Owing perhaps to the proximity of the Christmas holidays, several staff were unavailable for interview; nevertheless, meetings were held in the now renamed Ministry of Agriculture, Sugar and Land Resettlement with the Senior Economist, Head of Extension and Principal Research Officer (Plant Protection). Outside of the Ministry, discussions were held with officers of the Reserve Bank of Fiji, Fiji Islands Bureau of Statistics, and the Pacific Financial Technical Assistance Centre, a Forum Secretariat-endorsed and IMF/UNDP-sponsored project to improve the collection and manipulation of statistics in the region.

An informal meeting to discuss some of the survey findings with the Senior Deputy Director General of SPC took place on 28 December 2001.

2.5.6   Bangkok and Canberra

The opportunity to explore possible synergies between existing networks and initiatives for any proposal emanating from this study was written into the TORs. Work being undertaken by the Asia–Pacific Association of Agricultural Research Institutes (APAARI) and FAO's World Agricultural Information Centre (WAICENT) was thought particularly relevant so the Consultant visited the FAO Regional Office for Asia and the Pacific (FAO–SAPA) in **Bangkok**, 21–22 February 2002. Discussions were held with the WAICENT Information Management Officer, the FAO Liaison Officer for APAARI (FAO hosts the APAARI Secretariat) and Senior Extension, Education and Communication Officer. The opportunity was taken to meet with the Chief Technical Adviser of an agricultural statistics project funded by the Japanese Government.

Presentation by the Consultant of the essence of his draft report with the donor agency, the Australian Centre for International Agricultural Research (ACIAR) took place on 5 and 6 March 2002, in **Canberra**. All aspects of the findings, from the technical to the strategic, were explored with a range of staff from the Impact Assessment Program, Communications Program and with the ACIAR Deputy Director. Additionally, the Consultant discussed the experience of editorial staff of *Pacific Economic Bulletin*, at the Australian National University.

Following the visits to Bangkok and Canberra, the Consultant returned to **Suva**, completed the draft report and presented it to staff at SPC on 18 March 2002. This afforded the opportunity for direct interaction between the staff and author of the report at a stage where changes could be made as necessary.

3. Findings

3.1 Regional statistical resources

There are a few regional statistical resources available in and for the Pacific. They include but are not limited to *Selected Pacific Economies: A Statistical Summary* and *Pacific Economic Bulletin*. A review of these resources follows.

3.1.1 SPESS

The publication *Selected Pacific Economies: A Statistical Summary* is published by Secretariat of the Pacific Community approximately every two years. The latest issue of SPESS, number 15, was published in 2000. Data presented are derived from national statistical offices of SPC member countries or, where data are not available, from international agencies or other sources (SPC 2000, p. 6).

Basic statistical data include:
- land and sea area;
- population – total, density, growth rate;
- gross domestic product – total, per capita;
- government expenditure, revenue;
- foreign aid;
- exports, imports, trade balance, trade flows;
- retail price index;
- visitors (tourism);
- age, gender, employment, population distribution; and
- birth rates, infant mortality, life expectancy.

Data on agriculture are found for the following areas:
- distribution of GDP by sector (Table 4) – for 14 countries;
- government expenditure by sector (Table 7) – 14 countries;
- exports of principal products (Table 15) – 15 countries;
- imports classified by sector (Table 16) – 13 countries; and
- employment patterns (Table 23) – 18 countries.

Data on agriculture is combined with that on fisheries for Tables 4, 7 and 23. It is assumed that these data also include forestry in the definition of 'agriculture' (there being no other heading appropriate enough). Aggregation of data about three sectors that share some similarities but also many dissimilarities has been the subject of internal discussion at SPC (and was one of the reasons for the present study).

Data (primary industries only) on exports (Table 15) and imports (Table 16) are more specific:
- exports – meat; fish and seafood; cereals; fruits and vegetables; kava; sugar, honey etc; coffee, tea, cocoa; copra; coconut oil; palm oil; wood and wood by-products; and
- imports – food; beverages and tobacco; oils and fats.

Complete data are available only from Cook Islands, Federated States of Micronesia, Fiji Islands, Kiribati, Tonga and Vanuatu. No data are presented from Pitcairn, and only limited data (two or less categories) from New Caledonia, Papua New Guinea, Tokelau and Tuvalu.

As a regional resource, this publication is lacking given that complete data is only available for just over half SPC member countries (see Table 6). The difficulty that SPC itself faces in acquiring the statistics is the reason. Responses to the questionnaire survey show that 34.4% of those surveyed are familiar with *SPESS*, and 11.5% have used it (Table 10).

Table 6: Data present in SPESS by country

Country	GDP by sector	Govt expenditure by sector	Exports by product	Imports by product	Employment by sector
Am Samoa		x	x	x	x
Cook Islands	x	x	x	x	x
FSM	x	x	x	x	x
Fiji	x	x	x	x	x
Fr Polynesia	x		x		x
Guam		x	x		x
Kiribati	x	x	x	x	x
Marshalls	x	x		x	x
Nauru		x	x		
New Caled.	x		x		
Niue				x	x
NMI		x		x	x
Palau	x			x	x
PNG	x	x			
Pitcairn					
Samoa	x	x	x		x
Solomons	x		x	x	x
Tokelau					x
Tonga	x	x	x	x	x
Tuvalu	x		x		
Vanuatu	x	x	x	x	x
Wallis		x	x	x	

3.1.2 Pacific Economic Bulletin

Each issue of the *Pacific Economic Bulletin*, published biannually by the National Centre for Development Studies at the Australian National University contains a section entitled 'South Pacific statistics at a glance'. However, there are statistics for just six countries: Fiji Islands, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu. Data are provided on:

- real GDP growth rates;
- consumer price quarterly indices;
- growth in merchandise trade;
- current account balance;
- real GDP growth per capita;
- quarterly interest rates; and
- exchange rates.

There are no specific data on agriculture *per se*, but the inclusion of this publication in the list of statistical resources has to do with the frequent articles on economic development and the agricultural sector in countries of the SPC region, and the presentation therein of numerous agricultural statistical data. For example, an article on Papua New Guinea's economy may include figures for export of logs, coffee and cocoa exports compared to population growth (Curtin 2000, p. 14), or a few paragraphs reviewing the agriculture sector (pp. 18–19). In this way, *Pacific Economic Bulletin* is a valuable resource; but how valued is it? Responses to the questionnaire survey show that 31.1% of those surveyed are familiar with the *Bulletin*, and

9.8% have used it (Table 10). Information on the extent of distribution of this resource was not collected, and thus no significance can be drawn from these figures[5].

3.2   National statistical resources

The resources described here are all from countries visited; owing to time constraints, publications from countries not visited were not reviewed.

3.2.1   Cook Islands

The principal publication of the **Statistics Office** is the census report; the *Cook Islands Census of Population and Dwellings 1996: main report* (Statistics Office 1997) does not provide data specifically on agricultural activities, but does indicate the numbers and island location of individuals involved in agriculture (Table 3.4, 'Skilled agricultural and fishery workers'), their gender and age. Table 5.16 shows the number of private occupied dwellings by island and agriculture activity ('mainly subsistence', 'mainly commercial' and 'no agriculture activity'). Table 5.17 looks at farm machinery held (tractor, rotary how, mistblower, grasscutter, motor mower, disc, plough, tyne, slasher and knapsack sprayer); Table 5.18 the total number of livestock, including pets (pigs, goats, cattle, horses, chickens, cats and dogs). The *Annual Statistical Bulletin 2001* actually contains provisional figures for the year 2000 (and not 2001 as the title suggests); however, the publication appeared just five months after the end of the calendar year. Agriculture-related statistics of note are GDP by sector (agriculture combined with fishing), Table 2.4; CPI by major groups, including food (Table 3.1–2, historical back to 1967); by sub-groups (e.g. 'fruit and vegetables', 'meat, poultry and fish', Table 3.3); and by specific commodities back to 1975 (potatoes, onions, taro, sweet potatoes, bananas, oranges, beef sausages, eggs, Table 3.4). Principal exports (value) includes figures on 'fruits & vegetables', Table 4.3; imports by SITC section, e.g. 'food & live animals', Table 4.5. Government expenditure by function (of interest is expenditure on 'agriculture, forestry & fishing' back to 1981/82), Table 5.4. There are similar tables in the *Quarterly Statistical Bulletin* (Sep 2001 issue published in September 2001).

At the time the Consultant visited, the **Ministry of Agriculture** (MOA) was awaiting the printing of the final pages of the *2000 Census of Agriculture and Fisheries* (MOA & Stats Office 2001). The publication contains a comprehensive set of data in five main areas: households (Table 1); agricultural holdings (Table 2); parcels (Table 3); livestock (Table 4); and pearl farming (Table 5). Based on the information in the census *Instruction Manual* (MOA & Stats Office 2000), a wealth of detail will have been obtained. For example, under 'crops currently grown and/or planted and/or harvested', data are collected on name of each crop, area (m^2), and number of plants/trees. Data on income (for the previous 12 months) and loans for agricultural purposes (previous five years) are also collected which, along with other data on equipment used and agricultural inputs (e.g. fertilizers) can help paint a clear picture of the current agricultural situation. The 2000 census is the second agricultural census conducted in Cook Islands, but the first to include fisheries. The first census was undertaken in 1988[6]. Previously, the Ministry had an established Agricultural Planning Unit (APU) which had the capacity to undertake surveys of all kinds. A typical example of its output is the *Rarotonga Agriculture Market Survey April/May 1993*. The format of this publication is a couple of pages of interpretative commentary based on data in tables; the tables follow – estimates of weekly domestic demand (vegetables, fresh fruits and root crops); domestic demand for agricultural produce by market outlet (and by sector, e.g. supermarkets, restaurants); and market survey summary results. Data were collected by APU staff, with the

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[5] This is something that could be followed up.
[6] An agricultural census of the island of Rarotonga was conducted in 1975.

co-operation of all market outlets and with the help of an FAO technical adviser. It was intended that the survey be conducted every two to three years, for policy making.

3.2.2   Fiji Islands

The **Fiji Islands Bureau of Statistics** (FIBS) conducts regular household surveys. Based on the forms used, data are collected on consumption of home-produced commodities (Schedule 3, Block 2) which can provide some idea of the extent of the subsistence and semi-subsistence economy. Schedule 4 of the same survey collects more extensive data on income from agriculture, fishing, forestry and handicrafts; in particular of four agricultural commodities (sugar cane, rice, ginger and *yaqona*). Data on other crops and livestock are collected; the inclusion of handicrafts is a useful set of data which completes the picture of the rural sector, and is not as common in other countries.

The *1996 Fiji Census of Population and Housing: Analytical Report – Part 1, demographic characteristics* conducted and published by the Fiji Islands Bureau of Statistics (1998) contains data on where the population resides and the demographic structure of those populations, but no specific agricultural data. The 2000 issue of the annual publication, *Key Statistics* (FIBS 2001) contains data on:

- Table 3.3, GDP by activity, e.g. 'Agriculture, Forestry and Fishing', sub-divided into crops[7], livestock, fishing, forestry and subsistence, from 1991 to 1999;
- Table 3.5, Government expenditure by type and purpose, e.g. 'Agriculture, Forestry and Fishing', 1994 to 1998;
- Table 4.1, annual indices of industrial production, e.g. butter, milk, sugar, stockfeed, from 1993 to 1999;
- Table 4.4, primary production of selected agricultural products, i.e. sugar cane, copra, paddy rice, Virginia tobacco, cocoa, beef, pork, goat, chicken, eggs, ginger, from 1995 to 1999;
- Table 4.5, manufacturing of processed agricultural products, i.e. sugar, coconut oil, butter, stockfeed, from 1995 to 1999;
- Table 4.7, sugar industry production and prices, includes number of growers, area harvested, production, average production/ha, prices paid to growers, input of cane/t sugar, sugar production, molasses production, quantity, value, from 1975 to 1998
- Table 8.5, principal domestic exports quantity and value, e.g. taro, sugar, ginger, woodchips, coconut oil, from 1995 to 1999;
- Table 8.6, imports by value and SITC, e.g. food, fats, from 1995 to 1999; and
- Table 8.8, selected imports, e.g. canned beef, fresh beef, butter, rice.

The two principle publications of the **Ministry of Agriculture, Fisheries and Forests**[8] are the MIS reports and the agricultural survey reports. The *MIS* (Management Information System) reports are not formal publications but an internal quarterly compilation of data derived from various divisions or sections: Animal Health and Production Division; Extension Division; Fisheries Division; Quarantine Division. This is appended by a 'trade and price analysis' (presumably prepared by the Trade, Policy and Statistics Section of the Economic Planning and Statistics Division). There are a large number of data in the report; for example, the Animal Health and Production Division contribute data on the activities and particularly the revenue-generating activities of the veterinary section; animal and meat production (extent and value), milk production, egg and hatchery production, honey

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[7] Sugar cane is a sub sub-division.
[8] This Ministry has had a number of names over the last decade or so; previously it was the Ministry of Primary Industries (and Co-operatives) (MPI), then for a while the Ministry of Agriculture, Fisheries, Forests and ALTA (MAFFA); with the installation of the new Government at the end of 2001, it became the Ministry of Agriculture, Sugar and Land Resettlement (MASLAR).

production, breeding, pathology laboratory cases, meat inspections, animal quarantine activities, and livestock research production. As a management information system, all data are presented alongside targets[9]. If anything, data from the Extension Division is even more extensive. Data included in the 'trade and price analysis' section are compiled from additional sources as well as from within the Ministry, e.g. Coconut Board, Bureau of Statistics (especially export/import figures, although FIBS are seldom credited in the tables). There is no source given for exchange rate data nor market price data (presumably the Reserve Bank and surveys by the Extension Division respectively). There is interpretative commentary in all sections.

Three censuses have been completed in Fiji – in 1968, 1978 and 1991. The *1999 National Agricultural Survey* (Otanez, Ratuvuki & Ledua 2000) is different not only because it is a survey (in this case, a combination of multiple sampling frame and list sampling frame) but also in that, according to the Foreword, it is a 'first step for the establishment of the Fiji Agricultural Statistics System' (p. i). Technical assistance in designing, carrying out and publishing the survey came from an FAO/TCP project, Development of an Agricultural Statistics System (TCP/FIJ/6712). A single chapter (Chapter 6) presents the 15 tables, but there is a summary chapter (Chapter 5) which states the objectives of this survey to:

> …estimate on annual basis:
> i)   area, yield/hectare and production of crops
> ii)   livestock number and poultry
> iii)   milk production and milk destination
> iv)   employment

Within the parameters of this survey, comprehensive reference data have been obtained. There are comparisons made between the 1991 census and 1999 survey, and between the yields included in the Farm Management Information System and actual.

The **Reserve Bank of Fiji** produces a *Quarterly Review* (RBF 2001) and *News Review* (RBF 2001), both of which are up to date. The latter is a monthly newsletter which looks at sectoral developments in the major sectors (one is sugar); the *Quarterly Review* contains commentary on the domestic economy, including the sugar industry, copra and timber. Tables present data on lending to the various sectors, and GDP by sector.

3.2.3   Kiribati

The principal published resource is the *Report on the 1995 Census of Population* (Ministry of Finance 1997)[10]. Among the 67 tables are five that relate directly to agriculture:

- Table H2, number of households by type of land ownership by island;
- Table H3, number of households by type of food crop grown by island;
- Table H4, number of households by number of pigs owned by island;
- Table H5, number of households by number of chickens owned by island; and
- Table H6, number of households by number of ducks owned by island.

Food crops included in Table H3 are: breadfruit trees, *babai* (giant taro) pits, banana trees, pawpaw trees, potato crops, others (not specified) and toddy (fermented coconut palm juice). The number of pigs, chickens and ducks per household are categorised as 1, 2 and so on until

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[9] Thus it being referred to as an MIS, and also because it monitors and evaluates the since-suspended Commodity Development Framework.

[10] The 2000 census report is not yet published, but the data is available in tabular format.

9, then 10 or more. So if a household has 10 chickens or 1,000 chickens, it is just counted as one[11].

> *Further examination of the publication revealed that in fact the original census question was about the presence of various staple food crops. So the column headers (banana trees, pawpaw trees, etc) are inappropriate (should just be bananas, pawpaws). The column header 'potato crops' actually refers to sweet potatoes and 'others' to 'other vegetable crops'. 'Toddy' was the number of households who 'cut' toddy, not drink it. It was also discovered that whilst data on the actual number of pigs, chickens and ducks per household are gathered, these data are not presented in any table although this could have been done quite easily.*

Other agricultural data that are presented in the same resource include Table 18A, the number of people in paid employment by profession (and gender, age group). Professions include agronomist (one male over 50 years), veterinarian (2 males, 25–49 years) and a special section for agricultural occupations: copra cutter (62 in total), livestock chickens/pigs (12), agricultural worker (49) and seaweed grower (164 in total, the majority male and young). The following table, 18B, provides information on qualifications held by those in paid employment; for example, it is stated that the two veterinarians have completed primary (1) and secondary (1) education only, and thus are not veterinarians in the common interpretation (fully-qualified professional)[12].

The other available published resource is *International Trade Statistics 1998* (Ministry of Finance 1998[13]). This is the latest published issue; the issue for 1999 and 2000, whilst prepared, are not yet printed. Data provided in this publication is detailed and has adopted the harmonised system (HS) designed for custom tariff purposes. The old coding system used for commodities – the Standard International Trade Classification (SITC) – is given also.

Agricultural exports consist solely of copra, presented by country of destination, quantity and value (in Kiribati, copra constitutes 56.1% of the total value of all exports at 1998 figures).

Data on agricultural imports are more wide-ranging[14] and include data on country of origin, quantity, value and duty. Data here are very specific – perhaps too specific; for example, meat and meat products include the categories:

> 'live poultry, ducks, geese; fresh beef, frozen beef; fresh pigmeat; frozen pigmeat; other frozen pork products; fresh/frozen sheep/goat meat; sheep meat; horsemeat fresh/frozen; offal fresh/frozen; beef offal; bovine offal; pig offal; sheep offal; chicken offal; chicken (whole); chicken pieces; turkey; other edible meat; pig/poultry fat; more offal (by animal)'.

3.2.4   Papua New Guinea

The principal resource of the **Department of Agriculture and Livestock** (DAL) is the annual *Handbook on Agricultural Statistics*, but since only 10 copies of the 2001 issue have

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[11] These shortcomings were discussed with the Republic Statistician who agreed that changes could be made to future editions of the census.

[12] Neither are most of the medical doctors, which is an even bigger cause for concern.

[13] The publication date given is October 1998, but the Introduction is dated 22 October 1999.

[14] And include some strange imports: 144 fresh coconuts from Australia; 2.15 tonnes of taro from Japan and 94 kg from USA.

been 'published' it is difficult to assess the impact of this publication[15]. The content is comprehensive and organised around seven chapters:

- Agricultural exports an GDP – coffee, copra, cocoa, rubber, palm oil, tea; data from 1991;
- Agricultural imports – vegetables and fruit, cereals, meat and meat products, milk and dairy products, animal feeds; import of export commodities e.g. coffee, cocoa, tea and spices; agro-chemicals; edible nuts, from 1987 to 1990 (the International Trade Office in the National Statistical Office is redundant, not operational);
- Agricultural production – coffee, cocoa, copra, rubber, palm oil (data from as early as 1979 but all current);
- Livestock – slaughter by abattoir (current data), local/imported supplies of meats (1970/71–1991);
- Population and rural household activity – by Province (based entirely on 1990 smallholder survey);
- Food crop market survey – two Port Moresby markets (Gordons and Koki, data from 1988–1996/97), preliminary nationwide market survey (1988); and
- DAL summary budget appropriation and human resources (1998–2000).

The last agricultural census was conducted by the Australians in 1960/61; DAL have been seeking funding to carry out a new census for many years. The 1988 market survey (the data from which is contained in the *Handbook*) was a one-off survey, never repeated. Smallholder involvement in agriculture was gathered during the national census in 1990 (still used and still a very popular resource); this was repeated in the 2000 census (being compiled). A quarterly bulletin (two to three pages in length; not seen) is compiled and distributed to about 50 recipients, mostly within the Department.

The **Bank of Papua New Guinea** (the central bank) publishes the *Quarterly Economic Bulletin*[16]. The *Bulletin* includes a commentary on the domestic economy (by region), export commodities review which includes 'agriculture, logs and fisheries exports' (figures for cocoa, coffee, copra, coconut oil, palm oil, tea, rubber and logs). Tables present data on deposits at commercial banks by sector ('agriculture, forestry and fishing', Table 3.4) and advances not just by sector but specifically by sub-sector, i.e. coffee, cocoa, coconut products, palm oil, forestry (Table 3.5). Tables 6.1 and 6.2 show deposits and investments by commodity industry boards. Table 9.5 and 9.7, value and quantity of exports classified by commodity group ('agricultural'); Table 9.6 and 9.8, value and quantity of exports by commodity (cocoa, coffee, tea, copra, coconut oil, palm oil, rubber); Table 9.9, export prices for cocoa, coffee, tea, copra, coconut oil, palm oil, rubber and logs. Employment classified by industry, Table 10.6.

Other (identified) collectors of statistical data include the **PNG Internal Revenue Commission** where the ASYCODA Unit collects data on all imports. The **National Agriculture Quarantine and Inspection Service** (NAQIA) collects a wide range of data in order to process import permits and phytosanitary certificates, and conduct meat and stock inspections, i.e. the statistics so derived are a by-product of NAQIA activities; no statistics are published by NAQIA as such. Statistical data on animal production is obtained by DAL from the **Livestock Development Corporation** (who in turn obtain it from commercial entities such as Ramu Beef). The **Copra Marketing Board of Papua New Guinea** collects data on weight, grade, price and origin from its 39 collection points around the country; electronic data exists from 1991, and manual data prior to that date. No data are published but they are given to the National Statistical Office, Bank of Papua New Guinea, DAL, CCRI and CCEA.

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[15] The 2000 budget envisaged 300 copies but funding was available only for 170; in the 2001 budget, no allocation?

[16] The June 2001 issue was 'hot off the press' at the time the Consultant visited, 1 November 2001.

3.2.5   Tonga

As with other countries, publications of the **Statistics Department** form the cornerstone of statistical information in the country. The *Statistical Bulletin on Consumer Price Index* is published monthly. The index itself is divided into 'food', including as separate sub-categories 'fruit and vegetables', 'meats, fish and poultry', 'dairy farm and vegetable products, 'cereals and cereal products' and 'other food'; the weight of local and imported is noted. Data from the Talamahu Market survey is included in this publication (weight, not price) as detailed as specific items like the type of taro, carrots, lemons and so on. *Tonga Population Census 1996: household analysis* (Statistics Dept 1999) has tables on the number of households by livestock (Table H11) and by crops grown (Table H12). The data presented in these two tables indicate merely that the household has livestock (cattle, horses, pigs, chickens and goats); the island group but not the quantity of each livestock held is also given. For 'crops grown' the categories are 'crops (not squash)', 'squash only', 'squash and crops' and 'no crops grown'. There is further division by island group and district, but as with livestock, no indication of the quantity of crops grown nor any indication of what those crops might be other than squash. However, the value of this publication lies in its detailed summary of households. A very detailed report on trade is provided in the *Annual Trade Report* (Statistics Dept 2000). This sets out the type, quantity, value and origin/destination of all imports and exports; SITC codes are used. There is concern about the timeliness of this publication with the last one published being for the year 1999.

The **Ministry of Agriculture and Forestry** published the *1985–1993 Compendium of Agriculture and Forestry Statistics* (MAF 1994b). This publication represented a significant investment in terms of time and effort, and followed on from an edition published in 1991 which covered the years 1985 to 1989. Both editions were the result of collaboration between the Ministry and FAO projects[17]. A new third edition, *The Agricultural and Forestry Statistics Abstract* (MAF 2000) has been prepared for publication, and as soon as a donor is found, can be printed. The nine chapters contain 21 tables as well as 13 graphical presentations of a wide range of data derived from multiple sources (much the same as with the PNG *Handbook on Agricultural Statistics*; all sources are acknowledged). The chapters are:

- Agriculture in the economy – GDP, Govt revenue and expenditure, agricultural loans, households, employment;
- Agricultural production and land use – area, yields;
- Agricultural trade – agricultural exports, imports;
- Cash crops – squash, vanilla, cassava, taro, yams, sweet potatoes, coconuts, fruit crops;
- Domestic marketing – prices, supply at Talamahu Market;
- Livestock – veterinary cases, exports, livestock census; egg, meat and milk production;
- Agricultural services – as provided by MAF; import of agricultural inputs (e.g. pesticides);
- Forestry – staffing (within MAF) – plantings, area; and
- Miscellaneous – rainfall, 1994–1999.

Much of the data used in the 2000 *Statistics Abstract* is derived from earlier, sometimes much earlier surveys as well as from contemporary sources. An example is the use of land use data from the main report of *1993 Land Use and Crop Survey* (MAF 1994a). This survey collected and presented data for each island group on the number of farmers, tax allotments, ownership of land, land utilisation, farm size, cropped area, crop production estimates and food supply analysis. The comprehensive statistical data[18] presented in the *Annual Report* of MAF are also

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[17] The 1985–1989 edition resulted from work done under RAS/86/035, and the later version, FAO/UNDP–TON/91/001

[18] Includes squash (production by island group, tonnage exported, name of exporter); horticultural exports (crop, tonnage); pesticides (quantity, type); livestock (imports, meat products); animal diseases (type, animal, number); and extension (crops, acreage, island group).

utilised. Some data are derived from *Tonga Agricultural Census 1985* (Statistics Dept 1988?), particularly those relating to households. The 1985 census was Tonga's first; a new census has just (1 Oct – 30 Nov 2001) been completed and the first reports were being compiled at the time the Consultant visited in December 2001. In the 2001 census, data are being collected for the following:

Household survey
I　　　　Geographic area
II　　　　Level of agricultural activity of the household
III　　　Ownership of *Api Tukuhau*
IV　　　Agricultural holdings and method of operation
V　　　　Crops and trees grown by minor agricultural household
VI　　　Household membership and economic characteristics
VII　　　Livestock including dogs
VIII　　Fisheries
Holding
H1　　　Parcel details
H2　　　Agricultural income and loan
H3　　　Labour inputs
H4　　　Use of fertilizers and agricultural chemicals
H5　　　Equipment used
H6　　　Agroforestry on the holding
H7　　　Handicraft making
Parcel
P1　　　Number of separate plots
P2　　　Plot details
P3　　　Scattered/boundary crops/trees growing on parcel
P4　　　Crops planted and already harvested on parcel

Based on the information found in the *Enumerator's Manual* (Statistics Dept & MAF 2001), the extent of the data will make a significant difference to informed decision making in Tonga. The census was carried out jointly between the Statistics Department and the Ministry, with FAO funding and technical support.

The production of the quarterly publication, *Talamahu Market Survey Report* (MAF 2001), is an interesting activity: the survey is carried out every Friday by Ministry officials and staff of the Statistics Department; a single form is used but each organisation only enters data for specific commodities (depending on whether or not the produce needs to be weighed using the heavy-duty scales). Data are then used by the Statistics Department for the CPI; and by the Ministry to assess supply and prices. Despite this survey being less representative than in the past[19], much information of value is collected. Commodities not surveyed include firewood, Tongan coconut oil and handicrafts (pandanus roll, soft and hard mulberry, and *koke*, a dye for *tapa*).

The **National Reserve Bank of Tonga** publishes a *Quarterly Bulletin*. Each issue of this publication is presented in English and Tongan (the tables are in Tongan as well as English); this was the only publication seen that presented statistical tables in the vernacular[20]. This publication, *inter alia*, provides a commentary on the state of agriculture. Figures on agricultural products marketed in Tonga (value, volume and unit values; annual figures for 1990/91 and quarterly figures for 1993 onwards) are given in Tables D2–D4; categories are root crops, coconuts, bananas, watermelon, other fruit, vegetables, and miscellaneous. All

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[19] The Talamahu Market is the main market on Tongatapu, but other official markets have been established in other island groups, and there is also much trade from roadside stalls and local stores.
[20] Except for publications of the Vanuatu Statistics Office which were published in separate English and French editions, but this is not quite the same thing.

figures are derived from the Ministry of Agriculture and Forestry and are based on market surveys of Talamahu Market. The *Bulletin* notes that increasingly, trade at this market is declining. Government recurrent expenditure on agriculture is combined with that for forestry and fisheries (Table E2). Agricultural exports are presented in Tables F3–F4; there are categories for root crops, squash, vanilla and other agricultural products. Principal imports, e.g. 'food, live animals, beverages etc', are given in Table F7.

Tonga Development Bank (TDB) has a couple of publications of interest: *Tonga Development Bank Economic Report* and *Sectoral Reports*. The *Economic Report* (also included in the series *Operations Papers*) is published monthly or bimonthly and has recently changed its format. Instead of repeating data on major economic indicators, it now presents 'more detailed analysis of the key economic indicators impacting on decision makers in the Kingdom' (TDB 2001). TDB, as a lending bank to farmers and others in the rural sector, is particularly concerned about the viability of the sector as the basis on which loans are provided. Consequently, although each issue is different, there are data on land utilisation, farm profitability, commodity prices in New Zealand and rate of inflation. Data are derived from numerous sources including TDB itself, Statistics Department, Reserve Bank and South Pacific Trade Commission. The *Sectoral Reports* are published less frequently – of the three viewed, two were from 1994 (Rohorua) and one from 1997 (Lokotui). These reports afford the opportunity to look at more detail into specific commodities, their past performance, present situation, potential and recommendations (for TDB and the Ministry of Agriculture and Forestry).

3.2.6   Vanuatu

Publications from the **Vanuatu Statistics Office** were not received in time for an analysis to be included in this report. However, from information collected at the time, it was learnt that the 1999 population census included questions on agricultural activities: Table H12 – cattle; H14 – 'have food garden'; H15 – cocoa, kava, coffee, coconuts. Data in other publications are derived from Vanuatu Commodities Marketing Board, Vanuatu Quarantine and Inspection Service, market surveys (conducted by the Statistics Office) and Customs (export data).

An agricultural census was conducted in 1983 and 1993. The next is scheduled for 2003 if sufficient funding is found; preliminary meetings between the Statistics Office and Department of Agriculture and Rural Development have begun.

Statistical publications viewed include those from the **Reserve Bank of Vanuatu**: *Annual Reports and Statement of Accounts*; *Quarterly Economic Review*; and *Financial and Economic News*. The latest *Annual Report* (RBV 2000) comprises statistics for the years 1995 to 1998. Of interest to this study are the tables and narratives relating to: domestic economic development (copra, cocoa, beef and kava); sectoral distribution of credit (agriculture and fisheries as one category); trade balance (imports of 'food and live animals', 'animal, vegetable oils and fats'); macro-economic indicators (production value and volume (t), commodity exports volume (t) and value of copra, cocoa and beef. The *Quarterly Economic Review* (RBV 2001) publish current figures for the same three commodities; but also includes the country of destination/origin for exports/imports and more detailed figures for copra products and prices (sourced from VCMB and shippers), cocoa production for exports and prices (sourced from VCMB) and commercial meat production (sourced from VQIS). The newsletter *Financial and Economic News* discusses the national, regional and global economic scene as a whole and has peripheral information only (at least in the issue viewed) on the agricultural sector specifically.

The **Department of Agriculture and Rural Development**[21] (DARD) no longer has any statistical publications, but did in the past when there was an economics and statistics unit. According to one source, there used to be a biennial agriculture survey; the last published was in 1994 (not verified). And there was also an *Agriculture Economy Report* published in 1997 by the Department (not verified). Results from a smallholder survey conducted in 1997 were not, and may never be published[22].

The **Vanuatu Quarantine and Inspection Service** (VQIS) falls under the same Ministry[23] as the Department of Agriculture and Rural Development and is responsible for all quarantine activities in the country, provision of veterinary services and services related to livestock and meat production industries. As such, its *Annual Report* contains much valuable data, mostly in a narrative form but with some tables. Data are compiled monthly (into an in-house database) and contain records of: import permits issued (animal), live animals seized, animal products imports, biologicals seized; meat exports (i.e. beef) for five years, beef production, meat processing; and animal diseases. The *Annual Report* is not widely dispersed (it is not formally published), but if VQIS are approached, data from the database can be (and is) produced on demand, e.g. for the Vanuatu Statistics Office and Reserve Bank. In a way, not so much an under-utilised resource as an under-appreciated one.

The **Vanuatu Commodities Marketing Board**, in common with similar entities in Papua New Guinea and Kiribati, collect data as a by-product of buying and selling a commodity. Data available include those collected at the two buying points in Santo and Port Vila: dates, values, weights, grade, producer, zone/island, village – for cocoa and copra; and export data derived from the export destination form, i.e. destination, buyer, date of departure, value, weight and port of departure. These statistics are not published but are supplied to Board members, Vanuatu Statistics Office and Reserve Bank.

The **Chamber of Commerce and Industry of Vanuatu** (CCI) does not collect data on agricultural commodities sold in Vanuatu, but does present data collected in Auckland on prices for fruit and vegetables in the issue of its newsletter, *Produce Prices Imports*, seen by the Consultant (along with a list of Auckland importers). Along with facilitating business exchange, CCI in partnership DARD and Farm Support Association, among others, is promoting *aelan kaikai* – island food. The aim is to reduce imports and supplant them with (better) local alternatives. During the Consultant's stay in Vanuatu, a major article appeared in the *Trading Post* (24 Nov) setting out the arguments for this campaign in a promotional (and emotional) campaign. Many statistics were presented, mostly derived from the Vanuatu Statistics Office. This was a good example of institutions using statistics.

Another similar use of statistics was observed in the various provincial master plans drawn up under the **Rural Economic Development Initiative** (REDI), part of the Ministry of Provincial Affairs. The specific five-year master plan viewed was for Torba Province. In presenting a profile of the Province, the authors note that 'one of the problems with building a picture of a provincial economy is the lack of data desegregated to the regional level' (Wasi, Kaltamat, Langitong & Vuti 2001, p. 99). This is something noted by others, particularly in Papua New Guinea. In Vanuatu, provincial government councils will increasingly be responsible for the collection of statistical data, to address this need for specific data.

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[21] Previously Department of Agriculture and Horticulture.
[22] Apparently, some concern about the validity of the data.
[23] Ministry of Agriculture, Quarantine, Forestry and Fisheries.

3.2.7   Other countries

Owing to the lack of time, statistical publications from other countries in the region were not collected or analysed.

3.2.8   Data sought

From the open question in the questionnaire about the sort of statistical information that would be most useful to the respondent, 58 (or 95.1% of those surveyed) provided an answer (Table 7; actual responses in Annex 7). Apart from the misunderstanding by some researchers of the difference between socio-economic statistical data and trial data, nearly half (41.4%) were looking solely for agricultural information, usually crop/animal production data.

Nearly all the remainder were looking for a combination of agricultural and population and/or import/export data. The differentiation into these groups by type of statistical information thought useful by the respondents has to do with who collects or could collect this data. Viewed in this way, it is clear that those who were looking solely for agricultural information would be satisfied if the agricultural department were able to collect and present this type of data. The sizeable minority (37.9%) who were looking both for agricultural and other statistical data (primarily from the statistics office) would need both the department and the statistics office to be effective before their information needs were met.

Table 7: Type of statistical information most useful[24]

	Useful	
Type	n	%
Solely agricultural information	24	41.4
Both agricultural and other information	22	37.9
Both agricultural and research information	6	10.3
Solely demographic and other information	2	3.5
Research information or inapplicable reply	4	6.9

Statistical data that is both agricultural and research type data refers solely to the status of agricultural pests and diseases, both of plants and animals. Statistical data of this kind is derived both by survey, and as a by-product of pest identification services, and animal testing and pathology reports.

None of the types of statistical information deemed useful by the respondents is lacking, except perhaps some of the plant pest data, but it is possible that the information is not readily accessible or available. Very few mentioned the usefulness of regional information, and none suggested the usefulness of global information except expressed indirectly as a need to have market prices (in export markets) and import/export data.

3.3   Data collection

Having seen just what statistical resources are available, this sub-section considers who is responsible for gathering statistical information and the mechanisms used to collect it. Specifically, the following are discussed:
- which institutions collect data (information collected by interview and visits);
- who are the data collectors (by interview);
- frequency, credibility and error checking (by interviewing data collectors and from the perceptions of users);

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[24] Based on responses to survey question 16.

- content – required data collected (by interview and from the perceptions of users);
- limiting factors – institutional capacity, finance, number of staff, staff competencies (by interviewing data collectors); and
- suggestions for improvement – (from the questionnaire responses).

3.3.1   Institutions

As may be seen from the foregoing, Section 3.2, there are a range of institutions involved in collecting and some but not all publishing statistical information. In summary:

- all statistical offices collect agricultural information as part of overall data collection;
- all reserve banks collect some agricultural data related to the money supply and the capacity of the country to meet its debts;
- departments of agriculture are likely to undertake periodic agricultural censuses or surveys, and some collect market data;
- commodity boards collect data as a by-product of their transacting business, but do not themselves publish the data (nor do they see it as particularly useful for any other purpose, **see Case Study 2**);
- customs departments acquire data about imports (as part of their revenue collection activities) and some of these data may be of interest to departments of agriculture;
- quarantine services always have data on agricultural imports and exports (phytosanitary certificates); and
- development banks may have some useful data, particularly on the viability of the industry that concerns their borrowers (and departments of agriculture).

In all the countries visited, only statistics offices have the legal authority to compel householders to respond to requests for statistical information; all agricultural censuses then, where total compliance is required, are carried out jointly or nominally in the name of the statistics office and agriculture department. When this is seen as limiting the ability of the agriculture department to collect data, small and large-scale 'surveys' are undertaken, albeit co-operation of those questioned is voluntary, not mandatory. This seems to work well except in instances where the department approaches commercial farmers and producers. In this case, the response to questioning by an agricultural officer is not always given willingly, and not always truthfully.

3.3.2   Data collectors

Data collectors – the individuals not the institutions – fall into three categories: professional statisticians and enumerators, extension officers and skilled professionals (not statisticians).

Professional statisticians and enumerators almost entirely are found in statistics offices; there are a few statisticians in reserve banks and even one or two in agriculture departments, but in the main, they are found in statistics offices. However, when large activities are conducted, such as a national census, many more people who are not employees of the statistics office are used as enumerators, and a surprising number of them are agricultural extension officers. Owing to the frequency of national censuses, few officers participate in more than one census.

Extension officers, by virtue of the fact that in most countries they are dispersed at district level, are ideal 'data gatherers'. However, the extent of training provided to them during national or agricultural censuses is not necessarily sufficient to help them carry out routine collection of data, such as those that feature in the annual reports of agriculture departments. This has the effect of negatively impacting data collection and lessening the sense of responsibility for the quality of the data. Another area of concern is that extension officers themselves have adopted an approach to questioning the farmers and producers that does not

guarantee access to private, accurate information. The farmers become suspicious and suspect that the agricultural officer is in league with a rival producer; the validity of data so derived is suspect. Rightly, many farmers and producers see the questioning as intrusive and feel there is little benefit for them, so are disinclined to take the questions seriously, or give the time they might deserve. [**See Case Study 1**].

Professionals in agriculture departments, and these include veterinarians, quarantine officers, market information officers, economists and planners, all gather or seek out statistical data, which is then compiled in one form or another. What was found in the countries visited is that many of these individuals, even those 'responsible for statistical information' arrived at this position indirectly and have varying capacity for managing agricultural statistics. Only two trained agricultural statisticians were encountered, and one of them worked in a reserve bank.

3.3.3   Frequency, credibility and error checking

Concerns about the frequency of collection have to do more with routine data collection than with the large agricultural census or survey. What was found was that the capacity for routine data collection, for example, of market information, is cyclical: for a reasonable period of time, the data are collected efficiently; then something goes wrong – the officer responsible leaves, the ministry is downsized or the equipment breaks down – then everything stops, until some time in the future when the situation reverses. One consequence of this is that historic data are liable to have gaps, which makes interpreting trends difficult. Equally, leaving long gaps between agricultural censuses, as in the case of Papua New Guinea, a gap of 40 years, reduces the capacity of the agriculture department to monitor changes and respond accordingly.

It is a given that the credibility of data starts with its collection; where the collection is suspect, then little can be made of the results. As mentioned earlier, if those staff undertaking the collection do not see the point, are badly trained, poorly motivated and, as a result, feel little responsibility (i.e. have no investment in the outcome) then the credibility of data *is* suspect. Time and again in interviews, senior staff commented on the need for training data collectors, i.e. their extension staff; some also recognised the need for incentives to induce a greater sense of responsibility.

As a consequence of data being collected of varying credibility, error checking assumes greater importance. Data collecting institutions all said that they looked for obvious disturbances to data patterns; but none verified all the data, and none went back to the source except where it was obvious that the data were corrupt.

3.3.4   Content

The issue of content has to do with the collection of required data. There was evidence (from the interviews) that some data were collected 'because that's what we've always done'. The idea that data are collected to answer a specific question, illuminate a particular situation or enable an opportunity to be explored, was not non-existent but the reality suggests otherwise. The Consultant found several instances where the agriculture department iterated an information need but the data currently being collected could not, or not entirely, provide an answer; and many instances where the data being collected increasingly served little purpose. The idea that a procedure once established is immutable was common.

Despite this, results from the questionnaire survey show that 43 out of 52 respondents (82.7%) found the statistics 'Very comprehensive' or 'Comprehensive'; 9 (17.3%) did not, the reasons being:

- *not properly analysed*
- *gathering and compiling is not sufficient*
- *does not meet requirements*
- *presentation needs improvement to encourage people to read; interpretation is also lacking*
- *information on statistics is not enough*
- *data collected are extrapolated to gauge national figures*
- *the figures indicate the numbers of animals treated but rarely the diseases due to lack of diagnostic abilities or back-up (lab.) services*
- *the level of detail of livestock data is generally very poor*
- *often incomplete or non-standard format.*

On the face of it, this result would appear to discount the suggestion that there is a need for any improvement in the type of data collected. However, other questions in the questionnaire and during interviews had to do with ways to improve the situation; here it was found that there was suffused among the many answers, indications that the type or range of data were not necessarily collected according to need.

3.3.5 Limiting factors

During the interviews, it was noted that the principal constraints facing data collecting institutions are lack of institutional capacity and, the feeling from some institutions and especially statistics offices that other government agencies do not respond to requests for data collected promptly enough.

Lack of institutional capacity has to do with limited or limiting budgetary allocations, meaning that there just isn't enough funding to carry out mandated tasks as efficiently, effectively and in as timely a manner as required. Having the necessary equipment and software, and in the case of both routine and large-scale surveys, having reasonable access to transport are major concerns. Secondly, the number and calibre of staff, and their competencies, are major issues. Staff do not stay long in positions where their work is undervalued or morale low, although it was observed that in statistics offices and reserve banks, the morale seemed high. The drain of competent staff to other institutions, particularly to the commercial sector, or overseas through migration is an additional burden. Within agriculture departments, the lack of trained and/or professional staff is a significant limiting factor. The long 'chains of command' with all that that implies results in poorly motivated, less capable staff viewing data collection simply as a burden. The reliance on non-statistical staff for big surveys carries with it the responsibility of providing appropriate training and the constant fear that it is never enough.

The failure of many government agencies to supply the statistics office promptly was mentioned in many cases (although it should be noted, that there were examples of failure in the other direction too, where the agriculture department was left waiting for data from the statistics office). Constancy and consistency of data were concerns too. There were instances where lack of co-ordination between the agencies – even what could be described as institutional rivalries or jealousies – inhibited the free flow of data and impeded effective co-operation. However, there were many more examples where the statistics office worked closely with other agencies and were a great help to agriculture departments, especially during large-scale surveys or an agricultural census.

3.3.6   Suggestions for improvement

From responses to open questions in the questionnaire, suggestions were made for improving the collection of data (Q17), the most common response, mentioned 22 times among the 60 received, was for more training in collecting statistics. There is no surprise in this except to note that the need for training was mentioned more often to improve the collection of statistics than for any other area where improvement might be made, e.g. using statistical information. The other significant mentions were for more regular collection of statistical data (13 mentions), networking (also 13 mentions), improved methodologies and better availability (7 mentions each) and timeliness (6 mentions). In terms of networking, the responses indicated several distinct ways of looking at the issue:

- the need for greater interaction of institutions with each other and with stakeholders;
- better co-ordination of activities and resources within and between institutions; and
- strengthening information networks.

More regular collection of data and improved methodologies (i.e. standardised procedures and collection mechanisms; 4 mentions) will tend to improve timeliness (if the compilation is equally efficient). The call for better availability seems not to fit under the heading 'collection of statistics' except that improved availability is mentioned as an end result of better data handling, which does fit; similarly improved accessibility, from the point of view of consolidation of the results of data collection in a database, library or network.

The responses are listed in Annex 7, verbatim where possible.

3.4   Presentation, distribution and accessibility

This section looks at the medium of distribution and the way it is distributed or made accessible, and presents answers to the following questions:

- What is the medium of distribution (information collected by interview and visits)?
- To whom is it distributed (by interviewing data collectors)?
- Is there any feedback mechanism (by interviewing data collectors)?
- To what extent are people (i.e. potential users) aware of the resource (questionnaire)?
- How accessible, used, credible, and timely (observation, questionnaire, interviews) are the data?

3.4.1   Medium and format of presentation

All agricultural statistics published in the countries visited, irrespective of how they were compiled – and all institutions used computers – are presented in printed format. That does not mean that within an institution, printed publications are the only way for staff to access statistics; many are able to access the original database (or have it accessed on their behalf) and some are able to view statistics in other electronic media and on the Internet (though not by visiting national web sites but from web sites of international organisations which have recompiled national statistics on their web sites, e.g. FAOSTAT).

In the questionnaire survey the question was asked, '*What format is used to present the statistical information you need; but which do you prefer?*' The options were:

- print (published or unpublished);
- electronic file (e.g. Word document, PDF);
- computer database (e.g. FileMaker, Access); and
- web page or Internet-accessible database.

The results are presented in Table 8.

Table 8: Formats used and preferences for statistical information

Format	Used		Preferred	
	n	%	n	%
Printed	50	82.0	26	42.6
Electronic file	23	37.7	21	34.4
Computer database	19	31.1	30	49.2
Web page/database	14	23.0	25	41.0

Not surprisingly, 50 out of 61 respondents (82.0%) had used statistical resources in printed form; but it is interesting that 42.6% still prefer this format. This might have something to do with a realistic assessment of access to other formats (with the concomitant requirement for computer equipment and skills). Using Word documents and other fairly simple electronic file formats to present statistical information was the least preferred format, but a significant number (49.2%) preferred computer databases. Use of statistical information from the Internet, in one format or another, was least common and, surprisingly, not overwhelmingly preferred. Again, this probably reflects the realisation that access to the Internet will not be forthcoming to all staff, and not in the near future.

The most common means of managing statistical data are off-the-shelf application programs such as Microsoft Excel (very common), Microsoft Access, SPSS and FoxPro. Two agricultural departments (Fiji and Tonga) talked about installing a local area network (LAN) to facilitate the compilation of and access to statistical databases; Cook Islands may already have installed their LAN for this purpose.

Only two statistics' offices visited (Vanuatu and Tonga) had any definite plans for mounting statistical resources on the Internet[25]. Most reserve banks – with better budgets – already have web sites, primarily to inform about the bank's operations.

3.4.2   Method of distribution

Discussion on the medium and format of presenting statistical information necessarily determines the method of distribution. Since all the publications mentioned in Section 3.1 and 3.2 are printed, distribution issues revolve around having the money to print and distribute statistical publications. All statistical providers faced difficulties of one kind or another with this system, and clearly if acutely in the case of the PNG Department of Agriculture and Livestock, a large enough budget to print and distribute is not always guaranteed and is a severe limiting factor.

Printing and distribution by statistics offices increasingly is on a cost-recovery basis. That means that a limited number of copies of each publication are distributed free, usually to co-operating institutions (those who provided the data), ministers and overseas partners (both donor agencies and statistics offices); the remainder are sold *ad hoc* on subscription. The net effect of this – confirmed during interviews – was that fewer people and institutions than ever had access to the statistical resource. The way around this, at least as told to the Consultant, was to use the *wantok* system[26] to get a copy of the desired publication; or to have the statistics office prepare a special report or table directly from the database (as a one-off). This latter procedure was undertaken frequently and it seemed that if the office had the time and resources, they were happy to do this for the agriculture departments. At least, in this way the data were fresh and mostly current.

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[25] Sometime in 2002.

[26] The circumventing of formal procedures to get things done or achieve specific outcomes by enlisting the assistance of family members, friends and colleagues; equivalent in the Western world to 'the old school tie' or using mates.

Within agriculture departments, there was concern that not all agricultural statistical publications were distributed widely enough, not only to the officers who had contributed to them, i.e. extension officers, but also to those who needed to use the statistics in their work. Many users interviewed commented that these publications were not even available in the libraries, and called for a change to be made in the distribution policy (if such a policy exists). This supports the view that lack of *availability* of the publications, i.e. that they are not readily available where they are needed, is as much a problem as *accessibility*, that is that the contents are presented in a usable form and that the user has the skills necessary to make effective use of them.

Given that a major limiting factor is the time taken and skills necessary to get a publication to the stage where it is printable, and the cost of printing, all contribute to an unreasonable burden, other publication methods were considered. Prompting by the Consultant during interviews for data collectors to consider intermediate technology – CD-ROMs – to distribute databases and statistical publications met with a favourable response, although the technology involved was not so obviously understood. But with reference to the questionnaire findings (Table 8), that half of the respondents preferred to access the statistics as a computer database, then a simple, cost-effective solution is to distribute the databases as run-time versions on diskette or CD (if large). There was concern voiced during interviews that raw data in databases could be changed, on purpose or inadvertently, which could cause problems; or that data or electronic publications could be 'stolen'.

3.4.3   Feedback mechanisms

According to those involved in collecting and presenting statistics, there are no formal mechanisms for feedback (e.g. to find out whether the format is suitable or how it might be improved) and informal feedback is scarce and mostly extends to querying or correcting data presented, complaints about user-pay system, when publication is delayed or requests to be put on the mailing list (see Section 3.4.2). Suggestions (for improvement) are sometimes made to statistics offices during advisory group meetings.

3.4.4   Awareness of statistical resources

At the outset of the study, it was assumed that there was limited awareness of available statistical resources. Despite the difficulty of determining what is not known, it was thought useful to find out where users looked for statistical information, and how familiar they were with specific statistical resources or type of resource. The findings are discussed below.

Source of statistical information

To gain a better understanding of information-seeking behaviour, and some sense of their awareness of available resources, respondents were asked to identify where they looked for information – libraries, in-house databases, colleagues, etc. – and how frequently they did so. The results are presented in Table 9.

Table 9: Sources of statistical information, with frequency of use

	Often		Sometimes		Seldom		Sample size	
Source	n	%	n	%	n	%	n	%
In-house pubs/DBs	36	67.9	17	32.1	0	0.0	53	86.9
Statistics Office	22	42.3	22	42.3	8	15.4	52	85.2
Colleagues	25	49.0	23	45.1	3	5.9	51	83.6
Library	20	40.0	27	54.0	3	6.0	50	82.0
Agric Planning Office	21	43.8	17	35.4	10	20.8	48	78.7
Other Agric Office	19	41.3	22	47.8	5	10.9	46	75.4
The Internet	11	27.5	11	27.5	18	45.0	40	65.6

In-house (i.e. within the Department of Agriculture) publications/databases include, where available, the agriculture census and various quarantine, livestock and market databases, so it is no surprise that this is the source chosen above all others. Similarly, the range of publications and resources available to the national statistics offices complement these agricultural statistics very well, providing information on imports and exports, as well as basic demographic data.

It is interesting, however, that sourcing information from colleagues features so prominently (49.0%), above for example, the library (40.0%). What would be interesting to discover is to what extent 'asking colleagues' is the easier solution, or the only solution (in distant offices), and how much it is because certain individuals in the organisation may have access to statistical data that isn't published in one form or another. The low placing of the Internet as a source probably reflects access constraints.

A few other sources were given:
- *SPC, Forum Secretariat, SPTC, farmers, exporters*
- *private sector exporters/farmers*
- *scientific publications.*

Familiarity with statistical resources and those used

It is hard to expect people to use agricultural statistics if they are unfamiliar with (i.e. do not know about) the various resources available. To gauge the extent to which a lack of unfamiliarity might be a factor in the presumed low use made of available agricultural statistics, a few resources were listed, those more familiar in the Pacific context. They are:
- national agricultural statistical publications;
- national statistical publications;
- *South Pacific Economies – A Statistical Summary* (published by SPC);
- *Pacific Economic Bulletin* (published by ANU);
- FAO's (printed) statistical publications; and
- FAOSTAT (the online version).

The results are shown in Table 10.

Table 10: Familiarity with and use of statistical resources

	Familiar with		Used	
Resource	n	%	n	%
Ag stat publications	40	65.6	33	54.1
National stat pubs	35	57.4	30	49.2
FAO stat publications	27	44.3	21	34.4
SPESS	21	34.4	7	11.5
FAOSTAT	19	31.1	7	11.5
Pacific Econ Bull	19	31.1	6	9.8

A full description of the resources referred to is given in Section 3.1 and 3.2. It is noteworthy that very little use is made of three of them – *SPESS*, FAOSTAT and *Pacific Economic Bulletin* – which will be of interest to their respective publishers. The limited use of FAOSTAT is understandable given the current status of the Internet in the Pacific, but this resource is also published as a CD-ROM, which would be more easily usable in the region. All countries visited are members of FAO and as such, qualify for copies of FAO publications (and the printed statistical publications are distributed in quantities of 10/country). The limited use of *SPESS* is not explicable, given the occasions Pacific Island delegates are

required to present regional papers at international fora and that *SPESS* is the one place where data from the whole region might be found.

On reflection, perhaps it is not good that *only* 65.6% of questionnaire respondents are familiar with publications from (in most cases), their own department. Aside from respondents who do not work in the agriculture department, many of those who are not familiar with their own department's publications could be staff stationed in districts or on outer islands.

Cross-tabulating the area of specialisation with familiarity with statistical resources showed that 40 respondents were familiar with national agricultural statistical resources, extension staff were average at 70.0% (true average is 70.2%); veterinarians and livestock officers, quarantine officers, agronomists, marketing staff, farmers and trainers were above average; and information/communication staff (40.0%), economists, researchers, plant protection staff, and policy-makers and planners (66.7%) below average. There were some interesting things in this, particularly the poor familiarity of information/communication staff, and policy-makers and planners. Cross-tabulating seniority with familiarity showed an average familiarity with national agricultural statistical resources of 66.7%, senior-level staff were exactly average; middle-level staff were slightly below average (63.2%); and the two junior-level staff were both familiar with national resources (100.0%).

Interviews with data users did not reveal anything further about the extent of awareness of available publications. When asked to give an example of a 'good statistical resource', at least half said they could not give one; the remainder offered various specific publications or databases, mostly from the statistics offices with one or two exceptions (e.g. the quarantine database in Tonga, agriculture census results). Just five data users (21.7%) mentioned greater awareness of statistical resources as a way to increase use; this contrasts with seven data collectors (38.9%) who mentioned greater awareness was needed. These figures do not provide conclusive proof that greater awareness of statistical resources is needed; but the Consultant still doubts that the extent of awareness is as comprehensive as it could be.

3.4.5   Accessibility and use of statistical resources

Much of this section presents the experience and perceptions of users as gathered by questionnaire survey and during interview. Specifically, responses to the following interlocking questions are presented:
- the actual use of statistical information, and frequency of use;
- the level of success attained in finding needed information;
- the ease of use of the statistical resources, as perceived by the users; and
- perceptions to do with credibility and timeliness of statistical information.

Use of statistical information

To a large degree it is not surprising that of the 59 respondents (96.7%) who responded to the question, 98.3% said that they did use of statistical information. It was hoped that there would be more than one who said they didn't use statistical information, in order to find out why not[27]. It is possible that on seeing the questionnaire, some people decided that since they were not *currently using* statistics, they were not encouraged to respond (blind to the second question about whether they *wanted to use* statistics).

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[27] The one who didn't worked in a chemistry laboratory.

Table 11: Frequency of use

Frequency	n	%
Daily	12	19.7
Weekly	18	29.5
Monthly	18	29.5
Infrequently	13	21.3
Total	61	100.0

Frequency of use (Table 11) is affected by the level the respondent holds in the institution: 28.2% of senior-level staff but only 5.3% of middle-level staff use statistics daily; however, 36.8% of middle-level staff compared to 28.2% of senior staff use statistics weekly, and 42.1% of middle-level staff compared to 25.6% of senior staff use statistics monthly.

Level of success

From responses to the questionnaire survey, an overwhelming majority, 53 (88.3%), thought they were 'Successful'; one (1.7%) even went as far as saying 'Very successful'; but six respondents (10.0%) admitted their lack of success, for which the following reasons were given:
- *not consistent; not well presented; not checked properly before publication*
- *not accurate and out of date*
- *not enough and no information available*
- *hard to get the information you want*
- *not satisfied with the figures; out of date*
- *I don't get feedback especially from Research and local sources, even colleagues only supply me estimates.*

It should be noted that four of the six who were unsuccessful are senior officers, and two based in provincial offices. There is no evidence in the data to support the idea that senior staff are less successful than middle and junior-level staff, but was suggested by senior-level staff themselves during interviews. It can be accounted for by more senior staff having greater need for quality statistical information, and being more frequent users which exposes them to their own shortcomings more often than less frequent users.

Ease of use

> *Easy enough, but difficult to trust* – data user's response during interview

Out of 60 respondents (98.4%) a majority, 36 (60.0%) found them 'Easy' and three (5.0%) found the various statistical resources 'Very easy' to use; but 21 (35.0%) did not. The reasons for not finding the resources 'easy to use' included (in summary form):
- unavailability, i.e. not available or not easily located – 13 mentions
- poor presentation, i.e. not conducive to understanding – 5 mentions
- out of date, lacking consistency – 2 mentions each
- unreliable, dense, unfamiliar terminology, lack of skill – 1 mention each

When ease of use (of statistics) is cross-tabulated with functional group (refer to Table 4), proportionately more in the Outreach group (43.6%) found the statistical resources were not easy to use, compared to respondents in the Research group (20.0%).

During interviews with data users, seven (31.8%) said that they found it easy to use the data they'd found, but a number cautioned that this was only if they were available and accessible; nearly half, 10 (45.5%), found that it was sometimes easy, sometimes not; what made the

difference was the timeliness, comprehensiveness and validity of data found. Five (22.7%) admitted they did not find it easy to use the data.

Credibility

As part of the questionnaire survey, respondents were asked to what extent they believed the information they found, i.e. found it credible. Credible statistics are essential, so it is interesting that of the 57 who responded, 86% thought the information found 'Very credible' or 'Credible'; and 14% did not, because:

* *the data are not checked thoroughly before printing*
* *some are unchanged for many years*
* *they are out of date*
* *most of the information is not accurate, especially for [country] where correct data are not available in many cases*
* *for example, in the [country] 1995 census about the number of [crop] on [place]*
* *the people who conduct the census get their information by interview [as opposed to going out and counting the trees or pigs, etc.]*
* *more details required*
* *most [data] are at best guesstimates rounded to the nearest thousand.*

When the issue of credibility was raised during interviews with users, the response contrasts markedly to the findings from the questionnaire survey: of the 22 data users interviewed, only one thought the data credible; 54.6% said the credibility of data was variable (and suggested that official statistics are more believable than agricultural statistics); 40.9% said the data were not credible and remarked on the gaps, mentioning concern about how they were collected and compiled.

Timeliness

An aspect of statistical credibility has to do with timeliness, i.e. that the data are current and up to date as well as that the results of data collection are presented in a timely manner. In this regard, findings from the questionnaire survey show that there was a small majority, 47.4%, who did not find the information timely; 42.1% found it timely. Although the question was asked in a simple 'yes/no' format, 10.5% wrote it was timely 'sometimes'.

During interviews with users, 13.6% said the data were timely; 31.8% found the data not timely; and the majority, 54.5%, said that the some of the data were timely, some not. In a country that had recently held a national agricultural census the verdict was more positive. Thus there is some contradiction between the findings from the questionnaire survey and the interview responses, which is likely to reflect the opportunity in discussion with the Consultant to expand on the answer. In general, the available statistical information is not seen as being timely, nor up to date.

3.4.6 Suggestions for improvement

From the foregoing sections it would appear that there are a number of improvements that could be made:

* improve budgetary allocations for printing and distributing statistical resources, and explore alternative formats/media for presenting statistics;
* introduce a feedback mechanism for assessing the use and impact of agricultural statistics;
* increase awareness and improve availability (through better distribution) of statistical resources, especially those published by agriculture departments;

- improve credibility of data; and
- improve timeliness, i.e. currency, and the time from collection to presentation.

From responses to open questions in the questionnaire, suggestions were made for improving the presentation of statistics (Q19), improving access to statistics (Q18) and improving use of statistics (Q20). The responses are listed in Annex 7, verbatim where possible.

Improving presentation

Suggestions in the questionnaire responses for improving the presentation of statistics (see also Section 3.4.1 and 3.4.2) included:
- improve the format (16 responses)
- better interpretation of data (7 responses)
- provide training (6 responses)

The phrase 'easy to use' was employed by so many respondents the impression is gained that all suggestions for improving the format is about making the data easy to use, i.e. more accessible; similarly, 'better interpretation' was used in the context of explaining results through the use of narrative or graphic displays. Overall, the way the data are presented should not reflect the origin of the data, but its potential use. A good example is the way in which many import/export data are presented (i.e. annual trade reports). Most are presented in a form that resembles an old-style dot-matrix, computer print-out using Courier font at 12 pt, which is in itself very unattractive; compounding the problem is that the way the data are organised seems designed to dissuade even the most information-needy person (use of SITC codes *per se*, with no aggregation into reasonable headings). However, not all data are any more understandable when presented as colour graphs and pie charts, with fancy fonts; more thought should be given to presenting statistical information that takes into account the needs of the users, technical capacity and cost – this is not just a statistical issue, but a communication and management concern also. [**See Case Study 3**].

Improving access

Suggestions made in response to the questionnaire for improving access to statistical information (see also Section 3.4.5) included:
- Internet (15 responses);
- database (9 responses);
- publications (7 responses);
- equipment, computer network (6 responses each); and
- information network, training (4 responses each).

The linking of computers to a local area network or the Internet (and preferably both) was a major concern; many of the other suggestions for improving access have to do with networking of one kind or another – computer, information, online, and co-ordination (4 responses).

> *For those of us who do not have access to computers and Internet, we need printed information every month* – actual response to question on improving access (Annex 7).

There was a call for more regular publications, and for statistical resources to be available in printed format. It is as well to mention this now because an all-too-easy response to improving access is to reach for new technology; experience has shown that only the few benefit.

Publication of statistical information in the media, as part of dissemination of information to the public was mentioned. Overall, there was a feeling that the available statistical data could be better deployed and that modern technology can assist.

Improving use

Suggestions in the questionnaire responses for improving use of statistics (see also Section 3.4.5) included:
- provide training (16 responses);
- increase availability (10 responses);
- increase accessibility (9 responses); and
- improve timeliness, and provide equipment (5 responses each).

Having statistical resources where they were needed, i.e. local, and in a form that facilitated access were principal concerns. Much of the training being requested was to do with both with providing the skills to use the resources as well as help in understanding the use of statistical information. Timeliness, in the responses given, was directly related to availability, i.e. availability of up-to-date statistical information, where it is needed. Equipment, where requested, was computer equipment primarily but also included fax and phone.

3.5   Regional initiatives and networks

3.5.1   Food and Agriculture Organization

The Food and Agriculture Organization of the United Nations (FAO) are best known for providing technical assistance and training to member countries to enable them to carry out agricultural censuses in the region. In this regard, Fiji, Samoa, Cook Islands and most recently Tonga have recently conducted either an agricultural census or an agricultural survey[28]. The other countries – Papua New Guinea, Vanuatu and Kiribati – have indicated a desire to conduct a census in the near future. The impact of this assistance for the beneficiaries should not be overlooked, particularly where there is a lack of capacity at the national level to design, implement and interpret a statistical survey.

Training

To address this particular concern, a Japanese Government has funded an FAO project designed to improve the management of agricultural statistics in the Asia–Pacific region. The first phase of the project, Improvement of Agricultural Statistics in Asia and Pacific Countries (project no. GCP/RAS/171/JPN), was aimed at Asian countries but included Fiji (for some reason). The first phase was four years in duration, and concluded at the end of 2001; a second phase (with a new CTA) has commenced, and will last three years. This second phase has the title, Strengthening Regional Data Exchange System on Food and Agricultural Statistics in Asia and Pacific Countries (GCP/RAS/184/JPN).

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[28] The difference between the two appears to be an attempt to negate legislation that mandates a national statistics department as the only agency allowed to carry out a census (with the concomitant requirement on citizens to co-operate). A 'survey' on the other hand, relies on the willingness of people to co-operate but as an activity is less hidebound by rules and regulations, and is an activity that agriculture departments can conduct on their own (not that they always do).

The project followed a request made under the auspices of the FAO Asia and Pacific Commission on Agricultural Statistics (ASPAC) meeting held in Tokyo, Japan, in October 1996. The project document iterates the two immediate objectives:

- national statistical development strategies and plans drawn up for the improvement of food and agricultural statistics and information, for implementation in participating countries; and
- plan for the establishment of a database and equipment facilities, in a number of countries, to provide a capability to transfer data in electronic format both to and from countries in the region and FAO, using common concepts, standards and classifications.

The two immediate objectives of the follow-up project:

- phased implementation of the master plan for the Regional Data Exchange System for Food and Agriculture Statistics, following concepts formulated by the previous regional project, to transfer data both to and from countries in the region and FAO, in electronic format; and
- strengthen national capacity to analyse, use and disseminate food and agricultural statistics in support of national agricultural development policy and planning, including associated food security and poverty alleviation concerns.

Apart from a more explicit alignment with two core programmes of FAO – food security and poverty alleviation – this new project focuses on furthering a technological solution for data exchange. This may well be reflective of the current capacity of the FAO member countries in Asia, which are more advanced than the standard reached by FAO member countries in the Pacific. It is not surprising that all reference to Pacific Island member countries has been dropped, and only a select few Asian countries are included in the project. This does not mean that this project has no value for the Pacific, just that it will not be immediate; lessons learned and the tools and methodologies that will have been developed will have to wait until such time as they can be adopted, if appropriate.

WAICENT

An additional reason for making a visit to FAO in Bangkok had to do with WAICENT, FAO's World Agricultural Information Centre. WAICENT[29] grew out of a recognition, expressed at the World Food Summit in 1996, that 'information is one of the priority areas in achieving food security' (M. Riggs, pers. comm. 22 May 2002). There is some confusion in the mind of many that WAICENT is solely a web-based resource for FAO; this is not so. WAICENT is a strategic programme for information management and dissemination, and: acts as a clearing-house for information (by establishing standards, methodologies, etc); provides outreach to member countries (and institutions) by discerning information needs of stakeholders and partners, and capacity building; and acts as an inter-governmental forum for members through COAIM, the Consultation on Agricultural Information Management held biennially. Examples of the way WAICENT has contributed range from: technical backstopping of FAO projects, to support to one of FAO's key missions, Food Insecurity and Vulnerability Information and Mapping System (FIVIMS); from technical advice on the establishment of a regional information network, APARIS (see Section 3.5.4), to responding to *ad hoc* requests from governments for assistance in developing capacity.

Thus WAICENT is not just a web site; it is a strategic partner, and as such can contribute to implementing any agreed proposals for improvement in the management of agricultural statistics in the Pacific Islands. In this regard, a recent (Nov–Dec 2001) mission to the Pacific by the FAO Senior Extension, Education and Communications Officer, Dr Malcolm

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[29] http://www.fao.org/waicent

Hazelman, considered ways in which WAICENT may be able to make a contribution. Hazelman observed, *inter alia*, that regional institutions are potential WAICENT partners and that training requested on information management. Both these observations lend credence to a strategy for improved management of agricultural statistics which includes WAICENT.

3.5.2   Pacific Financial Technical Assistance Centre

Of more immediate interest is an initiative from the Pacific Financial Technical Assistance Centre (PFTAC). Implemented by the International Monetary Fund (IMF) and United Nations Development Programme (UNDP), with funding from Australia, New Zealand and the Asian Development Bank, the most valuable activity to date has been the development of a questionnaire to gather information on current statistical capacity in the region, at the national level. PFTAC's work has a high-level of recognition through its acceptance by and discussion at the annual Forum Economic Ministers Meetings (FEMM). At the 2000 FEMM in Niue, the Ministers agreed:

> 'on the need for substantial improvements in statistical collection, analysis and dissemination to strengthen policy development and monitoring, increase transparency, and foster private sector development in Forum Island Countries through:
>
> (i)   institutional strengthening of national statistical offices, where appropriate, with improved capacity through staff training and other forms of technical and financial assistance; and
>
> (ii)   greater efforts to establish a core set of priority data compatible with the international formats and standards established by the IMF's General Data Dissemination System (GDDS) and the UN's Minimum National Social Dataset (MNSDS)...'

By way of example, PFTAC carried out a review on the collection of statistics in Fiji, in January 2001. The aim was to try to improve macro-economic statistics, recognising that there is a problem with the informal, semi-subsistence sector. It is thought possible to undertake household income and expenditure surveys to acquire baseline data on production.

GDDS has been recommended as a regional standard. However, to meet GDDS standard, there is a need for good statistical infrastructure, i.e. trained staff, a manpower plan, adequate resources, and an infrastructure to support co-operation between statistics departments and other government departments. Co-ordination and training are essential; PFTAC would like to see horizontal transfer between the statistics departments and agriculture departments.

3.5.3   Secretariat of the Pacific Community

The role of the Secretariat of the Pacific Community (SPC) in supporting the development of agriculture and forestry in the Pacific is well documented and well known. Specifically with respect to agricultural statistics, evidence was not found to show that SPC directly has had an involvement in helping member countries better manage their agricultural statistical information. On the other hand, the SPC Socio-Economic Programme in Nouméa, New Caledonia, has been a major support to statistics offices in the Pacific through the provision of technical expertise, and as a result of collating official statistical data into *South Pacific Economies – A Statistical Survey* (SPESS).

3.5.4   APAARI

At the outset of this study, there was concern that recommendations for improvement, assuming that there was a situation to improve, could end up duplicating the activities or

initiatives of other projects, networks or institutions. In particular, the Asia–Pacific Association of Agricultural Research Institutes (APAARI) and SCAINIP (see Section 3.5.5) were mentioned.

APAARI is a relatively young organisation; its constitution was adopted only in 1990. But it has a membership of 26 institutions drawn from the whole Asia–Pacific region, from West Asia to the Pacific Islands; associate membership is held by all International Agricultural Research Centres in the region, and with its Secretariat hosted by the FAO Regional Office for Asia and the Pacific in Bangkok, is well positioned to innovate and lead. APAARI's first listed objective is to 'promote the exchange of scientific and technical know-how and information in agricultural' (APAARI Constitution, art. III, para. 5a, 1994), which places it firmly in the information networking business. More recently, APAARI has been working towards developing APARIS, the Asia–Pacific Agricultural Research Information System. Growing out of the five-year *Perspective Plan* of APAARI (1995), high priority was accorded the promotion of 'information and communication among member national agricultural research services (NARS) and others for exchange of knowledge on agricultural research for development' (APAARI 2001). Subsequently, APAARI acquired funding from the Australian Centre for International Agricultural Research (ACIAR) to strengthen the information and communication technology (ICT) needs at the APAARI Secretariat. ACIAR funding paid for equipment and staff. At the time of the Consultant's visit to the APAARI Secretariat (22 Feb 2002), the Information Officer had just completed her contract and there was no replacement.

On the face of it, there is currently no danger of duplicating activities or initiatives resulting from this study: The capacity of APAARI is still determined by member fees and external funding and APARIS is relatively new. Within its limited resources, there has been some development of a web site, production of a CD of 'success stories' and a workshop on research information management held in Chiang Mai, November 2000. Until the long-term future of APARIS is assured, a 'watching brief' only is needed, with the proviso that collaboration between APAARI and CAB International, and APAARI's proximity to FAO suggest significant developments in the future. As the information network is developed, it is expected that there will be opportunities for cross-linking; in this respect, APARIS sees itself as being a 'gateway'.

3.5.5 SCAINIP

The Standing Committee on Agricultural Information Networking in the Pacific (SCAINIP) was established at a meeting at University of the South Pacific Alafua Campus, October 1988. Attending the meeting were representatives from the then South Pacific Commission, USP School of Agriculture, USP Institute for Research, Extension and Training in Agriculture (IRETA), South Pacific Regional Agricultural Development Project, University of Guam, PNG University of Technology, USP Pacific Information Centre and the Pacific Regional Bureau of the Technical Centre for Agricultural and Rural Cooperation (CTA). Listing the attendees in a significant way indicates the purpose of the meeting: to look at ways in which agricultural information services in the region could be better co-ordinated through improved collaboration.

From 1988 to 1998, SCAINIP offered a way these regional institutions and projects – and later, national agriculture departments – could collaborate in organising and running training workshops, developing standards, and developing information tools and resources. The network's strength was that it was able to capitalise on each individual institution's capacity (and work programmes) for greater, shared benefits; its weakness was that it was never formally recognised at a higher level, that it depended too heavily on personalities and projects, and that it could never really break away from the initial focus on library co-operation.

There have been suggestions over recent years to resurrect SCAINIP and the Consultant was requested in his terms of reference to consider SCAINIP when developing recommendations as a result of this study. If a region-wide information network were recommended, then the lessons learnt from 10 years of SCAINIP would be useful in developing a new model. Those lessons are that:

- a regional agricultural information network has to be grounded in effective national agricultural information networks;
- there has to be a purpose beyond merely 'improving co-operation' or 'exchanging information' between agricultural institutions in the region; a purpose which takes into account tangible benefits for individuals and institutions in the region and is based on a credible needs assessment;
- participation in the network has to be at the institutional level, and interchanges be included in the role and responsibilities of specific officers – preferably at senior level – in the unit responsible for co-ordinating the national information network; and
- participation in the network is not just of librarians, but the whole range of agricultural information professionals including but not limited to extension staff, publishers, communicators, educators, and agricultural statisticians.

3.5.6 PARIS21

PARIS21 derives its unusual name from PARtnerships In Statistics for Development in the 21st Century. PARIS21 is a strategy which reflects the 'commitment to bringing all the development partners together to make a real difference in providing statistics for evidence-based policy making' (*Information Development*, vol. 16, no. 1, 2000, p. 4). The reason for bringing PARIS21 to the fore in this study is because it has the support of developing countries and donors alike[30]. In her keynote speech at the launch of PARIS21, the UK Secretary for International Development, Claire Short, said that: 'Good statistics allied to appropriate government policies can change things radically and for the better'. She went on to say that 'Badly informed decisions particularly affect the poor people'.

PARIS21 was established in November 1999 to:

- promote a culture for setting and monitoring policy based on evidence; and
- fostering well-managed national statistical systems that use resources effectively.

Further, PARIS21 works through:

- **p**artnership – bringing together donors and governments in support of country-owned development strategies;
- **a**dvocacy – to demonstrate the power and use of statistics for policy decisions;
- **r**esource – mobilisation to be able to collect the right information for policy-making;
- **i**nformation – exchange to share knowledge and foster co-ordination; and
- **s**trategies – to build sustainable statistical capacity, by better use of data as a tool for more effective development.

Of interest is that PARIS21 established a Task Team on Food, Agriculture and Rural Statistics (TTFARS) at their Consortium Meeting, 22–23 June 2000, in Paris. FAO is involved. Without duplicating activities implemented by various agencies, the Task Team will:

- contribute to the advocacy and more [sic.] visibility of food, agriculture and rural statistics (FARS) within the overall system of national statistics;
- advise on ways and means of mobilising more resources to support capacity building in FARS both at country and donor levels;

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[30] The founding organisers are the UN, OECD, World Bank, IMF and European Commission.

- provide a forum for exchange of innovative ideas, sharing of experience and best practices between agricultural statisticians and data users in various institutions;
- assist in identifying areas for methodological research needed to minimise cost of data collection on [the] food, agriculture and rural sector, and ensure timely and full use of the results; and
- promote better co-ordination among partners and stakeholders in food, agriculture and rural statistics (from a draft paper for discussion).

More information about PARIS21 can be found on their web site <www.paris21.org>.

3.5.7 Pacific Islands Trade and Investment Commission

Although peripheral to the current study, the Pacific Islands Trade and Investment Commission (PITIC)[31] is an active player in the promotion of the region's capacity, including its agricultural produce and commodities. PITIC is an agency of the Pacific Islands Forum Secretariat and actively promotes trade with the Pacific Islands region by identifying marketing opportunities, potential trade partners, helping exporters meet quarantine requirements, etc. The PITIC office in Sydney is one of three located in countries adjacent to the region (the others are in Auckland and Tokyo).

There are no agricultural statistical data presented on PITIC's web site (www.sptc.gov.au), and the web site of the Pacific Islands Forum Secretariat seems to be an evolutionary stage, so it is hard to be certain that there are no current data on agricultural production and more specifically, trade. However, PITIC itself does produce an attractive newsletter, *Pacific Outlook*, which has much that would interest agricultural exporters, such as new quarantine regulations on taro and mustard stick found in the Sep/Oct 2001 issue. Therefore, any development of interactive products in the future that utilise agricultural statistical data and present market opportunities must take cognisance of PITIC.

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[31] Previously known as the South Pacific Trade Commission.

4. Discussion

This section summarises the findings presented in Section 3 and discusses possible solutions. The organisation of this section follows closely the Terms of Reference and includes:
- an assessment of the available agricultural statistical data;
- a determination of collection methods and data assembly; and
- a review of the way data are presented, distributed and made accessible.

Once these areas have been explored, further consideration will be given to:
- regional networks and initiatives; and
- the role of SPC, specifically in improving its own collection and use of agricultural statistics, and providing technical assistance and support to member countries.

4.1 Available statistical data

The type or range of statistical data being collected – and in their published form, summarily reviewed in Sections 3.1 and 3.2 – are a reflection of the type of question it is thought the data will help answer. Recognising the issues and concerns raised in Sections 3.3 to 3.5, some assessment can be made of the available agricultural statistical data:
- More data are available than are generally made accessible, by publication or otherwise.
- Regional and international statistical resources are dependent entirely on national capacity.
- National statistical publications contain variable useful agricultural data, but are constrained in many instances by the data collection and management capacity of co-operating institutions.
- National agricultural statistics are not always comprehensive enough, and do not always present data needed to support decision making.
- Many concerns were raised about the interpretation and presentation of data.
- In general, there is a lack of awareness of statistical resources and a consequent limitation on their use.
- Nevertheless, the carrying out of an agricultural census tends to lead to those being involved having improved skills and greater motivation, with improved understanding of agricultural statistics and their role.

4.2 Collection and compilation of statistics

Expertise on how to conduct and collect information, at minimal cost, in a well-functioning working system – response to the question about what could be done to improve data collection (Annex 7)

It is assumed that poor data collection leads to doubts about the credibility and usefulness of statistical data. Based on the findings of the study as presented in Section 3, the issues to be addressed concerning data collection can be summarised as:
- There are few staff with appropriate competencies to design statistical surveys to meet the information needs of agriculture departments.
- There is a lack of staff and lack of trained staff to carry out data collection activities on behalf of agriculture departments and other agricultural institutions.
- There is no effective organisation and/or resourcing of a statistical capacity within agriculture departments.
- There are no standard forms and procedures for the collection of routine statistical information within agriculture departments.

- There is poor co-ordination particularly within agriculture departments, and to a certain extent between agriculture departments and other government agencies, commercial entities and non-government organisations.

All of the above lead to variable regularity of data, lack of timely data and poor quality data, which do indeed suggest there are doubts about the credibility and usefulness of agricultural statistical data in the Pacific Islands. Co-ordination and training are essential. PFTAC has said that it would like to see horizontal transfer between the statistics departments and agriculture departments (see also Section 3.5.2). This tallies well with the call from data users for greater co-ordination; and from national statisticians, for improved co-operation; and meets Murad's concerns (refer Section 4.6.2).

It is not just with the collection of data that there are concerns; once the data are collected they have to be compiled, made available for analysis, interpretation and subsequently, published. A number of issues were raised, both by data collectors and data users, which can be summarised as:
- lack of computer equipment and appropriate software;
- lack of capacity to use computer equipment and software; and
- limited capacity to interpret data and identify the significant findings.

Although hard to prove, there appeared to be an incremental willingness of staff to admit to inadequacies in their ability to effectively interpret statistical data the higher up in the organisational structure they were. Secondly, whereas many agriculture departments have access to computers and 'computer literacy' has improved markedly over the past decade, many interviewees and responses to the questionnaire survey suggest that there is still a lack of capacity to manage computers effectively. This is evidenced in many ways but one particular example tells the whole story:

> In one institution, a computer and software (FoxPro) were acquired to process fairly simple statistical data, i.e. limited in extent and complexity. The system worked fine whilst the consultant/adviser was still on contract, but once he left it was found that no one could access the computer database because no one other than him knew the password. No one currently in the establishment knew how to get around this problem; and the consultant/adviser was nowhere to be found. For the last 12 months, the institution has been filling out data summary sheets by hand.

When looking for solutions, it should be accepted that for many countries, the idea that they can establish and resource an agricultural statistical unit within their department is one with a limited future; their establishment and budgetary allocations are just too small. Any solution proposed must take account of their particular situation. Secondly, dependence by the agriculture department on a statistics office for collation and interpretation of data takes that office away from core activities, and is likely to be unsatisfactory; conversely, if the agriculture department took or was delegated responsibility (by the statistics office) for collecting, collating and interpreting data in their sector, and this was done through improved co-ordination nationwide, there is likely to be a much improved situation.

A solution to the issues raised can be addressed on two fronts: better training for data managers and collectors; improved organisation and management of data collection activities.

4.3 Presentation, distribution and accessibility of statistics

4.3.1 Presentation

Based on the findings of the study as presented in Section 3, the issues to be addressed are:
* poor budgetary allocations for printing statistical resources;
* lack of alternative formats/media for presenting statistics;
* poor timeliness, i.e. currency, and the time from collection to presentation; and
* lack of or limited skills for the presentation of statistical information, particularly when it concerns manipulation of statistical data; user-focused content; use of complementary graphics; and preparation of narrative summaries (i.e. interpretation).

Given that there is still a large constituency that neither has access to nor the skills to use computer and web-published resources, there will be a continuing need in the short to medium-term for statistical resources to be published in printed form. However, attempts could be made to explore alternative or, even better, complementary forms of publication, especially using CD-ROM technology to present and distribute statistical databases and/or statistical publications. The closer the design and intended use of these CD-ROMs is to an Internet-like resource, the better, since that will minimise the need for additional training at a later stage when the Internet is more accessible. And costs may be much less than preparation of traditional printed publications.

An improvement in the quality and format of statistical resources will require additional human resources as well as other resources, and a need for skilled staff. Greater emphasis on users and their needs will require better co-ordination of data and opportunities. This will lead to the need to aggregate this capacity into agricultural statistical units. To an extent, this is happening already in some countries visited, i.e. Tonga, Fiji Islands, possibly Vanuatu; already in place in Papua New Guinea.

In 2001, the SPC Statistician, Garth Parry, drew attention to the need for a special statistical classification for agriculture and fisheries in the Pacific. In his paper presented to the FAO Conference on Agricultural and Environmental Statistical Applications, Rome, 3–7 June, Parry (2001) puts forward an alternative to ISIC, the International Standard Industrial Classification of all Economic Activities, that better reflects the needs of small island economies in the Pacific. This is overt recognition that data could be better presented to make more sense from a Pacific perspective and is an interesting and useful contribution. His suggestions should be considered at the time discussions are held on any improvements to formats.

4.3.2 Distribution

Based on the findings of the study as presented in Section 3, the issues to be addressed are:
* poor budgetary allocations for distributing statistical resources;
* limited awareness and poor availability of statistical resources, especially those published by agriculture departments;
* limited credibility of data; and
* lack of a feedback mechanism for assessing the use and impact of agricultural statistics.

In that official government statistical publications are now distributed on a cost-recovery basis (i.e. charged for), there is an opportunity – in collaboration with the statistics office – to summarise the key data and/or prepare innovative regional (provincial) reports for wider distribution in the agriculture department. This is partly to ensure all officers have access to statistical information of relevance to them and partly also to reduce the effect of the official

publications that are now priced. There is currently a lack of availability of even the agriculture departments' own publications beyond the headquarters and main offices, i.e. out in the regions or districts.

4.3.3   Access to statistics

With greater availability of statistical publications throughout the agriculture department, there will be an improvement in access. However, to make best use of this improvement, the following issues will have to be addressed:

- lack of computer equipment and in particular, limited extent of computer networking;
- few if any effective and credible national information networks;
- poor co-ordination statistical data collection and management within agriculture departments; and
- limited skills in using information and communication technology.

The uneven distribution of resources, particularly computers and access to the Internet, within agriculture departments is a significant concern to many staff; even if they wanted to use statistical information in electronic form, they face many constraints (lack of equipment, lack of skills, lack of immediate access). Thus the need to maintain printed access to statistical resources. A strategy that is focused solely on modern technology, computers and the Internet will not benefit the majority and will increase further the imbalance between the information haves and information have-nots.

4.3.4   Use of statistics

With better collection of relevant and appropriate data, more up-to-date and timely production of statistics, increased availability and better access to statistical resources, many of the concerns to do with use of statistics will be resolved. However, based on the findings of the study as presented in Section 3, those issues that remain to be addressed are:

- limited capacity by agricultural staff to interpret data and apply the interpretation to understanding and resolving problems and identifying opportunities; and
- limited capacity by agricultural staff to prepare situational analyses, project documents and the like using statistical information effectively.

Time and again, interviewees referred to their need for statistics to help understand a situation, or to justify a particular policy or strategy as part of the planning process. Many said directly and indirectly that they felt this was a weakness in their capacity. These concerns can be addressed in the context of using statistical information in a more effective way to achieve specific outcomes, e.g. work programme, project proposal. These competencies to be available at all levels in the agriculture department, so that the district agricultural officer is as capable of contributing to an improvement of the situation in the rural areas as the senior planner is at the national level. And only gaining confidence in using statistical resources in this way will they be an improvement at the overall institutional level.

This strategy will go a long way towards tackling an issue that has not been noted earlier, but has been at the back of many comments and suggestions, namely that the role of agricultural statistics is not as understood and appreciated as it ought to be. The major assumption of this study is that access to credible, timely and appropriate agricultural statistics leads to more effective decision making. Despite agreement on this statement among decision-makers and senior staff[32], the allocation (i.e. lack) of budgetary allocations, staff and other resources do not suggest that the management of agricultural statistics is truly a priority.

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[32] The decision at PHALPS to recommend that this survey be done is evidence of important role of agricultural statistics; the findings suggest the opposite.

4.4   Regional initiatives and networks

Regional initiatives and networks as outlined in Section 3.5 have all attempted to address the immediate need in countries for better agricultural statistics. In particular, FAO has been active among its member countries in providing technical assistance and funding support for agricultural censuses and surveys. The considerable amount of training provided together with equipment and other resources have contributed significantly towards capacity building and institutional strengthening. However, not in every case has this capacity been maintained; rather there is the impression that every time a major survey is carried out, all the support and enthusiasm dissipate relatively quickly until the next major survey. An FAO/TCP is by definition, 'on the way towards achieving something bigger'; a TCP is supposed to fill an urgent need, and be part of an overall strategy where there is an identified 'gap' (in resources, expertise). It is not certain that this has happened, not when the evidence of a once efficient, now redundant agricultural statistics unit is presented. This stop-start approach to managing agricultural statistics is a major concern.

Given that there have been relatively recent agricultural censuses and surveys in four countries in the region (Fiji Islands, Samoa, Cook Islands and Tonga), and that there continues to be found the capacity and enthusiasm for managing agricultural statistical data, it is suggested that recommendations for improvement look towards complementing this work, from both a national and regional perspective.

Considering the contribution of regional and international institutions and networks (Section 3.5), the issues to be addressed are:
- lack of sustainability of the investment made through specific projects in agricultural statistical capacity and management;
- lack of a functioning regional information or organisational network that can contribute towards better access to agricultural statistics at the national, regional and international level; and
- limited contribution by the region of statistical information in global databases and systems.

It is certainly true that if agricultural statistical management at the national level improved, the opportunity to make these data available regionally and globally is realisable. Assuming that this national capacity were achieved, access to national statistical resources by others in the region could be facilitated by a re-established, refocused and newly-invigorated SCAINIP or something like it. It is not certain that continuing with SCAINIP as a library-oriented network will be beneficial; the re-engineering of it has to do with formalising and repositioning the network to be at the centre of all information management activities, whether they have to do with information resources found in libraries, information networks, outreach and communication activities, or statistical information (see also Section 3.5.5).

The involvement of WAICENT (see Section 3.5.1), through the FAO Regional Office in Bangkok (Thailand) and Sub-Regional Office in Apia (Samoa), in any strategic development is necessary so that the Pacific region can benefit from FAO's experience in other regions of the world, and because no one institution or programme can shoulder the whole responsibility. FAO can bring many other strategic partners to help in the development.

4.5   Role of SPC

The role of Secretariat of the Pacific Community (SPC) in agricultural and forestry development in the Pacific region is not in doubt. SPC has received acknowledgement by the Council of Regional Organisations of the Pacific, Working Group on Land Resources, of its lead role in the agriculture sector.

As outlined in the Strategic Plan, 2001–2005 (SPC 2001), the goal of the SPC Agriculture Programme is:

> To contribute to the economic and social well-being of the Pacific Island people through sustainable agricultural development.

The Programme has four objectives:
- increase efficiency and sustainability of agriculture;
- improve food security and public health;
- facilitate trade in agricultural products; and
- decrease impact of natural disasters.

In regard to agricultural statistics, SPC does not have the capacity currently to assist its member countries. But in striving to achieve its Programme objectives, several of the general strategies listed either require access to credible statistical data, or seek to assist countries improve their decision-making, which depends on access to credible data. Specifically, the following general strategies:

> Promote meaningful exchanges with our stakeholders to identify emerging issues and changing priorities in the agriculture sector.

This implies that the stakeholders at the national level have access to credible, timely, up-to-date and appropriate statistical information, access to the data, and sufficient skills to interpret them once acquired.

> Promote inclusion of food security and gender in project evaluation and formulation of project proposals.

Similarly, in carrying out this strategy, access to appropriate statistical information is imperative; it might be argued that because data on food security and gender are not or not well represented among available statistics, that this is why they need promoting.

> Provide countries with timely information to assist decision-making.

The most relevant general objective; also the most difficult. In the general scheme of things, provision of timely information to assist decision-making must come from within (an institution) as well as be accessible from without (e.g. SPC). However, the assumption is that the information, to be useful, has to be well-documented and organised (indexed), that the structures are in place to convey both request and response, and that there are skills available to manage information efficiently and effectively. As the findings show, that is an area of concern when considering agricultural statistical information[33].

In considering the specific strategies – those that seek to meet one of the four Programme objectives – several of them are based on the assumption that SPC and/or its stakeholders and

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[33] It's also an area of concern when considering management of agricultural information *per se*.

partners have access to credible, timely, up-to-date and appropriate statistical information. For example:

- increase adoption of more efficient and sustainable land use practices – Objective 1;
- promote livestock production – Objective 1;
- determine impacts of changes to the agricultural system on food security in PICTs – Objective 2;
- strengthen policy capacity of PICTs to deal with food security issues – Objective 2; and
- promote livestock and crop management systems which reduces the impact of disasters and facilitate response – Objective 4.

Each one of these specific strategies has at its core the need for credible and complete statistical information; change cannot be measured unless there is base data. Quite simply, these data are not available or not comprehensive enough currently; particularly data on the subsistence and semi-subsistence sectors – those most affected by disasters, and the best targets for improved practices that can bring proportionately greater benefits in terms of well-being and quality of life in the rural areas.

4.6 A summary of critical issues

4.6.1 Role of agricultural statistics

Murad noted that 'a major reason for the less developed state of statistics in PICs is the lack of awareness of the need for statistics in the decision-making process' (2000, p. 3). Whatever the basis for this assertion, it tallies well with what the Consultant found, from comments made by interviewees and mostly by observation. For example, if the need for statistics in the decision-making process was *truly* accepted, then the situation would not arise where agricultural statistics units were neglected, staffed increasingly with junior officers with low qualifications and limited skills, and with no or few resources (equipment, travel budget) to carry out effective collection of data. This example though is typical of the current situation.

4.6.2 Institutional capacity

The institutional capacity to carry out surveys in many Pacific Island countries is limited for a number of reasons. Lack of a sufficient number of well-trained staff is a significant lack. However, many of the countries in the region are too small to support a facility with this capacity, even at the national level; 'in particular, small countries in the region, such as Cook Islands, Nauru, Niue and Tuvalu, with a population base under 50,000, do not have the capacity for a permanent staff to conduct censuses or similarly large undertakings' (Murad 2000, p. 11). It was observed that whereas the national statistical department very often had reasonable capacity to compile data, the collection of it was often left to others; in many cases, agricultural extension officers were used (and not just for agricultural censuses but also for the national population census). Any undertaking of even a reasonable size would have to conduct extensive training of enumerators and survey data collectors, which adds to the cost and also does not entirely eliminate poor data collection.

Many questionnaire respondents and those interviewed noted the poor timeliness of available statistical data. The issue of timeliness though is not just about the currency of data presented, but is in many cases a direct result of conflicting priorities by statistical agencies with limited staff capacity, both in terms of numbers and calibre: 'Where the establishment of large-scale surveys has been tried, it typically has been at the expense of contemporaneous statistics, and explains much of the dismal state of statistics in the region' (Murad 2000, p. 20). Indeed, it need not be large-scale surveys: in one country that does undertake a weekly market survey, this data is generally not available for use until weeks or even months after the data has been

collected. It was suggested that a reason for this is that the officer responsible in one of the two partner agencies has other duties that conflict in terms of time and priority. An obvious solution would be to consolidate all market data collection with the one agency that does have time and resources to undertake regular surveys; it is the data that is important, not who does the collecting.

4.6.3   Resources to survey, publish, distribute

When looking for reasons why, once data are collected, they are not made available, there is no better example than Papua New Guinea. Despite antiquated equipment, an annual statistical publication is compiled; but because there are no or very limited funds available for publishing and distribution, only 10 copies are actually printed. The effect of this in terms of reducing the availability of statistical information for decision-making and the resultant low morale of the staff involved broach no argument. It could well be, as noted earlier, that the reason for lack of resources is yet another example of the low appreciation by decision-makers of the importance of access to timely, credible and comprehensive statistical information.

Statistical resources that are not widely distributed are not accessible, their value is under-appreciated and their use negligible. This must affect the quality of decision-making.

4.6.4   Training and support

Suffusing this report is the need for targeted training and provision of technical assistance. Currently, neither of these are available excepting to a limited extent under agricultural census/survey projects. An opportunity exists for SPC to consider how it might contribute, providing the following issues are addressed:
- SPC Agriculture Programme does not have an agricultural statistician on staff;
- operationally, SPC is constrained; and
- management of agricultural statistics, whilst certainly in need of improvement, is not the only concern.

If SPC were to acquire an agricultural statistician, that person could help agricultural institutions in the region determine survey strategies, provide training and assistance in carrying out data collection activities and could help in interpretation and presentation of the results. But, this position cannot be dependent on external funding for the simple reason, as noted earlier, that some if not most countries will always have a need for assistance in this particular area (a bit like the provision of an information service). Therefore, and this points to an operational constraint faced by SPC, priorities have to be determined by SPC and its partners/stakeholders in terms of just which services and activities must be core, i.e. provided long-term; and which can be short-term. It could be argued that if SPC cannot make this commitment, then it shouldn't offer agricultural statistical services at all, because the alternative is one-off agricultural surveys which exacerbate the stop-start management of agricultural statistics.

Another operational constraint for SPC is the way it is dependent for the bulk of its funding on projects, and that despite attempts to the contrary (and the *Strategic Plan* is evidence of this) the approach to countries is through projects. The Consultant became aware during the country visits, in discussions with staff of agricultural institutions, that although he may have visited to find out about agricultural statistics, this was interrelated to other issues, problems or areas of opportunity. In other words, an approach that adopts a 'clean slate', with no agenda, was more useful to the country or institution than retaining a particular focus. Evidence for this is given in the case studies (Annex 9). What it shows is that discussion on the problems of collecting data from egg producers quickly turns to consideration of how to

better work with farmers, i.e. an extension problem; or an opportunity to use available data on copra production transforms into better ways to interact with copra producers, giving them feedback on their industry and in so doing, improving the quality and volume of copra produced, i.e. a communication problem; or a way of rationalising and extending market data collection quickly offers opportunities to use the data to improve the production and export of vegetables and fruits at the same time contributing to food security, i.e. a statistical, marketing, communication and management challenge. A single, focused approach would not necessarily have helped understand how and in what way an institution could be assisted. This might require greater emphasis in SPC Agriculture Programme on country liaison officers, problem/opportunity-based teams and much more flexible management of staff and resources, i.e. not as tied to projects as may currently be the case. And responds directly to two of the General Strategies outlined in the *Strategic Plan*, namely:

> Promote *meaningful exchanges* with our stakeholders to identify emerging issues and changing priorities in the agriculture sector.
>
> Assist countries to develop an *integrated approach* to sustainable agricultural development (Consultant's underlining).

Discussions with donors (FAO and ACIAR) suggested that they might be more willing to consider flexibility in the use of project resources, reallocated to broader areas, based on a programmatic way of working with countries. For example, an amount of money from several donors might be set aside that could be drawn on for any agricultural statistical activity within, for example, a five-year period. SPC would have to provide the agricultural statistician, and a strategic plan setting out the broad areas in which that officer might work (based on this study perhaps); decisions on just how those funds might be utilised could be made jointly between the country and SPC.

A regional agricultural statistical project will not be as successful nor provide the long-term support needed by some countries as the a core-funded alternative.

5.   Recommendations

[It is] time we improved this area – response to request for any further comments or suggestions (Annex 7)

Based on the findings of the study presented in Section 3, and discussion of those findings in Section 4, the following recommendations are made, in the suggested order of implementation.

Recommendation 1

An underlying theme of the findings is that agricultural statistics and their management is not accorded the importance considered appropriate within the Pacific region. In most institutions, effective management of statistics is not a priority (as evidenced by resource allocations); but it is needed. Therefore, to continue the discussion initiated under this study and to suggest a way forward, it is **recommended** that:

The preliminary list of Core Basic Agricultural Statistical Data[34] be considered at national and regional fora.

The purpose of this recommendation is to assess the validity and appropriateness of the data sets proposed, engender further discussion on the issue and inform future decisions on how SPC should respond to this. SPC should collaborate closely with PFTAC and Forum Secretariat in implementing this recommendation. The expected outcome is a 'regional standard' for core basic agricultural data.

Recommendation 2

Armed with a regional standard or benchmark, the next logical step is for institutions in the region to consider the extent to which they meet the standard. Therefore, it is **recommended** that:

Agriculture departments and other agricultural institutions in the region be encouraged to take stock of their information needs, audit their available statistical resources and review the way they are presented as a first step towards better management of agricultural statistics.

Institutions cannot be directed from outside. All SPC can reasonably expect to do is suggest to the relevant institutions that they 'audit' their own situation, using the regional standard as a basis. This recommendation addresses the need for improved co-ordination as well as issues to do with identifying information needs, data presentation and distribution, and data use.

The expected outcome of this is a vision of an 'improved situation', one that addresses the extent to which institutions are in a position to meet these agreed minimum standards and what their immediate needs are.

Recommendation 3

The longer-term issue is the lack of technical support and training in the management and use of agricultural statistics in the region – as identified in the findings – and the need to promote

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[34] Presented as Annex 10.

the importance of agricultural statistics for effective decision-making. In other words, how and in what way can SPC help provide a solution. It is **recommended** that:

An agricultural statistical service within SPC be established, with core funding, to provide technical assistance and support to agricultural institutions within the region.

Currently, SPC has no capacity to assist institutions in the region with their agricultural statistical needs. By establishing a core-funded, agricultural statistical service, it is accepted that this type of service will be needed in the long-term, and that some member countries, particularly small island states, will never acquire the level of technical expertise nor have the resources available to sustain their own statistical units. This recommendation addresses the need for training and capacity building.

An agricultural statistical service:

- must be offered within the context of long-term provision of information services and support for agricultural development *per se*, not as a time-based project;
- over and above the operational budget, must have access to appropriate development funds on a case-by-case basis;
- must be able to participate a various levels within a more flexible operational structure so that it can best contribute to the overall success of assistance provided by SPC to its member countries; and
- must be proactive, seeking out problems and opportunities wherever they may be found.

Setting up an agricultural statistical service – essentially an officer and an office – would be possible within the existing operational framework of the SPC Agriculture Programme, but the extent of its usefulness is debatable if the constraints identified in the report hold true. Thus, the most appropriate operational structure for the SPC Agriculture Programme is one that:

- is not so heavily dependent on project funding so that its very structure resembles the extent and focus of the funds sourced;
- that encourages greater operational flexibility so that new groups or teams can coalesce on a needs-basis, with group or team leaders chosen by the members; and
- one that works more closely with institutions (and not just departments of agriculture) in the member countries with regular contact maintained by 'country liaison officers'.

The Terms of Reference for the position of Agricultural Statistician are included as Annex 10. As requested, this also includes a definition of 'agricultural statistics'.

Annexes

Annex 1 Terms of reference

1. Terms of reference

The aim of this consultancy is to improve the recording, dissemination, access and use of current and accurate Pacific Islands agricultural statistics.

The Consultant will:

- Examine and assess the available agricultural statistical data in or about the Pacific Islands.
- Survey institutions responsible for gathering agricultural statistical information to determine collection methods and data assembly.
- Review methods by which this data is distributed and accessible.
- Survey users of agricultural statistical information to gather their experience of using data and to determine their needs.
- Explore regional (eg. SCANIP) and other networks (eg. APAARI) to identify synergies for improvement of the collection and distribution of agricultural statistical information.
- Recommend a strategy that will lead to an improvement in the collection, organisation and use of agricultural statistical information in the Pacific.
- Determine a strategy for SPC that will enable it to improve its collection and awareness of agricultural statistical information, and present practical, immediately implementable improvements for the presentation of this information, especially electronically, for use by SPC staff and clients.
- Where possible, supply ACIAR with current agricultural statistics for the countries in the Pacific Islands Region on a national and sub-national (if available) basis.

SPC will provide technical support, principally in the form of contact names, documentation, travel arrangements and secretarial services (e.g. photocopying).

The Consultant will:

- Send e-mail updates on progress at least once per week during the Pacific Island country visits.
- Prepare and deliver a PowerPoint presentation to the research priorities setting meeting in Nadi, 29 October 2001.
- Prepare a draft report and submit to SPC no later than 15 February 2002; report to include annexed lists of all activities, consultations and research materials consulted.
- Prepare a final report one week after the approved draft report is returned by SPC; but not later than 15 March 2002.

2. Final schedule of visits

2001

28–29 Oct	Nadi, SPC Research Priority Setting Workshop (arr. Sun 28/11, 1.25 pm; dep. Tue 30/10, 7.00 am)
30 Oct–2 Nov	Papua New Guinea (arr. Tue 30/10, 1.55 pm; dep. Fri 9/11, 3.15 pm)
13–15 Nov	Kiribati (arr. Tue 13/11, 10.00 am; dep Thu 15/11, 10.45 am)
19–20 Nov	Cook Islands (arr. Sat 17/11, 12.20 pm; dep. Thu 22/11, 6.50 am)
23–29 Nov	Vanuatu (arr. Fri 23/11, 2.00 pm; dep. Thu 29/11, 6.00 pm)
3–7 Dec	Tonga (arr. Mon 3/12, 6.35 pm; dep. Fri 7/12, 12.45 pm)
10–12 Dec	Fiji Islands

2002

21–22 Feb	Bangkok (arr. Wed 20/2 7.15 pm; dep. Mon 25/2 10.30 am)
5–6 Mar	Canberra (arr. Mon 4/3 5.50 pm; dep. Thu 7/3 9.20 am)
18 Mar	Fiji, presentation of draft report to SPC (arr. Nadi, Thu 7/3 5.50 pm; dep. Nadi, Tue 19/3 8.55 am)
22 Apr	Final report to SPC

Annex 2   List of sources

1.   People

The following individuals provided specific information or assistance to the Consultant on behalf of themselves or in their official capacity. This includes all individuals who agreed to be interviewed, and all who put their name on the completed questionnaire. All are hereby acknowledged. Any errors and omissions are those of the Consultant.

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3.   Documents

3.1   References

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Annex 3   Questionnaire

Agricultural statistics are defined here as data collected on all aspects of crop and livestock production for sale or home consumption (food security); agricultural commodities such as oils, fibres, meat and animal products, niche crops (e.g. kava, noni); markets and marketing; trade, exports and imports including foodstuffs and agricultural inputs. Fisheries and forestry (timber and timber products) are not included.

Your time (and patience) are valuable resources. I appreciate your considering this questionnaire and hope that you will take time to fill it in. But first …

Answer 'Yes' or 'No' to either of the following questions:

Official use

Does your work require you to use statistical information? **1** 1 2

Do you want to use statistical information? **2** 1 2

If you answered 'No' to both the questions above, then you need not continue. If you answered 'Yes' to either of the two questions, then please continue.

Section A   About you

Gender (circle)	Male	Female			**3** 1 2
Age (circle)	less than 25	25–35	36–45	over 45	**4** 1 2 3 4
Language	Language/s used at work:	....			**5** 1 2 3 4 5 6
		....			**6** 1 2 3 4 5 6
Qualifications (circle highest award)	None	Certificate or Diploma	Degree or PostGrad Dip	Masters or higher	**7** 1 2 3 4
Level in your institution (circle most appropriate)	Junior level	Middle level	Senior level		**8** 1 2 3 4 5
Country of work	....				**9**
					10 1 2 3
Area of specialisation e.g. animal husbandry, extension, planning	....				**11**
	....				

In no more than a few words, describe **what you actually do** (tasks) in your present position:

12

Section B   Awareness and use of agricultural statistics

In this section, I am trying to find out how you use statistics and statistical resources.

1. *Do you use statistical information?* (please circle your answer)

Yes (go to **Q.3**)   No (go to **Q.2**)   **13** 1 2

2. *If no, why not?* (tick all that apply)

Do not know where to look for it	....	**14**
Do not know how to use the statistical resource	....	**15**
Do not have any statistical resources available to me	....	**16**
Lack of time (or believe it takes too long to find and use)	....	**17**
Other		**18**
.... (go to **Q.3**)		

3. *If yes, where do you look for statistical information?*

	Often	Sometime	Seldom	
Library (institutional or personal)	....	....	....	**19** 1 2 3
Agriculture Planning Office	....	....	....	**20** 1 2 3
Other Agriculture Office	....	....	....	**21** 1 2 3
Colleagues	....	....	....	**22** 1 2 3
In-house databases/publications (e.g. census)	....	....	....	**23** 1 2 3
National Statistics Bureau	....	....	....	**24** 1 2 3
The Internet	....	....	....	**25** 1 2 3
Other				**26**

4. *How frequently do you require statistical information?* (please circle your answer)

Daily   Weekly   Monthly   Infrequently   **27** 1 2 3 4

5. *On average, how successful is your search for statistics?* (please circle your answer)

Very successful	Successful	Unsuccessful	**28** 1 2 3
(go to **Q.7**)	(go to **Q.7**)	(go to **Q.6**)	

6. *If not successful, why not?*

(write) **29**

.... (go to **Q.7**)

7. *What format is used to present the statistical information you need* (tick all that apply)***;
but which do you prefer*** (tick the one that you prefer)***?***

	Used	Prefer	*Official use*
Print (published or unpublished)	....	....	**30 31**
Electronic file (e.g. Word document, PDF)	....	....	**32 33**
Computer database (e.g. FileMaker, Access)	....	....	**34 35**
Web-page or Internet-accessible database	....	....	**36 37**
Other			**38**

8. *Are you familiar with (know about) or used the following specific statistical resources?*

	Familiar with	Used	
National agriculture statistical publications	....	....	**39 40**
National statistical publications	....	....	**41 42**
South Pacific Economies – A Statistical Summary (SPC)	....	....	**43 44**
Pacific Economic Bulletin (ANU)	....	....	**45 46**
FAO statistical publications	....	....	**47 48**
FAOSTATS (online)	....	....	**49 50**

Section C   Perceptions

In this section, I want to find out what you think about the current situation with regard to statistics.

9. *How easy to use do you find the statistical resources*? (please circle your answer)

Very easy	Easy	Not easy	**51** 1 2 3
(go to **Q.11**)	(go to **Q.11**)	(go to **Q.10**)	

10. *If not easy to use, why not?*

(write) ....

.... (go to **Q.11**)

52

11. *To what extent do you believe the information you find*? (please circle your answer)

Very credible	Credible	Not credible	**53** 1 2 3
(go to **Q.13**)	(go to **Q.13**)	(go to **Q.12**)	

12. *If not believable (not credible), why not?*

(write) ....

.... (go to **Q.13**)

54

13. *Do you think the information you find is timely (up-to-date)*? (please circle your answer)

Yes	No

55 1 2

14. *Do you find the statistics comprehensive enough*? (please circle your answer)

Very comprehensive	Comprehensive	Not comprehensive
(go to **Q.16**)	(go to **Q.16**)	(go to **Q.15**)

56 1 2 3

15. *If not comprehensive enough, why not?*

(write) ....

.... (go to **Q16**)

57

16. *What sort of statistical information is most useful to you right now?*

(write) ....

....

58

17. *What do you think could be done to improve the collection of statistical information?*

(write) ....

....

68

18. *What do you think could be done to improve access to statistical information?*

(write) ....

....

78

19. *What do you think could be done to improve the presentation of statistics?*

(write) ....

....

88

20. *What do you think could be done to improve your use of statistics?*

(write) ....

....

98

21. *Any further comments or suggestions?*

(write) ....

....

108

Thank you for your time and assistance.

Annex 4   Coding used in questionnaire

5 Language 1   1   English
6 Language 2   2   French
                     3   Melanesian pidgin
                     4   Tokples (incl. Motu, Fijian)
                     5   Polynesian
                     6   Micronesian
                     7   Other (incl. Fiji Hindi, Chinese)

9 Country of work   1   American Samoa   Polynesia
                       2   Cook Islands   Polynesia
                       3   Federated States of Micronesia   Micronesia
                       4   Fiji   Melanesia
                       5   French Polynesia   Polynesia
                       6   Guam   Micronesia
                       7   Kiribati   Micronesia
                       8   Marshall Islands   Micronesia
                       9   Nauru   Micronesia
                       10   New Caledonia   Melanesia
                       11   Niue   Polynesia
                       12   Northern Mariana Islands   Micronesia
                       13   Palau   Micronesia
                       14   Papua New Guinea   Melanesia
                       15   Pitcairn   Polynesia
                       16   Samoa   Polynesia
                       17   Solomon Islands   Melanesia
                       18   Tokelau   Polynesia
                       19   Tonga   Polynesia
                       20   Tuvalu   Polynesia
                       21   Vanuatu   Melanesia
                       22   Wallis and Futuna   Polynesia

10 Region   1   Melanesia
                     2   Micronesia
                     3   Polynesia

11 Area of work   1   Extension   2   Animal production/health
                     3   Soils/Land use   4   Economic planning
                     5   Info/Communication   6   Plant protection
                     7   Administration   8   Plant breeding
                     9   Researcher (general) 10   Quarantine
                     11   Agronomy/Hortic.   12   Marketing
                     13   Farming   14   Policy and planning
                     15   Training   16   Agric. chemistry

12 Group   1   Outreach (area 1, part 2, part 3, 12, 14, 15)
                     2   Research (part 2, part 3, 4, part 6, 8, 9, 11)
                     3   Quarantine (10)
                     4   Administration (7)
                     5   Farming (13)

29	1	Data present (summarised in report)
52	1	Data present (listed in report)
54	1	Data present (listed in report)
57	1	Data present (listed in report)
58	1	Data present (listed in Annex 7)
68	1	Data present (listed in Annex 7)
78	1	Data present (listed in Annex 7)
88	1	Data present (listed in Annex 7)
98	1	Data present (listed in Annex 7)
108	1	Data present (listed in Annex 7)

Annex 5   Interview forms

1.   Interview questions – data collectors/presenters

Data collectors   *National statisticians*
                    Ministry of Agriculture
                    Customs officers
                    Quarantine officers

What is the range of data gathered?

Who are the data collected for?

How are the data collected?

    who does it (capacity)?

    how often (frequency)?

    error checking procedures (any)

    limitations (e.g. budget, training, time)

What format (medium) is used to present the data?

    limitations (e.g. lack of equipment, training)

How is the resource distributed? To whom (criteria)?

    limitations (e.g. budget)

Is there any feedback mechanism:

    on the product's content (coverage)?

    on the product's distribution (ease of access)?

    on the product's presentation (ease of use)?

What can be done to improve:

    the collection of data?

    the presentation of the data?

    access to the resource?

    use of the information?

Are there any plans for improvements?

How can SPC help?

2. Interview questions – users

Users   Decision-makers
Heads of Sections
Planners
Researchers

How important are statistics to you?

Why might you need statistics?

If you needed statistics, where would you look?

How easy is it to access the statistical resources?

How often do you use statistics?

Once found, how easy are they to use?

In your opinion, how good are the statistics? Are they

credible (believable)?

comprehensive enough, content-wise?

timely (up-to-date)?

Can you give me an example of a good statistical resource? And why?

Do the available statistics meet your needs? If no, why not?

Do you think you have the skills necessary to make best use of the available statistics?

What can be done to improve:

the collection of data?

the presentation of the data?

access to the resource?

use of the information?

How can SPC help?

Annex 6   Summary of key national statistical resources

Below is a list of key national statistical resources, by country. The intention in presenting a list in this form is to help SPC, ACIAR and other interested parties be aware of just what is available and indicate how up to date it is. This also goes some way towards meeting one of the Terms of Reference, to '*supply ACIAR and SPC with current agricultural statistics for the countries in the Pacific Islands region on a national basis*'.

Collection of the actual items is limited in those instances where few copies are printed or are currently available. Overall, SPC is more fortunate than ACIAR because in those instances where distribution of such publications is even just a little extensive, they are natural beneficiaries through exchange agreements with the SPC Headquarters Library in Nouméa. Nevertheless, the holdings in SPC Library in Suva (where the Agriculture Programme is located) are minimal.

Cook Islands

Census of Population and Dwellings 1996 (Cook Islands Statistics Office 1997)
Annual Statistical Bulletin (Cook Islands Statistics Office) – latest covers year 2000
Quarterly Statistical Bulletin (Cook Islands Statistics Office; latest Sep 2001)
Census of Agriculture 1988
Census of Agriculture and Fisheries 2000 (In press)

Fiji Islands

Fiji Census of Population and Housing 1996: analytical report –part 1, demographic
    characteristics (Bureau of Statistics 1998)
Key Statistics (Fiji Islands Bureau of Statistics; latest is dated Sep 2000, but published Apr
    2001)
Quarterly Review (Reserve Bank of Fiji; latest is dated Sep 2001)
Fiji National Agricultural Survey 1999 (Ministry of Agriculture, Fisheries & Forests 2000)

Kiribati

Report of the 1995 Census of Population (Kiribati Statistics Office 1997)
Report of the 2000 Census of Population (in press)
International Trade Statistics (Kiribati Statistics Office; latest for year 1998; 1999 in press;
    2000 forthcoming)

Papua New Guinea

Quarterly Economic Bulletin (Bank of Papua New Guinea; latest is Vol. 29, No. 2,
    September 2001)

Tonga

Tonga Population Census 1996 (Tonga. Statistics Department ?)
Annual Trade Report (Tonga. Statistics Department; latest for the year 1999?)
Quarterly Bulletin (National Reserve Bank of Tonga; latest is Vol. 11, No. 2, June 2000)
Provisional Estimates of Gross Domestic Product … 1993/94 to 1998/99 (Tonga. Statistics
    Department 2000)
Annual Report, Ministry of Agriculture and Forestry, 1999 (2000)
Tonga Agricultural Census 1985 (Tonga. Statistics Department 1985?)

Tonga Agricultural Census 2001 – in progress

1993 Land Use and Crop Survey (Tonga. Ministry of Agriculture and Forestry 1994)

Agricultural and Forestry Statistics Abstract, 3rd ed. (Tonga. Ministry of Agriculture and Forestry 2000; for the financial years 1993/94–1998/99; *supersedes Compendium of Agriculture and Forestry Statistics*)

Vanuatu

Quarterly Economic Review (Reserve Bank of Vanuatu; latest in June 2001)

Annex 7 Responses to open questions, 16–21

In most cases, the answers presented below are in the form written by the respondent. In some cases, where the intention is obvious, an answer that lacks clarity has been made clearer; if the answer is not clear, i.e. no idea what is being said, it is reproduced 'as is'. An ellipsis (…) indicates that the Consultant was unable to read the respondent's writing.

The numbers preceding each answer are case numbers; the identity and location of the respondent, even if guessed, is known only to the Consultant To preserve the anonymity of respondents, proper names of institutions have been replaced by generic names, and specific information needs have been replaced by subject categories.

Q16. *What sort* of statistical information is most useful to you right now?

1. New variety crop production; fertilizer trial on different crops and impact; different insecticide/…trials
2. Annual data results
3. Crop production/yield; supply/demand – agro-commodities (import/export); meteorological data; population
4. Agricultural statistics; crop production; population census; gender
5. Production (animal) figures; yield; death
6. Production (animal) figures – birth, mortality, livestock; import/export figures
7. Land lease data and ownership to work out drainage rates
8. Agriculture and population census; agricultural statistics for the Pacific; production statistics for different crops; national agricultural statistics; sugar production
9. Market information on agricultural products; domestic and export price and demand data
10. Information relating to changes in farm income as result of government policy
11. Agricultural commodity production (local); food imports and exports
12. Crop and animal production; imports and exports
14. Animal population and production
15. Impact assessment of changes in government policy on level of agricultural production
16. Anything related to agricultural development and ties with economic policies
17. All agriculture related statistics
18. Market and marketing information
20. Production figures; export/import
21. Divisional/Provincial crop production; market prices; export figures
22. Research analysis on trials and recommendations; marketing production
23. Meteorological data; crop production figures; marketing; exports/imports
24. Local market prices, and potential markets and export prices
25. Annual yields/acreage per crop
26. National data (Statistical Dept); agricultural data (Ministry)
27. Information on experimental design and analysis to find out significant differences
28. Newsletters, publications, journals etc. on post-harvest technology
29. Crop and animal production; economic value of exports/imports
30. Population; crop production (area, yield, volume); food imports and consumption
31. Insect distribution
32. Insect data, plant disease situation; fruit and vegetable production; pesticides imported
33. Agricultural statistics
34. Pests and diseases; export/import figures
35. Animal production; import/export; agricultural census
36. Agricultural statistics; imports/exports; fertilizers/pesticides; tourists
37. Crop production and pest problems
38. Current crops in the field (the amount); what and how many crops/produce in the market

39. Livestock information in the home and also the country
40. Animal and animal products database, both import and locally used
41. Crop production
42. Population statistics; agricultural production statistics; fish and forestry statistics
44. Production data; marketing information
45. Economic statistics
46. Vegetable production on main island
47. Agricultural statistical information
48. Production figures
49. Disease (animal) figures for the last few years so that we can compare trends
50. Agriculture and marketing
51. Statistics Department; foreign trade reports, market survey reports, quarantine reports, reserve bank reports
52. Agricultural census and any statistical information that relates to my current job (information management)
53. Livestock data – numbers and productivity; livestock production data
54. Export/import figures (kg) and measurement (m^3)
55. Agriculture census
56. Export and import figures; crop production data
57. Bulletins and data/figures relating to agricultural activities and commodities
58. Crop production; market supply of exports and local produce
59. Genstat
60. Marketing of horticultural crops
61. Agronomic and marketing information on crops

Q17. What do you think could be done to *improve the collection* of statistical information?

1. This data should be made on a monthly basis to respective officers
2. Collect regularly and frequently; provide guidance to me for my reports
3. To be standardised – everyone involved to do the same thing/pattern etc; standard format to be used
4. Improve database and software; improve on networking; train staff; training farmers on keeping records and data
5. Information should be properly documented, critically analysed and some decision made
6. Information should be analysed and available on time; annual import/export figures to be available early January of following year
7. Ministries should have their own information networks; requests (needs) from Sections be looked at and such data collected and kept accessible
8. Ministry should collate information and update it regularly and send to all field staff in comprehensive form
9. Training of staff to strengthen collection methods, analytical work, dissemination of information
10. A core team to be trained to regularly collect statistics; extension officers are also to be trained in report writing particularly in presenting quarterly reports
11. Consistency, accuracy and human resource development
12. A well-designed agriculture census and survey be carried out
14. Identify requirement of the users
15. Development of a simple data collection format for use by all functional Divisions; awareness training – Statistics Unit and field data collection staff
16. Establishment of a database where data can be collected, processed and distributed – the related information can be collected periodically through standard means
17. Survey (agricultural census)
18. Analysis of information to be meaningful (i.e. can be used for planning)
19. Weekly recording

20. Some definite source of information in the Ministry

21. Have a reliable wide area network; only reliable data to be imported; training of our frontline officers in data collection

22. Internet to be installed in all offices around the country

23. Resources figures should be tapped; information should be up to date and should be most efficient

24. More co-operation needed between the Ministry, buyers and exporters to gather updated and accurate information; regular market surveys to monitor changes in prices, locally and overseas

25. Conduct a comprehensive education programme on information gathering and documentation

26. More regular updates; training for those involved in collection

27. Indicate the sources available to users with a brief description on type of information under each source

28. Our library should access and bring in all this information for us to use

29. Conduct regular surveys (farms, markets); train extension field officers to collect appropriate data; information network/database from importers/exporters, producers to be established

30. Statistical organisations to work or liaise closely with field R&D organisations

31. Provide data sheets to local extension agents to record fruit and vegetables sold (locally) and a specific staff member to collect and analyse the data

32. That it be up-to-date information; the use of various growers' associations to collect information on local production; establishment of an extension service

33. Reliable network with stakeholders (national and international)

34. Need training of computer users in the office (i.e. staff); in particular, instalment of data or retrieving information from computer

35. Processing of information sometimes takes too long before it is published

36. Streamline all Ministry information into one mainframe database so Ministry can be better informed for planning process

37. Non-agriculture staff should collect the data on a regular schedule, e.g. every three months for vegetable growers

38. Data collected within a timeframe; field data sheets to be simple but practical at the same time

39. For all information to be updated

40. More training on how, where to go to collect all data on animals and animal products

41. More regular (every second month) collection

42. At the national level, one should know what is available (database) – information which is never published

43. Expertise on how to conduct and collect information, at minimal cost, in a well-functioning working system

44. Use opportunities when other data are being collected

45. A system has to be established and used; update present data system

46. Training of officers to collect statistical information – the right way to do it

47. Carry out a separate agricultural census, run by the Ministry of Agriculture – on-the-spot interviews and counting

48. Training

49. Database facilities – increased details in records; *more veterinary training for assistants to improve diagnostic abilities*

50. Publish more statistical publications

51. Timely; do more informative data analysis

52. Train people to acquire the habit of recording what they are doing and to quantify it

53. Centralise data in an easily accessible web database

54. Establish agricultural statistical database

55. Counting animals rather than making up figures

56. Statistical data and information should be collected/collated in 'one' statistical database

57. Make it compulsory that all findings/reports be collated monthly and distributed around the country

58. Conduct refresher courses on this; make computer available – we can't analyse information without computers

59. Make them (statistics) more readily available and create an awareness to the public

60. Education and computerised systems

61. Establish web site; improve staff resources capability

Q18. What do you think could be done to *improve access* to statistical information?

1. All computers to be linked to the Internet

2. Seek assistance from planning officers and economists

3. Full establishment of database locally; access to Internet and local web site …

4. Improved computer networking and databases *or* send regular information bulletins

5. There should be a database for easy access

6. Database for easy access to individual concern

7. Reintroduce Management Info System (MIS) and have information networks for flow of information

8. Ministry should have Statistics Unit, which should be enhanced financially, staffed to be able to regularly update and inform us of statistics data

9. Ministry computer network; web site installed; having data supplied free to Ministry of Agriculture so that it can be disseminated free to end-users

10. Use of Internet and new communication technology

11. Improvement in dissemination including new technologies

12. Departments using statistics information (in charge of exports, imports and production) to put it in the Internet

14. Focal point in SPC

15. Provision of computers to rural extension officers with Internet facilities; awareness training on how to use/access

16. Establish more information centres

17. Introduction of computers, Internet and …

18. Computer use (Internet)

20. Provision of Internet system

21. Establish database; have reliable network or Internet

23. Improve information system and gathering; use modern equipment; dissemination technique and system improvement

24. For those of us who do not have access to computers and Internet, we need printed information every month

25. Co-ordination among various stakeholders, and awareness development

26. Network

27. Display to users every network providing statistical information

28. Subscription to various publications

29. Regular publications, updates; create database; have database online

30. Once draft is compiled, these (statistical orgs and R&D agencies) institutions should comment on the contents and format

31. Have the information accessible on the Internet

32. That they be readily available, accessible, properly documented and filed

33. Up-to-date facilities, equipment, and access to and from stakeholders remain open

34. Need training of computer users in the office (i.e. staff); in particular, instalment of data or retrieving information from computer

36. Set up information system network; key resource information, e.g. associations, etc.; employ dedicated person responsible for putting all information networks together

37. Make public aware of what is available and train staff to use databases

38. Open book situation, meaning all Government agencies allowing access to information and what information they have

39. Feed all information in the computer database within the Ministry
40. Web site
41. Presentation in the daily newspapers for public access
42. Data users should know what is available from Government and NGOs
43. Improve work system and re-establish this important Section dealing with the collection and dissemination of agricultural information
44. Need central point to find out where data are being kept
45. A database system be established and updated regularly in each Section
46. Have all of the available statistical information in agricultural office
47. Carry out a separate agricultural census, run by the Ministry of Agriculture – on-the-spot interviews and counting
48. Collaboration with other relevant organisations
49. Update (fix) broken PCs so that a database of veterinary cases and treatment records could be used
50. Publish more copies of statistical information (very limited number published)
51. Publish/disseminate through the media too; put in electronic format – database
52. Distribute as printed materials and CD-ROM, and make available in libraries
53. Put it on the web
54. Establish a central statistics unit within the Ministry to collate and analyse, and make it available to the Ministry
55. Index
56. All statistical information could be improved by setting up an 'easy-access network' database in the region, based on the type of information
57. Computer networking or database to be compulsory in all District agricultural offices and all agriculturalists to be computer literate
58. Make computers available and get it connected to the Internet
59. Training and awareness programme
60. Internet access to all involved
61. Web site for agriculture and marketing

Q19. What do you think could be done to *improve the presentation* of statistics?

1. Based on relevant local research
2. MIS reports; decision making; planning
3. Standard formats to be designed to suit the type of presentation required
4. Data must be analysed and interpreted into relevant forms that can be understood by end-users
5. Quantitative analysis; graphical presentation; Internet
6. Quantitative analysis; graphical presentation; Internet
7. Statistics to be put in a handbook and given out to each Section who can photocopy and present to those requiring type of statistics
8. The statistics esp. on agriculture should be in a palatable form which could easily be understood by whoever that uses it; it should be in a form that targets different user groups
10. Should be presented in a user-friendly manner so people will read it; also if statistical booklets are simple and put in the vernacular
11. Staff involved to be better trained
12. Use graphs
14. Identify requirement of users
15. Hard statistics could be complemented with graphical/pictorial illustrations to help visualise the message it is intended to import, so that it is interesting to read!
16. Statistics should be analysed and presented under simple sub-headings
17. Training/staff development
18. Give analysis and recommendations
19. Staff need to have up-to-date information
20. Reliable source and accurate statistics

21. Figures to accompany some explanatory notes
23. Improve statistics database; data to be available to all who need them
24. Avoid use of bar graphs, but have figures with simplified explanation so that staff can understand and translate (interpret) for clients
25. Educational programmes and standardisation of data in all relevant areas
26. Training
27. Descriptions and illustrations written in simple English and examples given for relevant experiments
28. In simple, easy to use forms
29. A more comprehensive statistical database would be more useful
30. Different media, e.g. printed, electronic
31. The way they are presented are fine
32. The current presentation is comprehensive and understandable
33. Use modern technology; upgrade skills (capacity building)
34. Centralised or … electronic data (network)
36. More up to date; regular publications, bulletins, newsletters
37. Involve the media to make the public aware of collected data available
38. Make it as simple as possible
39. Make more accessible
40. Access to latest information on …
41. In a format that could be easily understood by the clients or farmers
42. Access to raw statistical data be encouraged for those who have the basic skills to handle such data
43. Co-operation between appropriate agencies that handle important national statistics by sharing this information in a timely manner; simple but clear presentation
44. Make more user friendly
45. Breakdown to each items and area specific
46. Collect information and present it in an easy, readable format or presentation
47. By presenting on computer
48. Training
49. Accurate recording on frequent basis
51. Need to do survey first, find out what the users need to know and use
53. Proper consultation on the design of surveys and censuses
54. Present in a quarterly report in more simple table or graph for official use only
55. Standard format
56. Use one database software program such as Access or FilePro
58. Include more marketing reports with prices and possible trends for future; include graphical representation
59. Give examples from work which are easily understood
60. Standard format be adopted and units standardised
61. Improve staff/statisticians' capabilities and facilities

Q20. What do you think could be done to *improve your use* of statistics?

1. All necessary office equipment to be supplied to all offices, e.g. computer, fax, photocopier
2. Presented in quarterly reports and media releases
3. Exposure to Internet and web sites; access to computers for the exercise; training on computer and methods of data collection
4. Conduct seminars/workshops on how we can improve on the use of statistics
5. Training and communication; regular meetings/seminars
6. Training – sourcing information; communication; analysis and presentation
7. On-the-job training
8. I should attend a statistics course to update myself on different available statistics which I could use and interpret to efficiently and effectively upgrade my work output

9. Free subscription to annual, seasonal and historical agricultural data for national and regional figures (plus international if possible)

10. Make it more accessible even to secondary schoolchildren; encourage all agricultural workers to use statistics in their report

11. Statistics to be readily available

12. Training

14. Improved accessibility and accuracy

15. Availability of timely and reliable data

16. Access to modern office equipment

17. Training (computer); Internet at stations

18. Give analysis and recommendations

19. Up-to-date statistics is useful

20. All sorts of statistics to be sent to our library

22. Training on modern statistical analysis and interpretation/application in wide range of environments

23. Undergo special training

24. Provide updated and reliable information monthly

25. Access to Internet and training

26. Improve availability of data

27. Give examples of analysis for experiments similar to what I'm doing

28. Training on the use of various statistical packages, electronic databases

29. Make data available for easy access

30. Improved availability and accessibility

31. Have data available at all times and have a statistician within the Ministry who is responsible for collecting and distributing the data in the region

32. That they be readily available when needed and be properly documented and filed so they are easy to locate

33. Use modern technology; upgrade skills (capacity building)

34. Established focal points such as information department, library, etc

36. There is a need for training to improve staff knowledge on the use and purpose of data access and collection

37. Improve my knowledge on where to look for data

39. To understand how to access the latest information

40. Training on the use of statistics

41. Easy access to information on agricultural statistics

42. More timely publications

43. Awareness of more use of statistics in various areas of the agricultural sector, and assist local officers to collect, organise and distribute this information at the start

45. Received update of statistics monthly by user

47. By collecting statistics maybe every three years

48. Training

49. Training course on use of statistics provided through USP

50. Have access to statistical publications

51. Need negotiation and understanding, and make data available in electronic form

53. Make them more easily available

54. Set up statistical format for collecting/time and staff that … computer to collate the information; request a consultant/expert to set up and train staff

55. Improved quality

56. Ease of access to information

57. I be connected to a computer network system (at least within the Ministry and other agricultural communities)

58. Reinforce existing basic knowledge to a more practical background knowledge

59. More training in field experiments, data collection and analysis

60. Education and ease of access

61. More detailed information gathering

Q21. Any further comments or suggestions?

2. Questions are relevant; data collected are useful for future planning

3. During this computer age, statistics/data will be most relevant to our work and reporting; further training on data collection and analysis, and computing urgently needed

5. Training of staff on data collection, enumeration, analysis, presentation by a professional

6. Immediate training and guidance on local and regional information sourcing by professional statisticians

7. Training on use of computers; access to computers; availability of computers

8. I would like to further reinforce our economic planning and statistics unit so that there are regular statistics from them in regards to different crops, production, update of census

10. Need more agricultural surveys on different commodities be undertaken to find out structure, marketing costs, marketing margins

11. Agricultural statistics in the Pacific have never been accurate; data 'inflated'

12. Suggest that a survey (census) be carried out to get the actual statistics

14. Need statistics to estimate/evaluate project impacts

15. I would like to have a copy of your findings on this survey

16. Divisional centres to be fully equipped with all relevant statistical information and manned by qualified staff

17. Staff development on the use of agricultural statistics

18. Any information is useless unless it can/is understood and transformed to practical use

20. It is important that statistics sent to our office are kept in the library for reference

21. Training of our frontline officers on data collection is very important

25. All stakeholders involved in statistical work to meet biannually to ensure that their work has relevance

26. [It is] time we improved this area

27. More concise publications which are relevant to be extracted from available statistical information to suit different users

30. Institutions should have full-time staff to compile, liaise and distribute statistical information to staff

32. Next time, employ extension officers to collect data; a statistician or information officer to document data collected

33. Questionnaire and documenting of findings is good, but it's making to reality that counts

34. In-service training for staff in Agriculture Department (junior to senior staff)

38. From my point of view, all statistical figures/data acts as an eye-opener to the current situation – you may not see it until you are given the figures

46. If SPC could provide assistance in training staff and/or funding should there be any activities set up, and improve current agricultural statistical information

48. The Ministry critically lacks qualified statisticians

51. Need further advice and guidance from SPC on improvements to our statistical data collection

54. This will improve quarantine data collection and processing by computer

55. Statistics on animal production would be of use

57. I would certainly be delighted if my name is included in your list of subscribers of your publication

58. Make the suggested changes as soon as possible

61. Develop the statistical and biometrical section of the Research Division

Annex 8   Some statistical projects in the Pacific

Supported by FAO

> Fiji Agricultural Census, 1968
> Fiji Agricultural Census, 1978
> Fiji Agricultural Census, 1991

FAO TCP/TON/4403   Tonga Agricultural Census
FAO TCP/RAS/4513   Data processing

> Tonga Agricultural Census, 1985 (Statistics Dept 1988?)

UNDP/FAO/RAS/86/035   Development of Agricultural Statistics in Asia and Pacific

> Included Cook Islands, Fiji, Kiribati, Marshall Islands, Micronesia, Niue, Palau,
> Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu

UNDP/FAO–TON/91/001   Strengthening Planning Capability of MAF (Tonga),

> Land Use and Crop Survey, 21 Jul – 3 Sep 1993 (MAF 1994a)
> Compendium of Agriculture and Forestry Statistics (MAF 1994b)

FAO/TCP/FIJ/6712   Development of an Agricultural Statistics System, Fiji
                         1998–2000 (21 months)

> Fiji National Agricultural Survey, 1999 (MAFF 2000)

GCP/RAS/171/JPN   Improvement of Agricultural Statistics in Asia and Pacific
                         1998–2001 (3 years)

> Fiji included

GCP/RAS/184/JPN   Strengthening Regional Data Exchange System on Food
                         and Agricultural Statistics in Asia and Pacific
                         2002–2004 (3 years)

> No Pacific country included

Annex 9 Case studies

Case study 1 Egg production in Kiribati

The problem

There is currently very limited capacity to undertake collection of agriculture statistics in the Agriculture Division. A good example is the collection of figures on egg production on South Tarawa. Currently, data on the number of chickens per household on South Tarawa are collected by the Statistics Office during the five-yearly census, but this data is not published (only the fact that chickens are held, not the quantity). Data on egg production – the number of eggs – has been collected by the Division since late 2000. Data on the number of egg-laying birds per producer, and the age of the birds is not collected. Therefore the egg production figures are limited in value, and do not contribute to an understanding by the Division of: the current status of egg production on South Tarawa; whether productivity is high/low; the viability of local egg production; feed conversion ratios; any underlying problems facing the egg producers such as concerns about the quality of stock, feeds, etc.

A solution

An obvious solution would be to undertake a baseline survey to establish the current status of the industry, and then carry out periodic collection of a wider range of data, thus enabling the Division to monitor trends and identify problems. However, the farmers are a little suspicious of the Division's motives, and suspect that this is a backdoor to collecting a levy; they see little benefit in co-operating with Division staff.

A different problem

The problem might better be described as lack of trust caused by and/or resulting in a lack of communication between farmers and the Division. An alternative approach to working with the farmers would help dispel their lack of trust, and ensure the Division was able to collect the data it needs to be able to help the farmers. The right approach would ensure that the farmers themselves benefited from the interchange with the Division. What is being presented here is not a concern about statistical capacity – although it is a concern – but rather the main problem appears to be the Division's approach to extension, to working with farmers and producers.

A different solution

The solution to the redefined problem might be addressed by:
- provision of training in modern approaches to extension, especially in working with individuals and groups;
- provision of technical advice and assistance to help Kiribati design, carry out and analyse a survey of egg producers; and
- further technical assistance (egg production) as required dependent on the findings of the survey.

For SPC to be in a position to help Kiribati, it would need to:
- make periodic visits to the country, in a non-exclusive way, i.e. not focused on biocontrol, animal health, seed technology or other project-influenced activity, but simply to discuss with staff of the Division what there concerns are, and what they would like to achieve;

- leave Kiribati with a good understanding of the problem or opportunity, and an agreed set of needs or issues to be addressed;
- together with colleagues and perhaps other institutions discuss how these needs identified might be addressed;
- present the findings to Kiribati, including suggestions as to how the problem may be resolved or the opportunity addressed, indicating the source of any technical expertise or resources (from within and/or outside of Kiribati);
- implement the agreed programme; and
- follow-up with monitoring and evaluation.

In order to follow this strategy, SPC needs:
- flexibility – and an operational structure – to operate outside of project frameworks, but benefiting from access to funds and technical expertise that projects bring;
- country liaison officers, so that there is continuity;
- a process that encourages lateral thinking among its staff, the capacity to form *ad hoc* teams to address specific problems/opportunities and a management structure that encourages both; and
- some idea of what comprises a basic set of statistical data and how these data might be acquired.

Links

Link to SPC Agriculture Programme Strategic Plan, 2001–2005
- General strategies:
  Promote meaningful exchanges with our stakeholders to identify emerging issues and changing priorities in the agriculture sector.
- Strategies by Objective:
  Objective 1, Increase efficiency and sustainability of agriculture
    Strategy 3 – promote livestock production to improve efficiency and sustainability of Pacific Island agricultural systems
  Objective 2, Improve food security and public health
    Strategy 2 – assist PICTs in development of appropriate methods for the improvement of food security
    Strategy 3 – Strengthen policy capacity of PICTs to deal with food security issues

Link to Kiribati National Development Strategies, 2000–2003
- Natural resource development – agriculture
  'The livestock industry needs development support aimed at increasing productivity and output to achieve greater import substitution … increasing the productivity in egg and pork production' (Kiribati 2000, p. 55).

Case study 2   Copra cutters of Vanuatu

The problem

The Vanuatu Commodities Marketing Board (VCMB) currently buys and sells copra and cocoa. At each buying point (Port Vila and Santo), data are collected on: purchase date, values, weights, grade, producer, zone/island, village – for cocoa and copra. Export data derived from the export destination form includes destination (importing country), buyer, date of departure, value, weight and port of departure. These statistics are not published but are supplied to Board members, Vanuatu Statistics Office and Reserve Bank. At the time the Consultant visited, the computer used previously to collate the data was inoperable, and data were being hand-written.

The solution

To facilitate data processing, either a new computer could be purchased or the existing one could be refurbished to do what is a relatively simple task.

A different problem

Rather than focus on the computer problem as such, this case study suggests there is an opportunity to do something that might increase the volume of copra produced and thus increase the income of people in the rural areas and improve GDP. It was learnt that the volume of copra being produced has decreased steadily the last several years. Setting aside a response that suggests this has to do with the price of copra (which assumes that copra cutting is price-driven), there was an indication that perhaps this has to do with a sense of estrangement from the industry by those whose support it relies on. In other words, if the farmers do not cut copra, there will be none to sell. Informally, the Consultant was told that farmers are somewhat interested in where their copra goes and what it is used for (questions asked at village meetings and so on). If this is an accurate reflection of the situation, then it suggests that there is some scope to re-engage farmers into the industry and along the way, increase production. What started out as an inquiry into statistical capacity might better be described as having to do with communication.

A different solution

The opportunity might be addressed by:
- provision of resources to VCMB to improve data collection and processing;
- provision of technical advice, training and assistance to help VCMB determine the best way to carry out an awareness campaign among copra cutters in Vanuatu (this may include institutions in addition to VCMB such as provincial governments and DARD); and
- provision of technical advice and assistance to help VCMB monitor and evaluate the results of the campaign in terms of industry indicators (volume of production, quality, etc).

For SPC to be in a position to help VCMB, it would need to:
- look beyond the identified needs of central government departments and purposefully reach out to other institutions identified as part of the industry or sector;
- initiate discussions with VCMB to see if the opportunity identified has credibility with the various stakeholders, and perhaps conduct a rapid survey of the situation;

- consider exactly what message or information is appropriate to be conveyed, to whom (target) and how (appropriate formats and approaches);
- help VCMB co-ordinate activities with other stakeholders and implement; and
- follow-up (monitoring and evaluation).

In order to follow this strategy, SPC needs:
- to be able to work directly with institutions other than central government departments; and
- country liaison officers, so that there is continuity and seamless integration of one activity with another.

Links

Link to SPC Agriculture Programme Strategic Plan, 2001–2005
- General strategies:
  Promote meaningful exchanges with our stakeholders to identify emerging issues and changing priorities in the agriculture sector; and
  Assist countries to develop an integrated approach to sustainable agricultural development
- Strategies by Objective:
  Objective 3, Facilitate trade in agricultural products
      Strategy 2 – assist countries and territories in ensuring that agricultural products meet international requirements
      Strategy 6 – generate and disseminate market information on selected agricultural products with market potential

Case study 3   Market survey in Tonga

The problem

Each Friday, a survey of the volume and price of selected agricultural commodities takes place at Malamahu Market in Nuku'alofa. In respect of agricultural commodities, the survey is carried out jointly by the Statistics Department and Ministry of Agriculture and Forestry. Statistics is interested in the data because it is used in reckoning the Consumer Price Index; the Ministry because it provides an idea as to what is going on in terms of production and sale of agricultural commodities. The Ministry publish a quarterly *Talamahu Market Survey Report*; it is fairly up to date.

There are a number of issues of concern. Firstly, there are some delays in recording and exchanging data collected (the Consultant was unable with certainty to isolate the exact causes of the delay, but pressure of other work is a factor). Secondly, the data collected – by the Government's own admission – represents 'one of a number of separate outlets for the sale of agricultural produce' (MAF 2001, p. i), so the data only tell part of the story.

The solution

Solutions to the two problems would have to involve better co-ordination between government agencies, and perhaps 'sub-contracting' the work to one agency, in this instance, the Ministry of Agriculture, instead of it being undertaken jointly. Regular auditing of the work could ensure statistical validity of data collection. In terms of tackling the second problem, there are indications that the duties of extension agents allow them access to a greater range of data (and indicators) than what is currently acquired through the market survey. Thus improved co-ordination of data collection from other sources within the Ministry would present a more credible picture of the situation than hitherto. The fact that the agricultural census has allowed Ministry staff participation in data collection on a broader scale is good. Overall, the de facto reconstitution of the agricultural statistics unit should be recognised formally.

A different problem

However, there is an opportunity for Tonga to take its advanced data collection and processing capacity to the next level. There is some concern about the extent of the data collected and that it needs to be kept up to date. One way to ensure that it is kept up to date (and relevant) is to use the example of the Market survey which proves that where there is a clear need for the data, it will be collected regularly. If a resource could be built that would benefit both Ministry staff and farmers in Tonga, a resource that did not just provide data but also took into account the latest crop recommendations and market potential, then this would be provide that stimulus. In part, the opportunity to do this is an information technology problem, because that is the best way to manipulate and make accessible data from multiple sources; in part it is a communications problem – what information is needed and by whom; how to present this and in what form; in part, it is an organisational problem to do with co-ordination of within and outside of the Ministry.

A different solution

These opportunities and problems might be addressed by:
* a meeting held to discuss the issues and determine in what way improvements might be made, initially in the Ministry then with other interested parties; and

- some provision of technical advice and assistance, possibly training, to help Tonga maximise the potential of its various data resources and information assets (i.e. information management and information literacy).

For SPC to help Tonga, it would need to:
- make a longer visit to Tonga to determine the viability of the opportunity and extent of assistance needed;
- provide any assistance as required; and
- document the results as a model for other countries in the Pacific.

In order to follow this strategy, SPC needs:
- to be able to work directly with institutions other than agriculture departments; and
- country liaison officers, so that there is continuity and seamless integration of one activity with another; and
- a team that will include an agricultural manager, statistician, information and communication experts (including an extension specialist) and computer technologist.

Links

Link to SPC Agriculture Programme Strategic Plan, 2001–2005
- General strategies:
  Promote meaningful exchanges with our stakeholders to identify emerging issues and changing priorities in the agriculture sector;
  Provide countries with timely information to assist decision-making; and
  Assist countries to develop an integrated approach to sustainable agricultural development
- Strategies by Objective:
  Objective 2, Improve food security and public health
     Strategy 3 – strengthen policy capacity of PICTs to deal with food security issues
  Objective 4, Decrease impact of natural disasters
     Strategy 1 – promote livestock and crop management systems which reduces the impact of disasters and facilitate early response

Link with Tonga Ministry of Agriculture and Forestry[2]
- Vision statement
  Improve the level of prosperity of the people of Tonga through agriculture and forestry
- Mission statement
  Provide high quality and timely service through competent and motivated staff, to enable clients to improve productivity, market access and profits, while sustaining the environmental and agricultural security
     A key goal – improve the system for collection and dissemination of information

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[2] From the 1999 MAF *Annual Report* (July 2000).

Annex 10   Core basic agricultural statistical data

Taking into account a concern raised by SPC at the presentation of the draft of this report, the following are a preliminary listing of what might constitute core basic data. These are data that an agricultural department has or ought to have so as to be able make informed decisions, identify opportunities and constraints, and provide a service to farmers. By no means is it suggested that this list is exhaustive; quite the contrary. The data sets identified should be the starting point for discussion within and among departments of agriculture in the region, so that they may be added to, deleted or simply refined.

The data sets fall into three categories: community, production and trade. Within each category are the type of core basic data that should be collected, compiled and made available.

Community

> location – village, district, island, province as appropriate
> households – numbers involved in sector, age, gender
> land tenure – tribal, leased, freehold
> crop production system – commercial, semi-subsistence
> livestock production system – intensive, semi-intensive, village
> assets – number of livestock, extent of area, plant and equipment

Production

> type – broad categories, such as root crops, vegetables, livestock
> commodity – e.g. taro, kava, pigs, eggs
> volume – in kilograms, units, bags, baskets, dozens
> extent of area under production – hectares, number of trees
> yield – per unit volume
> constraints – e.g. pest and disease incidence, natural disasters

Trade

Internal markets
> type – broad categories, such as root crops, vegetables, livestock
> commodity – e.g. taro, kava, pigs
> form – e.g. fresh, frozen, live, cooked, bottled, pounded
> source – village, island, province as appropriate
> where (on sale) – name of market, outlet (plus town, island, province as appropriate)
> volume – in kilograms, units, bags, heaps
> value – in local currency per unit volume

External trade
> type – broad categories, such as root crops, vegetables, fruit juices, meat
> commodity – e.g. taro, kava, noni, beef
> form – e.g. fresh, frozen, cooked, bottled, pounded, cured
> exporter – name of exporter, port of departure
> importer – name of buyer, country of destination
> volume – in kilograms, tonnes, litres
> value – in local currency per unit volume
> contribution to the economy (i.e. percentage)

Agricultural imports

      type – broad categories, such as cereals, meat, agrochemicals, agricultural machinery
      commodity – e.g. lamb, rice, herbicides, tractors
      form – e.g. fresh, dried, frozen, cooked, bottled, pounded, cured, tinned
      exporter – country of export, country of manufacture
      importer – name of importer, port of arrival
      volume – in kilograms, tonnes, litres, units
      value – in local currency per unit volume

Annex 11 Duty statement, SPC Agricultural Statistician

In anticipation of the development of an agricultural statistical service within SPC, the Consultant was asked to provide Terms of Reference for such a position. The majority of criteria proposed for this position have been taken verbatim from 'job vacancy' pages[3] of the United States Department of Agriculture, these being the only such resource currently appropriate on the Internet.

JOB DESCRIPTION

AGRICULTURAL STATISTICIAN

RESPONSIBLE TO: Senior Deputy Director General

BACKGROUND

The Secretariat of the Pacific Community (SPC) is an independent intergovernmental agency providing technical advice, assistance, training and research in the service of 22 Pacific Island countries and territories of Melanesia, Micronesia and Polynesia. It currently has a staff of more than 230. SPC is officially bilingual, with English and French being the working languages.

The regional Agriculture Programme supports the development of national capacities in agricultural management. A gap has been identified in the capacity of the majority of agricultural institutions within the Pacific Islands region to effectively collect, organise, disseminate and make use of agricultural statistics. We are seeking to recruit an Agricultural Statistician to establish an agricultural statistical service within the Secretariat.

The Agricultural Statistician must be able to apply statistical theory and technique to the survey planning, data collection, compilation, analysis and interpretation of data on the production and marketing of crops, livestock and livestock products; preparation of estimates relating to acreage, production of farm crops, number of livestock on farms, livestock products, stocks of agricultural commodities, value and utilisation of farm products, prices received and paid by farmers, and other aspects of the agricultural economy.

To be eligible for this position applicants must be citizens of …

DUTIES AND RESPONSIBILITIES

Under the supervision of the Senior Deputy Director General and in collaboration with Pacific Island countries and territories and SPC staff, the Agricultural Statistician will provide an agricultural statistical service to all Pacific Island countries and territories by:

- helping institutions better identify their agricultural information needs, design data collection procedures, and analyse the results;

- providing advice and expertise on the presentation and distribution of agricultural statistics, taking into account the infrastructural, technical and cultural situation;

- providing specific training, technical expertise and advice as requested to support SPC's efforts to strengthen institutions and build capacity; and

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[3] www.afm.ars.usda.gov/divisions/hrd/vacancy/2-01.htm (published May 1989, for continuous recruitment). The positions are within the National Agricultural Statistics Service.

- co-operating with other staff of the SPC Agriculture Programme and external institutions particularly national departments of agriculture, industry organisations, NGOs and other community groups to provide integrated, stakeholder-led responses to problems and opportunities in the rural areas of the Pacific.

QUALIFICATIONS AND EXPERIENCE

Essential

- A tertiary qualification in agriculture or some other appropriate field;
- *Either* postgraduate qualification in agricultural statistics *OR* a postgraduate qualification in economics or other related discipline *and* significant experience of managing agricultural statistics;
- A knowledge and working experience of culturally diverse rural communities in the developing world;
- Knowledge of agriculture and in particular its socio-economic context;
- Knowledge and understanding of statistical principles and practices, the application of statistical theories, techniques and methods, and the interpretation of statistical information;
- Knowledge of survey methodology and techniques in particular the design of questionnaires, development of collection procedures (mail, telephone or personal enumeration) and basic sample design;
- Knowledge of automated data processing procedures and computer applications including but not limited to statistical software packages such as SPSS, and spreadsheet/database applications such as Microsoft Excel, Microsoft Access and Filemaker Pro;
- Proven ability to communicate orally by expressing ideas clearly, concisely and effectively whether communicating instructions, conducting interviews, training others or addressing a group;
- Proven ability to communicate in writing whether by preparing reports, project proposals or instructional materials;
- Proven ability to organise and prioritise duties, while working within programme parameters to specific timelines and produce accurate and well-presented statistical reports;

Desirable

- Experience of agricultural extension and outreach activities;
- Experience in designing training activities and preparing training materials;
- Experience in the production of information and extension materials for culturally diverse rural communities, such as those in the Pacific;
- Knowledge of and experience in designing statistical publications in print or electronic form
- Appreciation of the Internet as a medium for information transfer
- Experience in identifying, designing and preparing project proposals, preferably in an agricultural policy and planning environment;
- Experience in the techniques of evaluation and monitoring for project design, project evaluation and impact assessment.