NEW HORIZONS IN AGRICULTURAL INFORMATION MANAGEMENT

PROCEEDINGS OF AN INTERNATIONAL SYMPOSIUM

MARCH 13-16, 1991

BEIJING, CHINA
The International Development Research Centre is a public corporation created by the Parliament of Canada in 1970 to support research designed to adapt science and technology to the needs of developing countries. The Centre's activity is concentrated in six sectors: agriculture; food and nutrition sciences; health sciences; information sciences; social sciences; earth and engineering sciences; and communications. IDRC is financed solely by the Parliament of Canada; its policies, however, are set by an international Board of Governors. The Centre's headquarters are in Ottawa, Canada. Regional offices are located in Africa, Asia, Latin America, and the Middle East.

Le Centre de recherches pour le développement international, société publique créée en 1970 par une loi du Parlement canadien, a pour mission d'appuyer des recherches visant à adapter la science et la technologie aux besoins des pays en développement: il concentre son activité dans six secteurs: agriculture, alimentation et nutrition; information; santé; sciences sociales; sciences de la terre et du génie et communications. Le CRDI est financement entièrement par le Parlement canadien, mais c'est un Conseil des gouverneurs international qui en détermine l'orientation et les politiques. Etabli à Ottawa (Canada), il a des bureaux régionaux en Afrique, en Asie, en Amérique latine et au Moyen-Orient.

El Centro Internacional de Investigaciones para el Desarrollo es una corporación pública creada en 1970 por el Parlamento de Canadá con el objeto de apoyar la investigación destinada a adaptar la ciencia y la tecnología a las necesidades de los países en desarrollo. Su actividad se concentra en seis sectores: ciencias agrícolas, alimentos y nutrición; ciencias de la salud; ciencias de la información; ciencias de la tierra e ingeniería; y comunicaciones. El Centro es financiado exclusivamente por el Parlamento de Canadá; sin embargo, sus políticas son trazadas por un Consejo de Gobernadores de carácter internacional. La sede del Centro está en Ottawa, Canadá, y sus oficinas regionales en América Latina, Africa, Asia y el Medio Oriente.

This series includes meeting documents, internal reports, and preliminary technical documents that may later form the basis of a formal publication. A Manuscript Report is given a small distribution to a highly specialized audience.

La présente série est réservée aux documents issus de colloques, aux rapports internes et aux documents techniques susceptibles d'être publiés plus tard dans une série de publications plus soignées. D'un tirage restreint, le rapport manuscrit est destiné à un public très spécialisé.

Esta serie incluye ponencias de reuniones, informes internos y documentos técnicos que pueden posteriormente conformar la base de una publicación formal. El informe recibe distribución limitada entre una audiencia altamente especializada.
New Horizons in Agricultural Information Management

Proceedings of an International Symposium,
March 13-16, 1991, Beijing, China

Compiled and Edited by
Gary K. McConne
Material contained in this report is produced as submitted and has not been subjected to peer review or editing by IDRC Communications Division staff. Unless otherwise stated, copyright for material in this report is held by the authors. Mention of proprietary names does not constitute endorsement of the product and is given only for information.
# Table of Contents

## Foreword
Foreword .............................................................. viii

## Keynote Address
Problems, Issues, and Challenges for Agricultural Information Systems and Services in the Developing World  
L. J. HARAVU .............................................................. 1

## Session I: Management and Development of National Agro-Information Systems
Database Design at ICRISAT and the Experience of Using External Databases  
L. J. HARAVU .............................................................. 13
Implementation Results, Roles and Effects of the Chinese Agricultural Information Services Project  
WANG Xianfu .............................................................. 24
The AGRIS System and the Participation of China  
Helga SCHMID ............................................................ 32
Ten Years’ Progress in China’s Computerized Information Retrieval and Its Future (Abridged)  
ZENG Minzu .............................................................. 40
A Brief Introduction to the Computerized Agricultural Information Retrieval Systems in China  
Chunpei HE ............................................................. 47
Efficient Architecture and Development Strategy of Agricultural Information Systems in Developing Countries  
CHEN Qiben ............................................................. 54

## Session II: Information Management and New Technology Application
The Infusion of Quality in Agricultural Information Services  
Syed Salim AGHA ......................................................... 58
Access Points to the Database of Bibliographies of Agricultural Documents in China and Their Retrieval Functions  
WU Zeyi ................................................................. 64
Management of the AGRIS and CARIS Regional Centers in Southeast Asia  
Josephine C. SISON ...................................................... 75
Preliminary Study on the Microcomputer-aided System for Compiling an Agricultural Thesaurus and the Establishment of a Descriptor Database Management System  
FANG Luming and WANG Caihua .................................... 85
Digitized Image Transmission Using High Speed Telecommunications Networks
   Gary K. MCCONE ................................................................. 92
The Integrated System of Database Creation and Computer-based Editing
   and Composition
   WANG Huaihui ................................................................. 98
Expert Systems for Agricultural Use: Recent Developments and Applications
   A. Mangstl and V. Troll ......................................................... 103
A Study of the Khonkaen University Research Information System
   Daruna SOMBOONKUN ......................................................... 114
Establishment of the Chinese Agriculture Abstracts Database
   GUO Jian ................................................................. 120
On the CAB Thesaurus
   HOU Hanqing and XU Jia .................................................... 125
Realization and Application of Large Capacity Chinese Character Disk
   Operating System (LCCDOS)
   NIU Zhan Liang, BAI Juping and LIU Huifang ................................ 134
The Close Associations between Indexing and Microcomputer Software
   Maintenance
   BI Jinping ................................................................. 140
Program for Automatic Creation of Subject Indexes by Computer
   WANG Huaihui ................................................................. 145

Session III: Management and Development of Regional
   Agro-Information Systems

SEAWIC: Its Organization, Objectives and Activities
   Ruben C. UMALY and Soetitah SOEDOJO .................................. 152
Strengthening the Establishment of a Chinese Regional Monographic
   Agricultural Document Database
   YAN Ming-zhi, LU Ping and MA Tao ..................................... 162
Indonesian Plan for an Integrated Management Information System for
   Agricultural Research and Development
   Prabowo TJITROPRANOTO and Liannie K. DAYWIN .................... 169
Creation of an Information Database and a Developmental line of Agro-
   Information Retrieval Techniques in Northeast China
   ZHENG Yegang and XIN Huajun ..................................... 173
Cybernetic Analysis of Scientific Information Services for Agricultural
   Development in China
   CHENG Xiaolan and CAI Jianfeng ..................................... 178
Functioning of the National Agricultural Information Network (AGRINET)
   D.Y. RATNAVIBHUSHENA ............................................... 190
Agricultural Information Services of Hubei Province
   LI Zezhou ................................................................. 200
Some Ideas on the Tendencies of Information Services by the Regional Information Agencies of Agricultural Science and Technology
PU Yunfeng and LI Pushen .................................................. 205

Ideas on Effective Ways of Transforming Agro-Information into a Productive Force
SUN Tianshi and XUE Yajie .................................................. 213

Present Situation and Strategy of Development in Information for Agricultural Science and Technology in the East China Administrative Area
CHEN Dingru ................................................................. 218

Coordination of Information Work on Agricultural Literature in Northwestern China
MA Yingcai and ZHENG An ................................................ 224

Discussion on Elementary Assignment on Information of Agricultural Sciences and Technology at the Provincial Level
MA Yikang and ZHOU Guangheng .................................... 231

A New Domain of Agricultural Information Service at the Provincial Level
-- The Combination of Information Analysis and Database Building
YUAN Zhiqing ................................................................. 237

Session IV: Scientech Information and Productivity

The System of the PCARRD Applied Communication Division in Transferring Agricultural Technology to Farmers
Teresa H. STUART ............................................................. 242

Discussion on Functions of Agricultural Scientific and Technical Information in the Development of a Rural Commodity Economy
BAI Erdian, CHEN Enping and GAN Jintian ............................. 257

Information as an Economic Resource in Agricultural Development
T. H. TAY ............................................................................. 266

Scientific and Technological Information is a Potential Productive Force
ZHU Binlong ........................................................................ 274

Integrated Root Crop Program (Philippines): A Coordinated Approach in Research Development and Extension
Perfecto U. BARTOLINI ...................................................... 279

Farm Management Data for Thai Farmers
Mrs. Kanitha SOPANON ..................................................... 290

On Effective Ways for Information Research to Serve the Rural Economy
CHEN Ming ......................................................................... 292

Preliminary Study on Ways of Transforming Agricultural Science Information into Productive Forces
CHEN Qi Rong ..................................................................... 298

Studies on Agricultural Information Research for the Development of a Rural Commodity Economy
LI Wenmao and NIE Shangqi ................................................ 305
Joining the Main Front for Economic Construction to Open Up a New Aspect of Information Research
SUN Xuequan and LIU Qingshui ........................................ 314

Establishing a New System of Agricultural Information Technology, Production and Marketing, and Promoting the Agricultural Technological Development of China
TONG Dijuan ................................................................. 319

On the Transformation of Agricultural Scientific and Technical Information -- Thoughts on Transforming Information into a Productive Force
YUAN Weimin ............................................................. 325

An Effective Way for Transforming Scientific Information into Productive Forces
LI Lunliang and YU Ying .................................................. 331

Broadening the Media of Communication of Agricultural Information and Its Role in Agricultural Development
LIU Shixing, LI Cuie and GONG Junjie ................................. 334

Session V: Development and Utilization of Agro-Information Resources

A New Approach to Information Systems Management at the International Potato Center (CIP): The Case of Information Services for National Potato and Sweet Potato Programs
Carmen SIRI ........................................................................ 340

Preparing English Abstracts of Chinese Documents -- an Important Step Toward International Sharing of Chinese Information Resources
LI Kaiyang ................................................................. 351

Linking Information Resources Sharing Management and Library Training in the South Pacific
Esther W. WILLIAMS ......................................................... 354

Resources of Chinese Agricultural Documents and Their International Exchange
ZHAO Huaying ............................................................. 369

Developmental Status and Trends of the Retrieval Journal System for Agricultural Information in China
JIA Shangang ............................................................. 377

Exploitation and Utilization of Sericultural Information Resources in China
GAO Zhicheng and CHEN Xichao ....................................... 385

The Agricultural Information Users in China and Changes in their Requirements
PAN Shuchun ............................................................. 390

BIOSIS as an Agricultural Information Resource
E. HODAS, M. O'HEARN and M. KELLY ................................ 398

On the Exploitation and Utilization of Agricultural Scientech Information
DING Jincheng ............................................................... 406

Exploitation and Effective Use of Scientific and Technological Information on Agriculture
LIU Yixian ................................................................. 410
On Information Obstruction  
YOU Xiu-Ling .................................................. 415

Prospects for the Chinese Agro-library and Information Education  
XUE Zihua ........................................................... 423

A Database of Bamboo Abstracts  
ZHU S. L. and ZHANG X. P. ...................................... 429

Multi Level Services for User Needs in Agriculture  
XING Zhiyi .......................................................... 435

Results and Benefits from an IDRC-supported Project: Tea Information Services (China)  
CHEN Zongmao, WANG Zipei and LU Zhenhui .................. 440

Practice and Enlightenment in Collection Development  
CHEN Aifen ......................................................... 446

Appendix 1: Supporting Papers

Opening Address  
WANG Xianfu ...................................................... 451

Welcoming Address  
LIANG Keyong .................................................... 452

Welcoming Address  
Clive David WING ................................................. 454

Welcoming Address  
WANG Tingjiong .................................................. 455

Discussion .......................................................... 457

Summary Report of the International Symposium on New Horizons in Agricultural Information Management .................................................. 459

Appendix 2: Symposium Participants

List of Symposium Participants .................................. 466

Appendix 3: Author Index

Author Index .......................................................... 472
Linking Information Resources Sharing Management and Library Training in the South Pacific

Esther W. WILLIAMS

The Pacific Information Centre
The University of the South Pacific Library
Suva, Fiji

PIC - Development with a Difference

When the Pacific Information Centre (PIC) was established in 1983 at the University of the South Pacific (USP) Library based in Suva, Fiji, it was not envisaged that the Centre would, in less than six years, be an influential unit in the development of regional information services in the natural sciences including mainly agriculture, marine studies and to some extent environmental studies. It was also not realized that the USP Library of which PIC is a part, would develop into one of the region's main centers responsible for library training. Interestingly too, over the years, PIC has come to assume the role of a regional library center responsible for many general library matters ranging from collection building and acquisition to the development and improvement of all types of libraries in the region. The work done in this regard would clearly be that of a regional library association and not one associated with a bibliographic center, the original concept of PIC.

In the past six years, PIC and its focal points--Cook Islands, Kiribati, Solomon Islands, Tonga, Tuvalu, Vanuatu, Western Samoa, American Samoa, and one regional focal point, the South Pacific Commission based in Noumea, New Caledonia (See Figure 1), have carried PIC's primary objective of identifying, collecting and recording published and unpublished materials originating in the region as well as materials about the region published outside the region and disseminating information about them. The Centre has managed and continues to coordinate and produce a number of regional publications based on its records as well as records submitted to it by its focal points. The work has proved to be realistic, difficult but workable requiring a great deal of effort, finance, training and perseverance for the center to continue with its aim of sharing information and making this accessible to all individual countries and users. Because the region's economy is agriculture based, the focus of PIC's work has been on the natural sciences, agriculture, fisheries and marine resources.

In addition, the Centre has set a number of wide ranging but specific objectives. Significant achievements have included the establishment of a South Pacific Region International Standard Book Number (ISBN) agency (November 1985), work on the Current Agriculture Research Information System (CARIS) and the International Information System for the Agricultural Sciences and Technology (AGRIS), estab-
New Horizons in Agricultural Information Management

USP MEMBER COUNTRIES

- national libraries
- USP Centres
- national bodies
- national universities

Niue (USP Centre)

Solomon Islands

Niue (USP Centre)

Tokelau

Nauru

Kiribati (KNLA)

Cook Islands (CIL)

Other specialist users: Institutions Professional Bodies e.g., ORSTCM

Universities PNG, MARC

Researchers Forum Sctt

SPC

FFA

SOPAC

Technical Services; Bibliographic work; Information; Storage and Dissemination; Training; Reprography

PIC Library

Tonga (IRD; USP Centre/Educ. Dept.)

Tuvalu (TNLA)

Vanuatu

Western Samoa (NMPL, SOA)

NCOS

ICCS

IDRC

ICOD

Asia Foundation

SPC AREA AND REGIONAL BODIES

EXTRA-REGIONAL BODIES; INTERNATIONAL ORGANIZATIONS

Figure 1. PIC Organisational Structure
lishment of a multi-disciplinary regional database (progressing well), and the establishment of the Pacific Islands Marine Resources Information System (PIMRIS) (August 1988). While all this work was happening it was clear that to ensure the continuity of all the activities there must be trained people. It was important to link the training of staff to the overall library and information work that was taking place not only in the Centre but in the focal points and throughout the region. To this end, the Library worked towards continued and upgraded developments in training for librarianship and information studies. This was done by introducing, managing, and teaching a Certificate Program in Librarianship (1982 and continuing) and a Diploma in Library and Information Studies (beginning with Semester 1 February, 1990). Apart from this, PIC and the USP library staff have spent many man hours offering training on site as well as advisory services in individual libraries locally and within the region.

Looking back I can say that PIC undertook more than what its objectives stated it should do. Originally a bibliographic center, PIC’s responsibilities have grown many times over. At the annual PIC Advisory Committee meetings the agenda usually reflects the work of a regional library organization with national and regional responsibilities. This has been unavoidable. However, at the 1989 PIC meeting held in Nuku’alofa, Tonga, a recommendation was made to reopen talks on the establishment of the Standing Conference of Pacific Libraries (SCOPAL). In the event that this gets established, it will relieve PIC of general library work and allow it to do the more serious business set out specifically in its objectives.

**The Region**

The South Pacific region is made up of 22 island nations scattered over a vast area of 30 million square kilometers of which less than 2% is land. In 1988 the population of the Pacific was 5.8 million and of these 4.9 million or 85% live in Melanesia (various sources; South Pacific Commission Population 1988, census reports, Fiji, Papua New Guinea and Federated States of Micronesia). This 5.8 million represents 0.116% of the world’s population which is 5 billion people. Approximately 4.2 billion people are living in the developing countries of the world in the regions of Africa, Latin America, Asia (except Japan) and the Pacific. Annual rates of growth of the populations of the Pacific vary greatly. Among the highest population growth rates in the world are the Solomon Islands growing at 3.5%, Federated States of Micronesia at 3.5%, Vanuatu 3.2%, American Samoa at 3.7%. About 75% of the population are rural dwellers most of whom live in villages. Most of the island states are in the low per capita income group ranging from Niue at US$259.00 to Fiji at US $1,248.00 (see Table 1). Their economies show marked disparities.

There is considerable linguistic variety in the region. Tonga, Niue, and Western Samoa have strong homogenous languages. Fiji has three major languages, English, Fijian and Hindi, but Chinese and other minor languages are also spoken. Vanuatu and the Solomon Islands have considerable linguistic variety with the added complication of pidgin and in Vanuatu, French as well as English. Apart from the variety of languages
### Table 1. USP Countries: Key Indicators

<table>
<thead>
<tr>
<th>Country</th>
<th>WHO</th>
<th>FAO</th>
<th>ACP/E Status</th>
<th>Land Area (Sq. Km.)</th>
<th>Latest Census</th>
<th>Latest Census</th>
<th>Adult Literacy % rate 1980</th>
<th>GDP Per Capita ($US) 1983</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cook Islands</td>
<td>X</td>
<td>X</td>
<td>Self-governing, 10 September 1965</td>
<td>240</td>
<td>1981</td>
<td>17,754</td>
<td>91.8</td>
<td>1360</td>
</tr>
<tr>
<td>Fiji</td>
<td>X</td>
<td>X</td>
<td>Independent, 10 October 1970</td>
<td>18,272</td>
<td>1986</td>
<td>715,375</td>
<td>75.0</td>
<td>1820</td>
</tr>
<tr>
<td>Kiribati</td>
<td>X</td>
<td>X</td>
<td>Republic, 12 July 1979</td>
<td>690</td>
<td>1985</td>
<td>66,073</td>
<td>95.0</td>
<td>770</td>
</tr>
<tr>
<td>Nauru</td>
<td>X</td>
<td>X</td>
<td>Republic, 31 January 1968</td>
<td>21</td>
<td>1983</td>
<td>8,042</td>
<td>n/a</td>
<td>9091</td>
</tr>
<tr>
<td>Niue</td>
<td>X</td>
<td></td>
<td>Self-governing, 19 October 1974</td>
<td>259</td>
<td>1984</td>
<td>2,532</td>
<td>100</td>
<td>1080</td>
</tr>
<tr>
<td>Solomon Is.</td>
<td>X</td>
<td>X</td>
<td>Independent, 7 July 1978</td>
<td>28,530</td>
<td>1986</td>
<td>285,796</td>
<td>51.0</td>
<td>610</td>
</tr>
<tr>
<td>Tokelau</td>
<td>X</td>
<td></td>
<td>New Zealand Dependency</td>
<td>10</td>
<td>1986</td>
<td>1,690</td>
<td>97.2</td>
<td>560</td>
</tr>
<tr>
<td>Tonga</td>
<td>X</td>
<td>X</td>
<td>Independent Kingdom, June 1970</td>
<td>699</td>
<td>1986</td>
<td>94,535</td>
<td>99.6</td>
<td>740</td>
</tr>
<tr>
<td>Tuvalu</td>
<td>X</td>
<td></td>
<td>Independent, 1 October 1978</td>
<td>26</td>
<td>1983</td>
<td>8,364</td>
<td>98.0</td>
<td>570</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>X</td>
<td>X</td>
<td>Republic, 30 July 1980</td>
<td>11,880</td>
<td>1986</td>
<td>140,154</td>
<td>n/a</td>
<td>700</td>
</tr>
<tr>
<td>Western Samoa</td>
<td>X</td>
<td>X</td>
<td>Independent, 1 January 1962</td>
<td>2,935</td>
<td>1981</td>
<td>162,200</td>
<td>97.8</td>
<td>770</td>
</tr>
</tbody>
</table>

**SOURCE AND NOTES:**
Pacific Islands Year Book, Sydney; Pacific Publications, 1989, 16th ed.
All countries are members of SPC.
Latest census for Fiji was taken in August 1986.
Kiribati - formerly Gilbert Islands.
Tuvalu - formerly Ellice Islands
Vanuatu - formerly New Hebrides.
spoken, English is the official language for many of the countries. This suggests that bilingualism or multilingualism is common.

Table 1 gives some idea of literacy rates for a number of the countries in the region. It should be noted that figures for adult literacy are relatively high with the exception of Fiji and the Solomon Islands. But generally, the figures can be deceptive as in the case of Fiji the 1966 census considered a person to be literate if he or she had four years at school yet a survey in 1977 showed that 25% of Grade 6 pupils were unable to read simple English. In Kiribati a survey showed that 45% of the pupils at the same level were unable to read.

The status of libraries in the region and their services is a separate subject in itself, but because it is important to the context of this paper I will give a brief account. At the present time there is considerable variation in the stage of development libraries in the Pacific have reached. They extend from those relatively very poor libraries struggling to improve budgets, collections, and services and the larger libraries which receive government support but are still functioning with limited finances and trained personnel. Over the years there has been some improvement in the areas of collection building, communication, training, and cooperative programs. This has largely been the result of hard work by regional librarians and of assistance, both in money and expertise (very little) received from abroad. The developments in computerization and satellite technology have also contributed to the development of libraries and document delivery in the region. Despite these developments and the continuing changes in the social, cultural, educational, and economic conditions of the countries, governments continue to ignore the need to develop libraries of all types in the region. While educational opportunities have increased, access to information and knowledge remains poor.

It is often taken for granted that libraries are areas that will attract aid and therefore there is no planning for development in this sector. Governments fail to realize that reliance on aid and reliance on foreign expertise mean that the country will not be self-reliant in its information needs and development. There is little doubt that improving library and information services in the region will continue to be of low priority for some time.

**PIC Services in Agriculture**

One of the most important services provided by PIC to agricultural officers and information workers has been the contents pages awareness service. Every two months the contents pages of the latest issue of forty selected agricultural periodicals are put together and distributed to readers. There are about thirty regular recipients. Many are agriculture departments and officers. Readers are supplied free of charge a copy of any of the articles selected. The copy is sent mainly by fax if the user is outside Fiji. Otherwise, normal mail will serve the purpose. If the item is urgent then the courier service is used.
Other developments and services that are popular and used widely include:

a) current awareness service through the *Recent Additions - General and Pacific*. These are produced fortnightly and list selected new titles of interest that the library receives. About 80 to 100 titles are listed. A reader may borrow any of the titles.

b) interlibrary loans of material from the library collection and abroad. This service is made available free upon request. If the Library does not hold the item then the Library will use its interlending service to try and obtain the item from another library. This service is very heavily used. The turn-around time for requests sent to New Zealand, Australia, and the United Kingdom varies from one day if the request is made by fax to a library abroad and return by fax, or seven to fourteen days if using the normal mail.

c) information service for researchers which is supplied by the Pacific collection librarian or other Library staff. Queries are usually made by letter or telephone. The *South Pacific Research Register* is a good source of information. Most agricultural research officers are sent a form to complete and return. The register is produced every two years and lists researchers conducting research in the region.

d) the service of the agriculture liaison officers who are placed in twelve countries of the USP region and are paid under USAID. They are part of USP's Institute for Research Extension and Training in Agriculture (IRETA) and form a link in the agriculture information network in the region. They are extensively trained and meet regularly through the University's satellite system. They provide a link between the USP staff and the agriculture department staff. They keep all groups up-to-date on developments in particular areas of primary production and whenever possible collect relevant and useful publications for the Alafua library and for the Institute.

e) CARIS and AGRIS services which are at the moment being transferred to the Library/IRETA at the School of Agriculture, Alafua Western Samoa. Data collection is now complete. About 200 forms have been received. The directory should be available soon. This project has taken some time to complete due to a number of unforeseen difficulties. But moving the coordination and administration of the work to Alafua is sensible since it will closely involve agricultural people cooperating and working with PIC.

f) the use by the public of the new USP PIC database that is now being created and should be completed in mid-1990. All the Pacific collection items have been included in the database. We can only hope that this database will be useful to keen library users including those working in the Agriculture Department. In the initial stages it is planned that Agricultural Departments wishing to access the system may apply to do so once the new university ethernet system is in place.

g) short term training assignments to the USP library have been very popular and useful. In the last six years of PIC's operations there have been about four to six trainees annually. Those who come for the training learn mainly the basics of librarianship. A
number also come in for specialized training on PIC work, computerization and bibliographic work.

h) bibliographic services. Users are made aware of publications that are available in their area of work. PIC produces a number of regular publications: the *South Pacific Bibliography*, *Recent Additions - General and Pacific*, *South Pacific Research Register*, and a periodicals index relating to the South Pacific. These are distributed free to about 200 readers.

**PIC and PIMRIS**

The Pacific Islands Marine Resources Information System (PIMRIS) is a cooperative system involving the USP, South Pacific Commission, South Pacific Applied Geosciences Commission (SOPAC), and the Forum Fisheries Agency. It was established in August 1988 with funding from the International Center for Ocean Development (ICOD), Canada, with the specific task to serve the information needs of the government officers in the 22 countries and territories in the Pacific, and the staff of regional organizations with interest in marine research, management and training. The system's coordination center is in PIC and its major objectives are to establish a regional database for fisheries and marine resources; produce a series of publications including general and specialized bibliographies, a quarterly newsletter and information brochures; provide basic information services to include current contents (listing 49 selected periodical titles), bibliographic searches, abstracting, and document delivery; provide professional advise and training for national units in establishing and organizing collections; and provide training of staff.

With less than one year being in operation, PIMRIS has made considerable progress. There has been some groundwork done on the creation of a PIMRIS database by extracting records from the main Library multi-disciplinary database. This follows the original concept of PIC of "peeling off" certain subject fields to produce bibliographies or set up separate databases that can be transferred to the other countries in the region on diskettes. The main library system, URICA, will hold the multi-disciplinary database. The PIMRIS database will be built using CDS-ISIS, AUSMARC format and ASFIS descriptors.

There is a quarterly newsletter and a quick information service on marine science. PIMRIS offers searches on ASFA CD-ROM for any user free of charge. This service is very popular. Currently the user is helped with the search, but it is planned that this service will be available for researchers to use themselves.

Since PIMRIS has just started there are plans to introduce new services. The newsletter will change its format to include information on the fishing industry in the region, news about the markets available internationally; material and equipment information; fishing activities; fisheries people; research interests and a current contents and awareness service. Apart from this it is hoped that the need to obtain, identify, and purchase
marine science literature will be vigorous in order to build up a good marine science collection for the region.

**Training Programs for Library and Information Personnel**

As early as 1972 the Library, in association with the Fiji Government, commenced the Fiji Certificate Course in Librarianship. This course was conducted as a summer school. In 1980 this course terminated and the new USP Certificate Program in Librarianship commenced in 1981. This program offered through distance education is aimed at training the bulk of library and information workers that staff various libraries in the region. It targets students and workers that work under supervision in libraries. There is no special curriculum set up for agriculture library staff. The program is a general one and under the auspices of the Library, Institute of Education and Extension Services.

Since the Certificate first began in July 1981 enrollment for semester one has averaged 136 students and semester two, 115. Through 1989 over 400 students from the region have enrolled in the program. About 120 students (1989) have completed the program. Since this program is offered through distance education students self-pace their studies. Students may complete the six courses in between two to four years. Many do the courses parttime as they cannot get release time from work. Successful students are working in libraries of all types - public, academic, school, special, national.

In November 1985 at a PIC Advisory Committee Meeting interest was expressed and support received for an up-graded program in library and information studies leading to a diploma. This expressed need and demand reflects the present need for qualified, competent, semi-professional librarians in the various libraries of the South Pacific region. This has led to the need for change in the depth, standard and level of knowledge and skills that library assistants need today. Currently there is no program available in the region to meet the requirements for higher levels of information skills for library staff who provide information to policy makers, users in academic institutions, or international and regional organizations. The diploma was also a response to the need for an academically recognized and accredited program from which a student could pursue a degree program if desired.

After a series of meetings with the University the program was approved in December 1986. On 7 April, 1988, the USP and the IDRC signed an agreement in which IDRC provided support for the program. The big day commences Semester one on February 26, 1990, when the diploma will be launched on campus. It is a three semester program of one and a half years duration. The program will commence January 1991.

The project has a number of components responding to the needs expressed by librarians in the region. First there is the Diploma itself. Students are required to take ten academic courses made up of four academic subjects chosen from a select list of approved courses and six library studies courses. The library courses are: Introduction to Library/Information Studies, Building the Library/Information Centre Collections,
Organizing Library/Information Centre Resources, Library/Information Centre Services, Management of the Library Information Centre, Libraries/Information Centres - Specializations: the school library, academic, public and special. Students are encouraged to use examples from libraries they work in when writing assignments and practical work.

In 1988-1989 the library was involved in the preparation and the writing of courses. To date the library has completed almost four courses and will embark on the last two during the year. These will be piloted during the on-campus course in preparation for the distance education program commencing in 1991.

The Library has just completed screening the 44 applications received for the Diploma and has selected 33 students. These students have been selected to set vigorous criteria. It is hoped that this on-campus offering will train the much needed paraprofessionals who are already in charge of small libraries including medical, technology, agriculture, school, and public. It is envisaged that the off-campus offering will attract more students as it will be more convenient and less costly to a majority of the people in the Pacific. From January 1991 on, the program will be offered through distance education only.

The other major component in this training project is the preparation, coordination and conducting of workshops on selected topics. These are related very much to the needs of the region as expressed by librarians and information personnel. Also the selection of the Training of Trainers Workshop as the first workshop to run was important in that it trains the regional staff on how to conduct their own workshops. This workshop, run in January 1989 in Suva, has had a significant impact on those who participated.

The workshop themes include: library/information centre management and record management; automating small libraries; rural community library services; audiovisual services in libraries/information centres, assertiveness training; instructional skills for practicing librarians; recruitment and supervision of volunteers in the school library; disaster preparedness/conservation and preservation. These workshops - ten national (i.e. held in a particular country only for students and residents) and six regional (i.e. held in one country for participants from all island countries within the USP network) are integrated into the Diploma. It is also planned that nine workshop kits will be produced for use in the future. Already the outlines for all the nine workshops have been prepared by regional librarians who attended the Training of Trainers Workshop in 1989.

Teaching staff engaged in the training of the courses include one, fulltime professional librarian and one parttime. The Certificate is continuing. I assist with the teaching of one course. The training program is indeed heavy with the existing staff situation. Ideally there should be more people. Because it is a library project based within the library, it has been possible to draw on other professional staff to help. Unfortunately, in the past twelve months staff shortages due to resignation and migration has slowed down work.
This has, however, not dampened our enthusiasm and excitement over the new program as we see that our work will not only produce people who will be able to manage the many libraries in the region but also in the long term increase the pool of trained librarians which will automatically have a positive effect on the development of libraries throughout the region.

Of interest is the report of a workshop for agricultural librarians and information officers in the South Pacific held in Suva in 1984 and organized by PIC and the Commonwealth Secretariat. It was a successful conference and some of the recommendations made are included here as I feel they may have some relevance to this symposium:

a) on the program. That input from all participants is important in the construction of any workshop program.

b) on definition. That the defined roles of the librarian, information officer and the agricultural liaison officer be made clear to the officers themselves and to the appropriate ministry.

c) on subject scope. That the subject scope of agriculture is extremely broad leading to the justification for the need to promote a multi-disciplinary database for the South Pacific region.

d) on contacts. That regular contacts between farmers, information officers, liaison officers, and librarians through satellite and other communication means be encouraged and expanded to maintain information exchange on specific topics of interest as well as to discuss regional agricultural related problems and their solutions.

e) on abstracting and indexing. That this be included in future training programs. This has been done in the new library Diploma.

f) organizing and managing small library collections. That this be included in any future workshop particularly if participants are not librarians or not working in a library.

g) online databases. That a list of online databases on agriculture be updated regularly and distributed to all information officers.

h) on training. That agriculture informational officers must be encouraged to undertake training in librarianship.

The participants also identified a number of areas in the workshop that were rated highly useful and these included: information retrieval, current awareness, active cooperation, consultations and exchanges, library education awareness, the large information base available, and forms and means of disseminating information. Other areas that were considered useful included preparation of a newsletter, editing, use of the library, assessing user needs, and use of computers for small libraries.
New Horizons in Information Management and Training

What of the future? In which direction should we proceed in managing information and training? As I see it there are a number of key development issues.

Trying to Beat the Cost of Information Management

The continued success of any information center in developing countries will depend not only on financial assistance at all levels - national, regional, and international - but also on the skilled and committed staff available to do the work, and strong government backing. It is not easy for the librarian to push for preferential satellite charges, or the provision of dedicated telecommunication lines, an increased book budget, or even extra staff. Librarians will have to use their contacts with government officials to get things moving or make services so good that users will support proposals for continuation. With PIC I have found that we have been managing to continue our services because we have continued funding from IDRC and a group of dedicated and hard working staff. With our IDRC support coming to an end there will be difficulties. There is some financial support from the University but it is not enough. More intense and regular resource sharing and cooperation between libraries should alleviate the problems somewhat but only for a short time. Information management is costly and it requires a good deal of investment and creative and forceful accounting to be even marginally successful.

Working with PIC has reinforced the fact that for any new development in information services or networks in small countries in the developing world, the most sensible route to follow is to make use of and share existing structures, institutions, skilled manpower, resource sharing endeavors, physical facilities and equipment. For PIC, its smallness, and the difficulties listed above have forced it to develop the way it has, incorporating a number of activities, all separate, yet all interrelated. The load may be heavy and for a short while, particularly in the early stages, there may be some pressures to go it alone. However, with limited financial resources other alternatives do not seem practical. It is sensible to spend one’s energies being concerned with building an all-embracing multi-disciplinary database with relevant and quality information. This, I believe, is a good approach for a small country which may not be able to afford developing its own system for some time. The country will depend on and share with a central unit for its, information needs. Ultimately it may have to procure new technology to improve access to information it needs.

More Money than Sense

In 1985 PIC sensed that there was a great deal of proliferation in the region in the area of information improvement plans in agriculture. At one stage there were in existence (on paper and physically) about twenty different information systems related to and planned for agriculture in the region, and as usual these were all isolated. While PIC is trying to maintain frugal, sensible and relevant development in information, recently it has become more and more aware that developments and forces from outside the
region may not be too receptive to this strategy of sharing information building and networking. There continues to be some competition among international organizations with their own agendas. It would seem that this is the type of reaction we see after an international meeting on a particular area of global concern. People all want to get into the act. Experts representing international and regional organizations would come into the region and spend a day or two talking. They go away and overnight they reinvent the wheel. Everyone is busy promoting new ideas. You wonder why this is happening. Cannot the international agencies such as CABI, CTA, CGIAR, FAO, CIRAD work together for the same cause?

Since then things have not changed - the players have but the desire to start something 'new' for the developing countries has continued to be fashionable. People feel that change and development have been slow and something must be done. But change is a slow process. It does not proceed uniformly on all fronts or follow a set pattern. In the end the developing countries are again the ones that suffer in the sense that they have to put up with all these developments in the region. Be supportive if the project has government backing, spread their time thinly trying to attend different seminars and workshops usually on the same or almost the same theme (training or use of new technology for instance) but held at different locations. Furthermore, the countries often find that they are put in a corner when after three or so years of aid they are forced or expected to take on the project lock, stock and barrel. We must try to make some sense of all this.

Working with Multi-disciplinary Databases

Related to this preoccupation with new systems are the changing global development priorities. Whenever there is a change there is an interest in developing an information system in the related field. For instance, in the seventies it was energy. Agencies were supporting developments in alternative forms of energy and information systems that accompany them. Then followed agriculture, trade and investment, fisheries and marine resources, tourism, and now environment. There is no doubt that all these are important to everyday life but we must be careful that when we are approached to cooperate in any new information system we must understand and take caution that whatever work we are required to do must be within our resources and capability. Considering the rapid changes in priorities it would make sense then to develop multi-disciplinary databases. This is practical for small developing countries where the volume of publications is not so great as to overcrowd the database and enough trained personnel and financing are not available to manage the systems. Later if one wishes to specialize then one should be able to do so because in the end the basic technical practices and management and database creation are the same. Dissemination principles can apply across the board. It would be considered a waste of time, energy and resources to build major collections in the same fields but in physically different places. Also the techniques, equipment and staff costs will often be duplicated. But the pressure to specialize from the start will always be there. To resist specialization or a one subject area development will not be easy.
New Technology; Rapid Change

The effects of new technology in the region is remarkable. Only two years ago there were no fax machines. Countries were communicating using telephones, telexes, cables and ordinary mail. The fax machines are now normal office equipment. Satellite communication has been part of the University system for sometime enabling the countries of the USP region to participate in conferencing and meetings across great distances. These developments have speeded up work in information transfer and document delivery.

The number of computers has also increased throughout the region, enabling work in data transfer between countries to take place. While the full potential of the system is yet to be realized countries of the region are making use of what already exists. The information sector in the region has not tapped this facility to any reasonable degree and it is hoped that with some assistance, the use of the existing facility will revolutionize, even in a small way, information practices in the region. The use of databases on CD-ROM is already becoming a popular service to users, librarians and information people at USP, PIC and PIMRIS.

It is interesting to note that while the developing countries are adopting and moving ahead with new technology to solve the problems of distance and accessibility there are many information experts in the developed world who continue to argue that it is undesirable for developing countries to adopt these new challenges and techniques. They base their reasoning on the general knowledge that the countries of the third world do not have the manpower, finances and skills to maintain and service the equipment and use it. While both these points are valid considerations it does not, however, mean that the countries of the region must not follow this path of development. The countries in the third world cannot detach themselves from all that is happening in and out of the region because developments in the developed countries will unavoidably affect the developing countries. Librarians and libraries, if in the position to advance training and skills in the various relevant areas, should be allowed to do as they see fit. Those that hold the view that the developing countries are not ready for this change should be asked, "Then when will they be ready?" The technology is speeding by. We must decide for ourselves whether to join the race and become skilled or stand by and watch as silent partners in development.

The Value of South - South Information Exchange and Sharing

For many years USP has accessed and used information mainly from developed countries - Australia, New Zealand, the United Kingdom and the United States for study and research. Some of the services have been costly and the satisfaction rates have been varied. In recent times, with new and improved developments in database creation and networking in developing countries, a whole new world in information has opened up. Access to relevant and useful information in countries such as the Philippines, India, Africa, and even possibly The People's Republic of China will no doubt have a very positive effect on development in general in the South Pacific. The question of
relevancy and quality will continue to become important considerations. I strongly support any developments for South-South information and publications exchange as well as exchange between developing countries, North-South.

**Partnership in Training**

In the South Pacific as it is in many of the developing countries, education and training are key and priority development areas. Without trained people very little long term progress can be achieved. While governments in the South Pacific fund and support education, the same support is not forthcoming for training in information. Unfortunately this situation will continue into the future. It would make sense for developing countries to form a partnership in training to enable the planning, sharing and executing of training programs in information. There is much to be said for the exchange and the sharing of curriculum plans, course materials (when written), texts and teachers.

Another point that is central here is the question of the focus of the training. PIC and the USP have been involved in training at the paraprofessional level for over ten years and we are convinced that training in information must be broad, covering both the sciences and the humanities with an introduction to specialization built into the program. The students must learn the basics of information and library studies as the principles, and concepts are the same. So it would be sensible for agriculture students to undertake a broad education in library and information studies and then be given the opportunity to make a choice on the specialization option of academic, public, or special libraries. This training will prepare the student to handle and manage the growing and fast-changing accumulation of knowledge that surrounds agriculture and fisheries; knowledge that is broad and covers many subjects. This curriculum will also enable the students to manage multi-disciplinary databases. I believe that such an educational focus will provide the students with the opportunity for professional growth throughout their careers to the point where they can move on to graduate studies. It will also enable the student to function well within a rapidly changing world.

There are other useful experiences gained from this training program. One, it has enabled us to build up confidence and skills in planning, writing and teaching our own courses. Two, it has also meant that there will be the possibility of sharing written course materials with other institutions running similar types of programs. Three, we have also found that teachers and professionals from similar situations, environments and backgrounds normally perform teaching tasks better on the job than a person from the developed country with no third world experience at all. Four, for the South Pacific where the population is scattered and where many people who wish to study cannot be released from work, the distance education mode has given many people the opportunity to study. The USP has been involved in distance education since 1972, and has been very successful. And finally, linking training and library work has many advantages. Keeping up-to-date with training and changes being made in the library scene assists the practicing librarian, On the other hand the practicing librarian’s experience goes a long way to making the course relevant and useful.
Conclusion

In the last ten years there has been some real progress in the development of collections in the departments of agriculture and training in the region. There has also been a growing awareness among government officers and influential people of the importance of information to agriculture and fisheries personnel, to development in general, to the economy, and to training. This justifies some optimism in anyone who is aware of what existed in the past, and who believes that it will require a miracle to get anything better than what exits now.

Despite this, some continue to see the developments in this area as being too slow and feel that there must be some changes. Surely, if progress and developments have been slower than originally hoped, that is because the job is now more difficult than originally imagined. Apart from the internal political, social, economic and cultural factors that affect progress, new developments in developed countries in the areas of computer science, technology, communications and the evolving new economic order, make catching up even more difficult. The information gap between the developed and the developing countries gets even wider. Often, developing countries tend to forget that what they are quickly trying to achieve - improved information dissemination, access and training - many of the countries in the west took a century to accomplish. Significant changes cannot happen overnight. One must be around for some time to see further positive progress take place.

Bibliography

Materials referred to in the preparation of this paper are all PIC and USP Library papers and reports.


South Pacific Information Centre. Reports submitted to the International Development Research Centre for the years 1983 to 1989.