NEW HORIZONS IN AGRICULTURAL INFORMATION MANAGEMENT

PROCEEDINGS

OF AN INTERNATIONAL SYMPOSIUM

MARCH 13-16, 1991

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New Horizons in Agricultural Information Management

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# Table of Contents

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 Soetitha 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 Hupei 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
YE Xiu-Ling ................................................................. 415
Prospects for the Chinese Agro-library and Information Education
XUE Zihua ................................................................. 423
A Database of Bamboo Abstracts
ZHOU 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
Integrated Root Crop Program (Philippines): A Coordinated Approach in Research Development and Extension

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Abstract
This integrated program was developed with a coordinated approach in research and development, and extension. Coordination is carried out in a multi-agency and multi-disciplinary approach and personnel involvement in the program. There are three distinct components of the program: i) integration, evaluation and training; ii) production, animal feeding and processing; iii) enhanced access to appropriate root crop technologies. The formulation of the Program Core Team (PCT), a review, coordination and training body that provides a forum through which issues and mechanisms of integration can be worked out is perhaps the more innovative component of this program. Its functions include integration and coordination, evaluation, planning and human resource development.

Research and development for production, animal feeding and processing includes multi-agency and multi-disciplinary involvement of personnel to take charge of root crop improvement, processing, and utilization of root crops for animal feeds and human food which would directly benefit subsistence households.

By enhancing access to appropriate root crop technologies the program aims to develop a participatory and integrated extension program that will accelerate the adoption of appropriate root crop technologies by subsistence householders. The components include: inventory of root crop technologies; socio-economic survey; consumer study; identification of target groups; statistical databases; extension training program; communication plan and strategies (media-mix, content and format) of extension support materials; piloting; production and dissemination of extension support materials; feedback mechanisms and processing documentation.

INTRODUCTION
Research and development and extension projects on root crops in the past were conducted individually on a piecemeal basis -- unintegrated and uncoordinated.
Previous IDRC support on various projects while focusing on root crops has been lacking close integration and coordination of the projects. On the suggestions of various IDRC program officers but coinciding with a desire by ViSCA for closer integration of root crop research, ViSCA has integrated their requests for root crop support into a coordinated program.

BACKGROUND

The Philippine Root Crop Research and Training Center (PRCRTC) based at the Visayas State College of Agriculture, (ViSCA) Baybay, Leyte, was established with the Philippine Council for Agriculture, Forestry and Natural Resources, Research and Development (PCARRD) and IDRC support in 1978.

It is now one of the leading root crop centers in Asia. In addition to IDRC support, it has also received financial assistance from ACIAR and CIP as well as PCARRD and college funds. Considerable expertise has been developed in the area of root crop production, storage, processing and utilization for human food and animal feeds, extension, and research information. While PRCRTC is mandated for national research and training on root crops, it has a strong local impact in the development of the root crop industry in the country. PRCRTC is also starting to play a role in root crop research in the whole Asian region. Its research and training therefore, has an impact locally, nationally and internationally.

THE INTEGRATED ROOT CROP PROGRAM

The three distinct components of the program are:

- Integration, evaluation and training
- Production, animal feeding and processing
- Enhanced access to appropriate root crop technologies

Overall Project Design
In its broad design, the project takes into account the integrating purpose of the overall activity and its experimental nature as well as each of the specific research and development programs. Specifically there are two coordinating components, each with its director, program of work and budget allocation.

Program Core Team
Perhaps the more innovative component of the program has been the formulation of the Program Core Team (PCT), a review, coordination and training body. It provides a forum through which issues and mechanisms of integration can be worked out through.

Through it, the broad objectives of developing a sustained pattern of integrated research and extension will be realized and planning will be undertaken for the broader and overall human resource development (HRD) needs of the college.
Its mandate includes the responsibility for:

i) ensuring continuing dialogue among project personnel as to how and where information exchange and joint activities can be fostered;

ii) assessing the extent and quality of collaboration and designing methods for enhancing the process;

iii) generating, synthesizing and documenting valuative data on the integration process;

iv) planning and executing those activities aimed at facilitating the implementation of all aspects of the research and development programs (i.e., training); and

v) developing the details of ViSCA’s overall HRD plans as these relate to IDRC’s support.

The PCT will be housed within the Office of the Director of Research and Extension (ODREX) and it will be a part of the regular structure of the College. It will comprise the director of ODREX, chair; the director of PRCRTC, vice-chair; the Program 3 leader as secretary; Programs 1 and 2 leaders and the ViSCA president as members. This set up will allow a broad perspective of the progress and needs of the overall research/development project and of the College as a whole.

Research & Development and Extension
The research and development and extension activities will be conducted under the Philippine Root Crop Research and Training Center (PRCRTC), with the PRCRTC Director serving as the program leader for two sub-programs (breeding/production, processing and information/communication and extension). The overall responsibility for the design, implementation and monitoring of the technical components of the research and development work will be under PRCRTC while the day to day implementation of the studies will be handled by the respective team program leaders. The PRCRTC director will ensure that within and among the three programs technical quality is maintained and integration and coordination of the work is realized wherever it is appropriate. He will also take a leading role in coordinating with other research and extension agencies at regional and national levels, especially with the Department of Agriculture (DA) and the Northern Philippine Root Crop Research and Training Center (NPRCRTC).

PROGRAM 1. INTEGRATION, EVALUATION AND TRAINING
The project clearly recognizes that the effective integration of a research and development program of this scope and complexity will be a major undertaking. One for which all the details of the design and implementation can be worked out in advance but which will need continued monitoring, adjustment and reconceptualization. Based on this understanding, the project has incorporated a distinct program coordination mechanism -- the Program Core Team. The PCT has been developed specifically for
this project but is expected to remain in some form as an ongoing feature of ViSCA's integrated activities.

The general objectives and functions of the PCT will be to support and facilitate the cohesion and integration of the research and development programs as a whole and to coordinate those activities aimed at strengthening both the immediate research and the broad institutional staff development needs of ViSCA. These functions will be integration/coordination; planning/evaluation and human resource development.

Integration and Coordination Function
Under its integration function the PCT will organize regular meetings for its members to review program components specifically in terms of the extent and quality of coherence among them; of inhibitors to the effective sharing and use of information between research and extension activities; and of strategies for facilitating more consistent intra-project exchange. It will organize the production of regular working papers on the status of project activities and on the output of those activities; ensure the circulation of these reports; and organize appropriate opportunities for ongoing monitoring and feedback across project activities. Finally, it will organize and conduct twice yearly meetings for project personnel and include the full complement of relevant IDRC staff to review in detail the progress, problems and future directions of the overall project and of its various sub-components.

The first activity to be coordinated by the PCT will be a pre-implementation project planning meeting. The objectives of this workshop, to include all research and development and extension/information program staff will be:

i) to orient participating personnel and agencies to the overall framework, goals, structure and procedures of the project;

ii) to draw suggestions for the more detailed planning of these elements;

iii) to plan explicit evaluation and integration strategies and schedules; and

iv) to identify potential indicators to assess integration and results.

Similar meetings will be held every six months thereafter to monitor progress and make necessary adjustments. Within six months following project completion, a national seminar will analyze the products and process results of the project. This workshop will be preceded by a post-project evaluation to be organized by IDRC and ViSCA, and conducted by a joint team of ViSCA and an outside resource person.

Evaluation Function
Under its evaluation function, the PCT will ensure the regular monitoring of all project activities. This will include coordinating the production of research and extension evaluation reports by the leaders of the three substantive programs. It will also ensure preparation of reports detailing the effectiveness of coordination among these ac-
tivities. Regular technical progress reports will be submitted for review both to IDRC and to all participating project staff at ViSCA.

To facilitate this formative evaluation work of the PCT, and to ensure an appropriate degree of analytical rigor, comprehensiveness and consistency in data collection, the project will employ a research associate expressly to serve as "process documentalist." In general, he will be responsible for establishing a schedule of data collection, analysis and collaborative reviews of the progress of the project. This will include the regular recording of meeting minutes; interviews with project staff in ViSCA and the participating external agencies, and preparation of status reports for internal circulation and review. A computer will be provided to the PCT to facilitate the regular interactive production of information.

Planning and Human Resource Development
The PCT will be responsible, as its third function, for planning, in coordination with IDRC and the project research/extension personnel, the in-project and degree training activities of the project.

The in-project training will deal specifically with the immediate research and extension training needs of the three programs, i.e., research and design and methods training for project staff, extension workers and farmers (specifically with respect to on-farm and ethnographic methods); materials production and teaching strategies for extension activities; training in extension management (e.g., CDS/ISIS); research management training; biological testing/analyses up-grading. The details of these activities will be developed as the project evolves and specific training needs are identified. It will involve in-house workshops, provision of resource persons as trainers, some in-region study visits and participation in local training programs.

Support for degree training at ViSCA will be within the context of its long-term staff/institutional development; looking beyond the needs of the immediate project in terms of both focus and duration.

PROGRAM 2. PRODUCTION, ANIMAL FEEDING AND PROCESSING

The program on root crop improvement will develop new sweet potato varieties which will meet the needs of small-scale producers especially the subsistence households in the upland areas. In addition, technologies on new or improved cultural management practices for minor root crops, particularly arrowroot (Maranta arundinacea Linn.) suited to the conditions of small scale farmers will be generated. The expected major beneficiaries of the technologies generated are the small subsistence rural householders.

The opportunities for improving current feeding practices, reducing the cost of feeding and increasing income from animals by utilizing feeds from sweet potato production will be included in this program.
New food uses for root crops and improved indigenous food products and processes that will meet the technical, economic and social requirements of subsistence processors are the major expected results of the program. It is anticipated that the processing technologies developed will directly benefit subsistence households involved in root crop processing.

**PROGRAM 3. ENHANCING ACCESS TO APPROPRIATE ROOT CROP TECHNOLOGIES**

**Background**
The Philippine Root Crops Information Service (PRIS) has accomplished its targeted objectives and outputs as a scientific information analysis center. The PRIS evaluation results revealed PRIS’ success in disseminating root crop information to the academic users, teachers and students. However, such information rarely reached extension workers and less literate householders. It was therefore recommended that more involvement of the Department of Agriculture (DA) especially its extension workers be considered; that media other than print be used and that a well-planned, strategic communication campaign be considered. It was the consensus that PRIS should venture into the development and production of a multi-media mix for root crop technologies and that communication and extension staff development should be considered.

Realizing the significance of the services of PRIS, ViSCA has committed to continue its support to maintain its already established bibliographic databases and document delivery services.

This project is designed to effectively disseminate root crop technologies to the farm level of the Philippine uplands.

**Objectives**
The overall objective of this component of the project is to develop a participatory, integrated extension program that will accelerate the adoption of appropriate root crop technologies by subsistence householders.

**Anticipated Beneficiaries**
The immediate beneficiaries will be trainers, extension workers and farmers who will be direct audiences of this project. In the long run, it is hoped that all extension workers and farmers involved in root crop production will benefit from the various outputs of this project.

**Methodology**
This project will be exploratory and evolutionary in nature. Thus, its methodology will be developed and refined through the various seminars and workshops at different stages of the project.

This project will start with a seminar involving representatives from ViSCA, PRCRTC, NPRCRT (Northern Philippine Root Crop Research and Training Center), the
Department of Agriculture and farmer organizations that will be participating in the project. The objective of this seminar is two-fold:

i) to present an overall picture of the project so as to cultivate understanding among the project participants;

ii) to search for general assumptions, principles and strategies which can be used as guidelines of the project.

**Project Components**

This project consists of the following components:

- preparation and inventory of appropriate root crop technologies
- socio-economic survey
- consumer study
- identification of target groups
- statistical databases
- continuation of information services to scientists and researchers and regional networking
- design and development of extension training program
- development of a communication plan and extension support materials
- piloting
- production and dissemination of extension support materials for pilot regions, and
- feedback mechanisms and process documentation.

**Inventory of Appropriate Root Crop Technologies**

An inventory of appropriate root crop technologies will be drawn up following an assessment of existing root crop technologies. The assessment process will comprise reviews of completed verification trials and the results of related studies. Farmers, root crop technology developers (e.g., breeders, engineers, food technologists, etc.), communication/extension specialists and socio-economics core team members will participate in this process which should result in a short-list of technologies which are ready for extension. The criteria for readiness, appropriateness and prioritization of technologies for extension will be defined by the team. Root crop technologies which need further verification or on-farm trials will be identified and the necessary trials will be conducted. The results of these trials will be subjected to further agronomic/socio-economic analysis. The socio-economic core group will work together with the extension team on the community-based field trials which will be characterized by active farmer participation. Reconnaissance surveys will help assess which sites have potential for the piloting of the technologies.
Socio-economic Survey
This survey is designed to collect and provide socio-economic and cultural data for all components of this integrated program. Thus, the survey team will begin by conducting a workshop among the program leaders in order to identify each team’s needed data. After that, the survey team and survey consultant will design the survey instruments, sampling and data analysis methods as well as determine the survey plan. The survey instruments will be translated into the different dialects of the survey areas and pre-tested with root crop villagers. The survey will be conducted by enumerators selected from the survey areas, who will be trained in survey methodologies. During the course of the survey, the survey team will visit the survey sites in order to supervise the enumerators and ensure the proper conduct of the survey.

Consumer Study
A consumer study will be conducted in parallel with the socio-economic survey. It will be aimed at determining the acceptability of the different varieties of sweet potato and minor root crops by people living in both rural and urban areas. The study will begin with a review of completed consumer studies conducted by market research firms such as Consumer Pulse, Inc. Related literature on food and nutrition will also be reviewed. This will be followed by the design, pre-testing and implementation of the consumer survey. NPRCRTC, as part of this study, will carry out a survey in Northern Luzon to assess the existing post-production system for highland sweet potatoes in the region. The results of the survey will help NPRCRTC to identify topics for its research agenda.

Identification of Target Groups
Results of the socio-economic and consumer surveys will be used to identify target groups and segment them according to their needs and socio-economic environments. Households selected from three pilot areas, (one each in Luzon, Visayas and Southern Mindanao) will participate in a complete extension program.

Statistical Databases
Three regional socio-economic statistical databases to provide up-to-date and reliable information to policy makers, researchers, administrators and other users concerned with root crop developments (particularly the Department of Agriculture and regional research consortia) will be established at the libraries of ViSCA (for Visayas), Benguet State University (for Luzon) and Central Mindanao University (for Mindanao). The teams responsible for handling these operations will be comprised of staff drawn from the Department of Agriculture, Economics and Statistics, and the libraries. The operations will be microcomputer-based, using MINI/MICRO-CDS/ISIS software. (The microcomputers at the Benguet State University and the Central Mindanao University will additionally hold root crop bibliographic databases (on MINI/MICRO-CDS/ISIS) as is already the case for the ViSCA library microcomputer. An initial workshop and subsequent annual meetings will be held to enable the three teams to determine/modify the database structure, to share knowledge about secondary data sources, experiences/feedback on the types of enquiries put to their respective databases as well as the computer-generated outputs that they package for their respective regional clientele. It is expected to pull primary data that will be made available from the projects’
socio-economic survey, but statistical data primarily from secondary sources is envisaged. A training workshop on the MINI/MICRO-CDS/ISIS software for this particular non-bibliographic application will be conducted by an external consultant.

**Continuation of Information Services to Scientists and Researchers and Regional Networking**

Bibliographic and directory (of researchers) database-building activities, and document delivery services based on the collaboration of the fourteen state colleges and universities that were started under PRIS will be continued. The research development and extension experience of ViSCA and PRCRTC on root crops is of great interest to the Southeast Asian region and during the life of this project, PRCRTC will be communicating with regional scientists and researchers to explore their interest in networking activities, including the sharing of scientific and extension literature. The International Sweet Potato Newsletter which is being published by PRCRTC will continue to be supported.

**Design and Development of Extension Training Program**

A workshop to design and develop an extension training program will be conducted. The team will construct training curricula and training media which will consist of print as well as audio-visual aids. The training is designed to stimulate community participation in accelerating the adoption of root crop technologies as well as encourage extension workers and farmers to use participatory problem-solving methods.

The training program will start with the training of trainers. This training will aim at strengthening the training capacity of three teams of regional personnel from the Department of Agriculture. Each team will consist of a Regional Coordinator on Root Crops, a Regional Information Officer and a Regional Training Coordinator. The regional teams will in turn train the provincial and municipal workers in the identified regional areas. Finally, these extension workers will train the farmers.

**Development of Communication Plan, Strategies and Extension Support Materials**

A communication plan which will describe the media-mix, and the content and format of messages will be developed based on the results of the socio-economic survey and target groups identified. It will guide the development, production, dissemination and evaluation of extension support materials. It is envisaged that the full range of broadcast, print and indigenous media will be employed. The exact mix will depend on an analysis of information collected through the socio-economic survey. This will include the degree of access to different media forms, the degree of functional literacy, the credibility rating of various indigenous communication channels and the range of the different media and channels. The formulation of messages and design of extension support materials will be carried out by communication specialists working closely with the appropriate researchers and extension specialists. All messages and prototype materials will be field-tested, refined and if necessary, tested again on members of the various target groups prior to their final mass production and application within the extension program.
Piloting
After the training program and the extension support materials have been designed, tested and reproduced, the training for trainers, extension workers and farmers of three villages (one each in Luzon, the Visayas and Mindanao) will be arranged. These pilot areas will serve as a learning and social laboratory for testing, verification, and adoption of extension services and root crop technologies. The project will be implemented in three regions of the country and one municipality in each region. The regions that have been considered are the root crop growing regions of the country. These are Region V (Bicol), Region VIII (Eastern Visayas) and Region IX (Southwestern Mindanao).

Production and Dissemination of Extension Support Materials for Pilot Regions
The Information Team at ViSCA which had been previously responsible for the publication lines of the Philippine Root Crops Information Service (PRIS) will be handling the mass production of the extension support materials for the pilot regions when the final version of the prototype materials are ready. Dissemination of the extension support materials to the pilot areas will be coordinated with field visits and the distribution of inputs and supplies (planting materials, fertilizers, etc.) and hence there will be close liaison with the Department of Agriculture and the Agricultural Training Institute with regard to the required number of copies for each pilot region and the time frame for the distribution process. The other major root crop producing regions of the Philippines, Benguet/ Mountain Province and Northern/Central Mindanao will not receive the full extension service treatment planned for the selected pilot sites. However, once the extension support materials have been prototyped, they will be made available in the non-pilot regions to the Regional Applied Communications Units (RACUs) which are the regular channels of the Department of Agriculture for producing and disseminating information to extension agents and farmers. Each RACU will be given "topping up" funds (in addition to its regular institutional budgets) to adopt the prototype materials itself to meet local requirements for subsequent mass production and dissemination for the region of its responsibility. An early workshop is to be held to brief representatives from each RACU to ensure that there is an understanding of their own particular roles within the totality of his extension program as well as of the whole project. Annual training workshops will be conducted on adapting the prototype materials for the RACUs.

The objective of dissemination in the non-pilot regions is to ensure there is information available to subsistence households in the other important root-crop producing regions which have not been selected as the pilot regions.

The RACUs are expected to keep careful records of their activities for input into the process documentation of the program.

Feedback Mechanisms and Process Documentation
This extension program will be designed to enhance close interaction among farmers, extension specialists and researchers/scientists. The feedback mechanisms will be developed to facilitate the flow of information among them. All activities and processes
entailed in this project will be documented. Information and data derived from the feedback mechanisms and documentation will be analyzed periodically for validating and refining the extension program.

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