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Joint ESCWA/FAO Agriculture Division

**REPORT ON THE ESCWA/FAO ADVANCED TRAINING WORKSHOP
ON THE FARM ANALYSIS COMPUTER PACKAGE (FARMAP)**

Baghdad, 26 November - 2 December 1989

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1. Introduction

The Joint ESCWA/FAO Agriculture Division, as a part of its work programme for 1988-1989, organized the follow-up Advanced Training Workshop on the Farm Analysis Computer Package (FARMAP), in co-operation with the Food and Agriculture Organization of the United Nations (FAO). The Training Workshop was held from 26 November to 2 December 1989 at ESCWA headquarters in Baghdad.

The workshop was opened on behalf of the Chief of the Joint ESCWA/FAO Agriculture Division by the Senior Economist of the Division.

The participants were welcomed on behalf of the Executive Secretary of ESCWA and the Chief of the Agriculture Division. The Senior Economist highlighted the importance of farm management data in project analysis, agricultural planning and agricultural policy formulation and stated that the Training Workshop was not only oriented towards improving practical skills and expertise but was also based on the actual field data collected by the participants themselves. This gave the workshop another dimension, whereby the participants would work through the computer training package and see the analysis of the farm data which they had helped to collect.

The objectives of the Training Workshop were:

- (i) To upgrade the technical skills of the participants in conducting farm surveys;
- (ii) To enhance the participants' efficiency in the use of FARMAP for farm data processing and analysis.

2. Participants

Five Iraqi trainees from the Agriculture and Water Resources Research Centre (AWRRC), which comes under the Scientific Research Council in Iraq, attended the Workshop.

3. Training staff

The instructors included staff from the FAO Farm Management and Production Economics Service and the ESCWA/FAO Agriculture Division. The training and resource personnel consisted of the following:

Joint ESCWA/FAO Agriculture Division

Technical Secretary/Instructor
Administrative Secretary/Instructor

FAO Farm Management and Production Economics Service

Instructor

4. Description of the contents of the Workshop

The Advanced FARMAP Training Workshop covered the following topics:

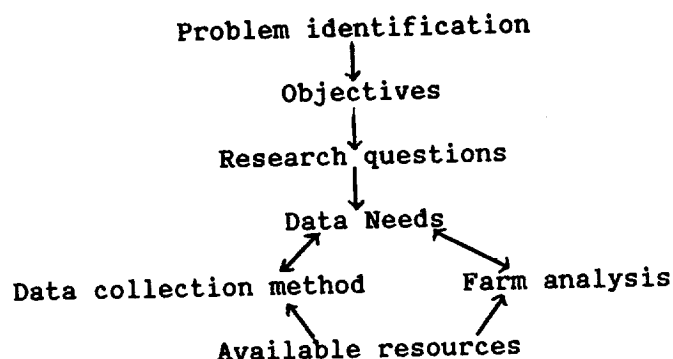
- (a) An overview of farm survey planning and management;
- (b) An introduction to the Farm Analysis Computer Package;
- (c) Applications of the Farm Analysis Computer Package.

4.1 An overview of farm survey planning and management

The lecture stressed the fact that the only way to avoid running into problems arising from lack of planning was to start by designing the survey. Examples of types of such problems were given. In many cases, when researchers were dissatisfied with the data collected and the way the analysis was carried out, lack of proper survey design was found to be the main reason.

The lecture explained how planning for farm data collection could be done.

The process of farm survey planning was described through the following diagrams:



Each of the above-mentioned steps was discussed:

Problem identification can best be done through answering the following questions:

- What is the problem and how could a survey contribute to its solutions?
- What are the factors influencing the problem and how are they related?
- What are the causes of the problem and what are the consequences?

With proper understanding of the problem, the objectives of the survey can be set.

Research questions help to make the problem statement operational; the difficulty in formulating research questions is to cover the entire problem and especially the interdependencies between the different aspects. From the research questions the data needs can be delineated.

To answer the research questions, one needs to define the data, which must be outlined at this point. Doing it at this stage helps to protect against undercollection of data. At this point, one has to list all the data stages before designing the questionnaire. It also helps to prevent overcollection of data because one will include only those data that are needed to answer the research questions.

However, specification of data needs can only be done by considering at the same time at least three other factors - available resources; method of data collection; and planned form of analysis. It is important to know for each method of data collection the type of data this method is suitable for, resource requirements and the results produced.

Several forms of analysis are possible for a farm survey. The main reasons for planning the analysis prior to data collection are to ensure that:

- (a) All necessary data are gathered;
- (b) No unnecessary data are collected;
- (c) The data are collected in a form amenable to analysis.

The lecture emphasis then shifted to data collection and survey management. Once the problem is identified and the survey objectives and associated data needs, analysis and choice of sampling method have been specified, a questionnaire can be designed to record the information needed for analysis. Steps required in the design of the questionnaire, its presentation, sampling techniques and training of enumerators were highlighted. The main components of field work planning include:

(a) Timetable

The importance of a timetable as a planning tool was stressed. The table should be realistic, controllable and flexible.

(b) Logistics

Many materials are needed to carry out a survey. The organization and procurement of these materials is called logistics or logistical support. It is not a technical aspect of a farm survey, like deciding on data needs and data collection methods, sampling, questionnaire design, data processing and analysis. But any survey, no matter how well prepared technically, will come to a halt if the logistical support has not been carefully planned.

(c) Survey documentation

Survey documentation does not refer to the final report. It refers to the information which should be put on paper during the survey in order not to lose any information. This includes, inter alia, all time estimates for data collection, processing and report writing. This documentation will also be very useful for others in planning farm analyses. The same applies to recording of all costs involved. The same data set could be used more than once if it had enough documentation. The basic information necessary for someone else to utilize the same data set includes:

- (i) Data structure, how were the questionnaire data organized in data files, where to find a piece of information, together with a copy of the questionnaire;
- (ii) The code book, including all new codes added during data collection and processing;
- (iii) A detailed list of the data processing steps, indicating those undertaken for data validation and modification performed on data set.

(d) Data analysis

After entering the data and completing all the validation steps, the analysis can be started.

(e) Reporting

The entire survey process is geared to the production of the final report. Only a good report can make all the efforts referred to above useful.

Before writing the final report, one should take some time to consider the interests of those for whom the report is prepared. The following questions might help in this context:

- What is the information the reader is most interested in?
- What is the best form of data presentation (graphs, tables, indicators)?
- Which is the most appropriate style for presenting the findings?

The lecture was concluded by explaining criteria for organization of the report and interpretation of tables, graphs and charts.

The contents of a report should be presented in a logical format containing the following elements:

Preface
Acknowledgments
Table of contents (including list of tables and figures).
Abbreviations and equivalents
Glossary of technical and local terms
Executive summary
Introduction
Objectives
Survey methodology/design
Survey implementation
Data analysis
Results and recommendations
Bibliography
Appendices

4.2 An introduction to the farm analysis computer package

FARMAP is designed for computer processing of farming systems survey data. The package is sufficiently flexible to capture and handle the diverse data needed for monitoring development and identifying agronomic, environmental, cultural, institutional and socio-economic constraints of the farm household unit.

It was developed by the Farm Management and Production Economic Service (AGSP) of FAO. The ways to apply the package are as numerous as the reasons for undertaking farm surveys. Examples of possible uses include:

- (a) Farming systems research (FSR);
- (b) Developing extension recommendations;
- (c) Preparing rural investment projects;
- (d) Monitoring project implementation;
- (e) Evaluating current and past projects;
- (f) Providing input-output data for planning;
- (g) Assessing the effects of policy changes.

The farm analysis computer package deals with the processing aspects of farm survey research and is therefore an aid in the provision of accurate and timely information for development needs. It is hoped that its use will foster greater attention on all of the steps in survey research.

The package consists of:

- (1) Coding system for recording farm-household data;
- (2) Computer programs for processing such data;
- (3) Documentation explaining how to use the package.

The numerical coding system is comprehensive, covering both production and consumption data. It allows greater flexibility in coding through the use of user-defined codes. Flexibility is perhaps the most important characteristic of FARMAP. The types of information and level of detail in data sets can vary considerably. Any information collected for a farm-household can be stored and summarized by FARMAP in user-designed tables.

After this introduction of the package, major developments in the new version of the FARMAP program were highlighted. These included changes and modifications in programs such as ENTDATA, MODCON, replacement of some utilities and introduction of a new program called DATAMAN. This was followed by a discussion of data concepts, coding systems and data processing conversions such as:

- Data processing phases and steps;
- Typographic conventions for commands and parameters;
- File naming conventions.

The present FARMAP package is more powerful and user-friendly than previous versions. It improved to a large extent tools available for collection and processing of rural household and farm survey data, amongst which farm management survey data. A list of FARMAP programs with a brief note on their functions is annexed to this report and incorporates the new developments.

4.3 Applications of the farm analysis computer package

Sessions in this part of the Workshop were devoted to the applications of FARMAP in actual farm data collection situations. A brief discussion was held on the questionnaire used for the data collection carried out for the pilot survey in Ahwar region. The format of the questionnaire, coding method used and the FARMAP data structure and processing standards were thoroughly elaborated. Participants were then asked to prepare a command file ENTDATA for entry of data in line with the designed questionnaire. After that, the lecture focused on the improvement of this command file, guiding the participants through the introduction of some range checks, classifying the codes and data fields in relevant record types. Participants were allowed to enter data into the computer from the questionnaires for a few representative farms. Subsequently, they were provided with a comprehensive command file already prepared for data entry of the Ahwar Pilot Survey along with a set of data for five farms entered in the program prior to the training sessions. Participants also, at this stage, designed some mock tables after a quick perusal of the data set and the questionnaire. They were expected later to produce real tables by utilizing the actual data set that was stored for them in the program.

Then, participants were exposed to applications of the MODCON program. A command file was also prepared for this purpose. They had a chance to carry out some modifications and systematic checks on the data. A more detailed command file for running of the MODCON program, which was designed prior to the Workshop, was also placed at the disposal of the participants. This enabled them to run MODCON, obtain results and observe changes on the data sets, i.e. prior to running of MODCON and after the running of MODCON.

In this way the data were screened and modified and the stage was set for further analysis. Participants worked on the preparation of tables utilizing real data (pilot survey data) and designing command files for each table to be processed and produced through running of the CROSST program. They were able to obtain desired tables on household composition, education status, land tenure and land conditions as well as a table of frequencies on farming constraints. Participants were also provided with, for comparison purposes, some samples of actual CROSST command files related to the pilot survey.

Lectures were also given on the preparation of more complicated and detailed command files for cross tabulation on household, gross margins and animal resources tables. Samples of advanced command files on cross tabulations were also made available to the participants. FARMAP interfaces with other packages in general and with Lotus 123 in particular were also lectured on and applied.

5. Workshop evaluation

The participants were requested at the end of the Workshop to complete evaluation forms by giving their views on the Workshop in the light of which further training and follow-up activities could be planned.

Trainees expressed satisfaction with the way the Workshop was organized. They acknowledged that the stated objectives of the Workshop fully corresponded to the outcome. The Workshop was considered useful and of immediate relevance to their future work. Quality of presentation and that of documentation of the Workshop as well as the FARMAP package as a tool for data collection and processing were rated from good to excellent. The exercises carried out were deemed essential by trainees for the application of the package and were considered highly relevant to their own work. However, most of the trainees indicated that the duration of the Workshop was short and that they needed more time to spend on each program. They considered further advanced training on FARMAP interfaces with other packages useful. The trainees showed keen interest in receiving training on: farming systems, spreadsheets (Lotus 123), statistical packages and linear programming.

6. Closing session

The Workshop ended on 2 December 1989. Participants were thanked for their seriousness and interest. They were told that their training did not end with the conclusion of the Workshop. Training on FARMAP and its application is a continuing process and requires constant practice. Participants were given the assurance that the staff in the Joint ESCWA/FAO Agriculture Division and the AGSP of FAO would be ready to provide technical backstopping at any time.

The participants in return thanked ESCWA and FAO for providing the training opportunity for them.

7. Conclusions and recommendations

(a) The Workshop provided training on micro-computerized analysis of farm survey data. FARMAP programs ENTDATA, MODCON and CROSST were explained in detail with examples and exercises. The Workshop was instrumental in deepening the participants understanding of the subject-matter and upgrading of their technical skills in survey design and FARMAP applications.

(b) It is hoped that the participants trained in this Workshop would be capable of conducting future farm surveys successfully.

(c) There is a very little amount of accurate farm management data available in the region for farm planning and policy formulation. Countries of the region could be encouraged and assisted to carry out well designed farm surveys. This will enable them to identify farm constraints, design indicators and channel information to policy makers for better policy analysis and formulation as well as preparation of viable projects.

(d) There is a need to place more emphasis on data base improvements, farm management surveys and data analysis. Thus compilation as well as utilization of farm survey data warrants top priority consideration.

(e) FARMAP is a powerful tool for farm survey processing and analysis. As such, the use of FARMAP in farm surveys and future training workshops for the introduction and application of the package in the ESCWA region is highly recommended.

Annex I

LIST OF PARTICIPANTS

Name	Degree	Position	Place of employment
1. Mr. Mutaser R. Al-Nashi	M.Sc. Agri. Economics	Asst. Scien. Researcher	AWRRC*
2. Mr. Abdul Khalik Shaker	M.Sc. Agri. Extension	Asst. Scien. Researcher	AWRRC*
3. Mr. Bassam H. Al-Bahadily	M.Sc. Irrigation Eng.	Asst. Scien. Researcher	AWRRC*
4. Mr. Ehab D. Salman	M.Sc. Animal Production	Asst. Scien. Researcher	AWRRC*
5. Mr. Ahmad M. M. AL-Kubaisy	M.Sc. Soil Physics	Asst. Scien. Researcher	AWRRC*

* AWRRC = Agriculture and Water Resources Research Centre, Scientific Research Council, Iraq.

Annex II

FARMAP PROGRAMS

<u>Program</u>	<u>Main function</u>
FARMAP	Menu-driven selection of FARMAP programs, MS-DOS functions and software operating under MS-DOS.
ENTDATA	Interactive data entry with point-of-entry checks (within fields) and data editing, with a command file.
DATAMAN	Data editing, without command file, either record by record or in browse mode, of selected fields and records. Export of selected fields of selected records in binary or ASCII format.
MODCON	Systematic within-record arithmetic operations on data fields (including corrections), under specified logical conditions. Within-record checks (within and between fields of same record).
EXTRAC	Writes under specified logical conditions one record per observation, i.e. a farm, an activity (one record per activity of each farm), a component of an activity (one record per component of each activity of each farm, or a plot one record per plot per farm). Can be used to interface with other packages requiring a single record per observation, or to summarize data prior to tabulation: limited report generating capability.
CROSST	Report generator. Data first flow into a matrix according to logical conditions set for rows and/or columns and a flow parameter (accumulation, count, minimum, maximum), then are manipulated by row, column or cell, then finally printed. Produces output for all farms, for each activity of all farms, for each farm, or for each activity of each farm.
FARMOST	Sorts interactivity or in batch FARMAP binary data for the various processing modes required by FARMAP programs.
MOVEDA	Transfers contents of selected fields from selected records to any other record, within the same farm.
TAB2CSV	Converts CROSST tables interactively, thus enabling their import into spreadsheet and data base management packages.
ASCBIN	Converts ASCII fields into binary FARMAP files, using default or user-defined input format. Used for interfacing FARMAP and other packages.
TRANSB	Transfers groups of contiguous records, from up to 10 binary input files into one binary output file.
DECHECK	Checks presence of identical binary records (suspected double entries).