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PLANNING, MONITORING AND EVALUATING
NATURAL RESOURCES MANAGEMENT ACTIVITIES
BY FIELD EXTENSION AGENCIES IN HONDURAS 1/

Paul Dulin 2/

Abstract--A decentralized system was devised where extension agency teams from the Natural Resources Management Project (NRMP) in central and southern Honduras assess the current situation in terms of natural resources use and the needs of local communities, estimate both physical and human goals, schedule technical assistance, and assign responsibilities to each team member on an annual and monthly basis. The system includes continuous monitoring and periodic evaluations, thereby providing a basis for reporting on activities as well as a mechanism for detecting obstacles to efficient project operation.

Abstracto--Un sistema descentralizado fue desarrollado para el Proyecto Manejo de Recursos Naturales que opera en las regiones sur y central de Honduras en que los equipos de las agencias de extensión analizan la situación actual del uso de los recursos naturales y las necesidades de las comunidades locales, estiman las metas físicas y humanas, calendarizan la asistencia técnica y asignan responsabilidades a cada miembro del equipo por año y, luego, por mes. El sistema incluye el monitoreo continuo y la evaluación periódica de las actividades, así estableciendo la base para el reportaje de información y provee, a la vez, un mecanismo para detectar los obstáculos a la operación eficiente del proyecto.

Natural Resources Management Project

NRMP is one of a series of watershed and natural resources management projects designed and financed by the U.S. Agency for International Development (AID), beginning in the late 1970s. The project was signed into being in 1980 by the government of Honduras (GOH) through its Ministry of Natural Resources (MNR), but field activities did not start until mid-1982. NRMP was originally located in the watershed of the Choluteca River in southern Honduras, but nearly doubled its area from 1982 to 1985, and in late 1985, the MNR Central Region was created and included in NRMP's jurisdiction (fig. 1).

NRMP has three primary objectives:

- improvement of GOH capability, through MNR, to manage the country's natural resources in a more coordinated fashion;
- development of a program for optimal management of the upper watersheds of the Choluteca, Sampile and Guasaule Rivers; and

- raising the incomes of poor farm families situated in upland areas through their incorporation into appropriate systems of agricultural and forest production and utilization.

As these objectives imply, the project focuses on users of natural resources in upland areas away from the productive soils and otherwise favorable conditions of the valleys.

Traditional Methods of Operating Projects in Honduras

Honduras is no different from any other developing country. The methods of operation for its projects and programs are products of traditions that have been ingrained in the organizations that manage them, many being instigated historically by foreign entrepreneurs, profiteers, anachronisms of early colonial rule and other sociopolitical influences both internal and external to the country. The management systems still employed in Honduras and MNR contain certain inherent inefficiencies that negatively affected implementation of NRMP:

- a lack of priority for attending to poor, small-farm families living in mountainous and hilly areas;
- institutional inefficiencies inherent in public and semipublic agencies; and
- the selection and promotion of inappropriate technology.

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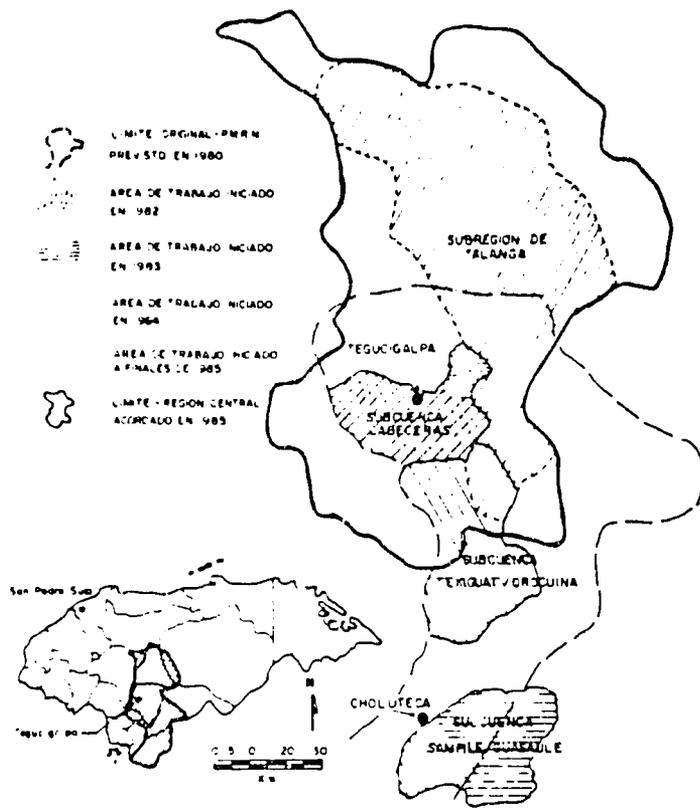


Figure 1--Location and progress of NRMP from 1982 to 1985.

Lack of Attention to Hillside Farms

The traditional focus of technical assistance in Honduras has been on owners and users of the most productive lands--the alluvial valleys. For this reason, the type and complexity of technology to be applied, tools for applying it and investment requirements are more appropriate for large landowners and commercial agricultural interests. Several reasons are given for the traditional lack of attention to hillside farmers:

- the education of agronomists, extensionists and zootechnicians is oriented toward commercial production technology in flat areas (valleys);
- the large number of small farms and their distribution in inaccessible areas limits the efficiency of technical assistance due to elevated costs per production unit;
- lack of a clear definition of production systems practiced by subsistence farmers on hill lands, knowledge of which is basic to providing technical assistance appropriate to the reality of marginal agro-ecological and socioeconomic conditions there; and
- at the national level, the immediate economic return of even moderate increases in the productivity of small hillside farms does not justify the required investment in technical assistance.

Although a case could be made to continue to abandon the small hillside farm family for any one of these reasons, a sobering fact must be considered--these farmers will continue to exert pressure on hillside lands. As the population increases, the use of marginal hill lands and rate of natural resources destruction also increase, with a resulting negative, and even devastating, effect on valley lands as upland watersheds disintegrate and extremes of floods and desertification become more prevalent.

Institutional Inefficiency

The increasingly hierarchical and centralized organization of MNR, which is responsible for executing NRMP, has resulted in inefficiency and created a bureaucracy that is irresponsible and uncoordinated. Starting at the highest levels of authority, the organization is subdivided into sectors that operate in nearly sectarian form, each with its own objectives and interests, without coordination between sectors. This is diametrically opposed to the integration represented by the small-farm production system, with its recycling of resources and their multiplicity of uses. These divisions provide technical assistance that is incomplete and disjointed.

The planning and evaluation process is centralized, based on national priorities, and does not consider the needs of local communities. MNR's central planning authority imposes unrealistic numerical physical and human goals on project directors that are far beyond the real capabilities of NRMP extension agents. The same applies to any evaluation of the quality and quantity of work--when the evaluation process is managed by the central office, which is remote from the implementation level, extensionists do not benefit from the feedback process, cannot analyze their experience and are incapable of reorienting their activities to make them more efficient.

Employees seldom understand or are not even hired under terms of reference for their positions, are not oriented and trained to carry out the job or given the authority to act independently to achieve the objectives of those terms. These same employees are not provided with the basic logistic support and supervision necessary to effectively implement planned activities, even when the planning is done by those who are also responsible for authorizing budgets for the purchase of supplies and equipment, as noted above. Finally, little attention is paid to monitoring the progress of the project or its employees. Reporting is fraught with misinterpreted terminology; duplicate, confusing and conflicting arithmetic totals of "goals achieved;" and a general lack of awareness of the project's actual status and activities.

Selection and Promotion of Inappropriate Technology

No matter how efficient and well structured the executing agency, if the technology being promoted is inappropriate to the target population, the

project is doomed to failure. Mistakes in technology selection include techniques which cannot be adapted to local climate, soil and slope conditions, or introduce changes that are far different from the local farm families' traditional production systems. Should either problem exist, the chance for rejection of the project's technical assistance efforts, however good the intentions, would be very high.

Examples of such mistakes can be taken directly from the experiences of NRMP.(1)

- Plantings of a "miracle" tree failed miserably in a mountain village 1,400 meters above sea level because extensionists did not research the species' altitudinal limitation of 600 meters. Later, farmers would not believe project extensionists when they offered a different tree for planting.
- Extensionists paid various farmers in a village to construct hillside terraces to conserve the soil under their corn crops. However, when they saw that the farmers turned their cattle into the terraced fields to feed on the stubble, the extensionists told the farmers they could not do so or they would not receive any more incentives. Later, farmers had no wish to do any further terracing, regardless of the value of the incentive or terraces, because it represented the loss of a primary source of forage for their cattle. The extensionists failed to study the traditional production system of these farmers and attempted to introduce a contrary technology.
- One agency's extensionists promoted the adoption of mechanical measures of soil conservation to farmers in a small village. Based on informed sources, they believed that rains in the area were light and of short duration, so they instructed farmers to construct hillside ditches at a wide spacing. When the first rains of the wet

season arrived, the ditches filled rapidly with water and sediment, overflowed and caused accelerated erosion throughout the farmers' fields. The extensionists had not investigated reliable sources of information concerning local rains and erred in selecting ditches as an appropriate structure. When they returned to promote other techniques, the farmers did not respect their technical ability and paid no attention.

The First Step--An Operational Organization

NRMP already had a hierarchy of organizations, modeled on the structure used by the ministry--one of numerous semiautonomous sectors operating in their own continuum. There were already people of varying professional backgrounds filling numerous positions. So, the first step was not to recreate an organization, but to make the organization operational. Efforts were shifted to develop a more horizontal structure, whereby authority was decentralized, both geographically and functionally (fig. 2).

Essentially, three basic units were denominated:

- the Directorate, which has ultimate political, administrative and budgetary authority;
- the Executive Unit, with its extension agencies, which is responsible for carrying out extension and technology transfer activities directed at the target population; and
- the Planning and Technical Assistance Unit, with its group of technical specialty sections, which provides formal training for extension agents and selects the range of technical interventions to be promoted by the project, ensuring that they are appropriate in terms of both agro-ecologic and socioeconomic criteria.

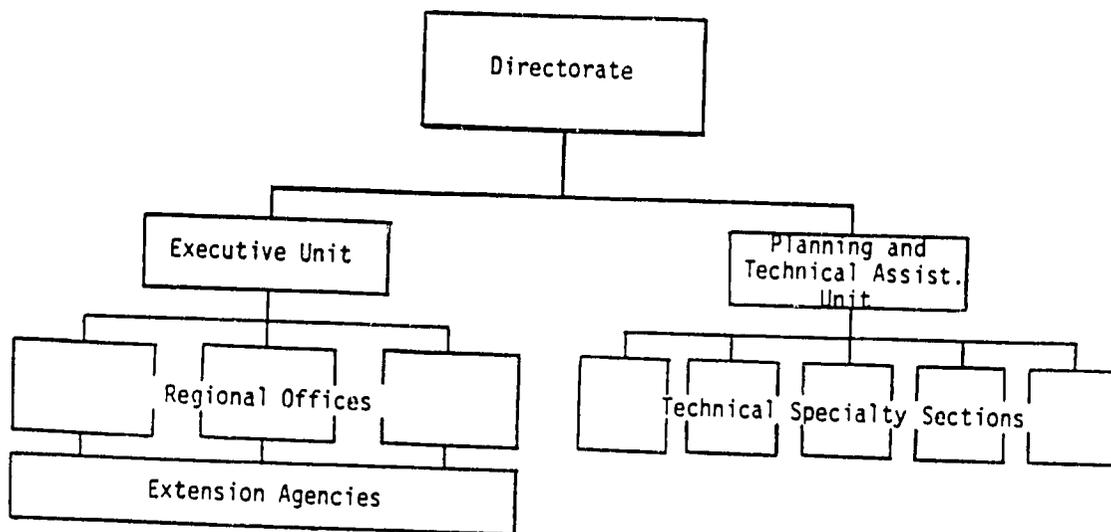


Figure 2--NRMP's operational organizational structure.

Most important about this organization is that all staff activities are oriented toward the work being done by the extensionists of NRMP's extension agencies (in 1986, there were 21 such agencies). The director ensures that project personnel are hired and paid, logistic support provided and national priorities met in the spirit of the project agreement. The Planning and Technical Assistance Unit's specialists provide extensionists with needed training and monitor the execution of activities to ensure technical quality. The extensionists are the only real link to the farmers and their families who participate in activities promoted by the project. They live in or near the communities where they provide continuous technical assistance to try to meet the needs of local people. It is for this reason that a decentralized, horizontal organizational structure is applied to planning, monitoring and evaluation activities--all of which are carried out by the project's extension agencies.

A System of Operations for Extension Agencies

If an organization is to function efficiently, it must have a systematic management approach, within which all the activities carried out by project personnel fit into a scheme--an overall strategy that will take the project closer to fulfillment of its objectives. What was lacking in NRMP was a system to give logic to the execution of field activities as well as provide sequence, order and scientific validity.

Such a system does nothing more than provide a flexible framework within which the personnel of a project's field extension agencies can:

- define priority work areas;
- assess the needs of local communities and the condition of the natural resources base;
- formulate technical assistance strategies and select appropriate interventions;
- plan a chronological sequence for the year's technical assistance activities;
- plan and evaluate the execution of activities on a monthly basis;
- scientifically monitor the level of success and validity of techniques being implemented; and
- annually evaluate the efficiency of the technical assistance effort and level of farmer acceptance of the interventions being promoted.

These steps are illustrated in figure 3 and discussed further in the following subsections.

Initiating the Planning Process and Development of Annual Work Plans

Generally, the planning process employed by extension agencies consists of a series of steps that begin with the collection of preexisting biophysical data concerning the agency's work

area. These are usually basic topographical maps, information on climate and soils, and a current land-use map. A single map is produced that overlaps current land use (including vegetative cover) and slope classes. The result is a map of priority work areas that indicates where traditional land use is currently outside the land's capacity (based on slope) to support that use (table 1).

After priority work areas are delineated through mapped information, the next step involves the agency's informative diagnosis of priority areas. This diagnosis is designed to discover, update or otherwise generate the basic information necessary to make accurate decisions in selecting technologies that are appropriate to local agro-ecologic and socioeconomic conditions, and formulating strategies for transferring those technologies to local populations. These diagnoses are based primarily on literature searches, direct observation during reconnaissance and informal interviews with local people--they are not based on surveys. Information collected during this phase includes data on the local population and its vocation(s), land tenure and use, farming and resource-utilization systems, communal organization, local variations in soils and climatic conditions, and current status of the natural resources base. The diagnosis is intended to characterize each priority community and identify representative farms and resource-utilization systems that can be extrapolated for priority work areas.

With the informative diagnosis completed (this usually involves a series of maps, graphs and organized notes on each priority area and its communities, but more importantly, familiarity with the communities and people), the extension agency begins the formation of strategies for each community to be organized or farmer group in the

Table 1--Categories used for delineation of priority work areas, produced by overlapping maps of land use/vegetative cover and slope for the same area.

Priority Activity	Slope (%)	Current Land Use/ Vegetation
Agronomic measures	0-15	agriculture
Mechanical conservation structures with agronomic measures	15-50	agriculture
Pasture improvement	0-50	natural or cultivated pasture
Reforestation	>50	agriculture or pasture
Forest management/ protection	>50 ^{a/}	forest

^{a/} Should also include management of any areas currently under forest cover regardless of slope; priority given to areas with >50% slope.

11

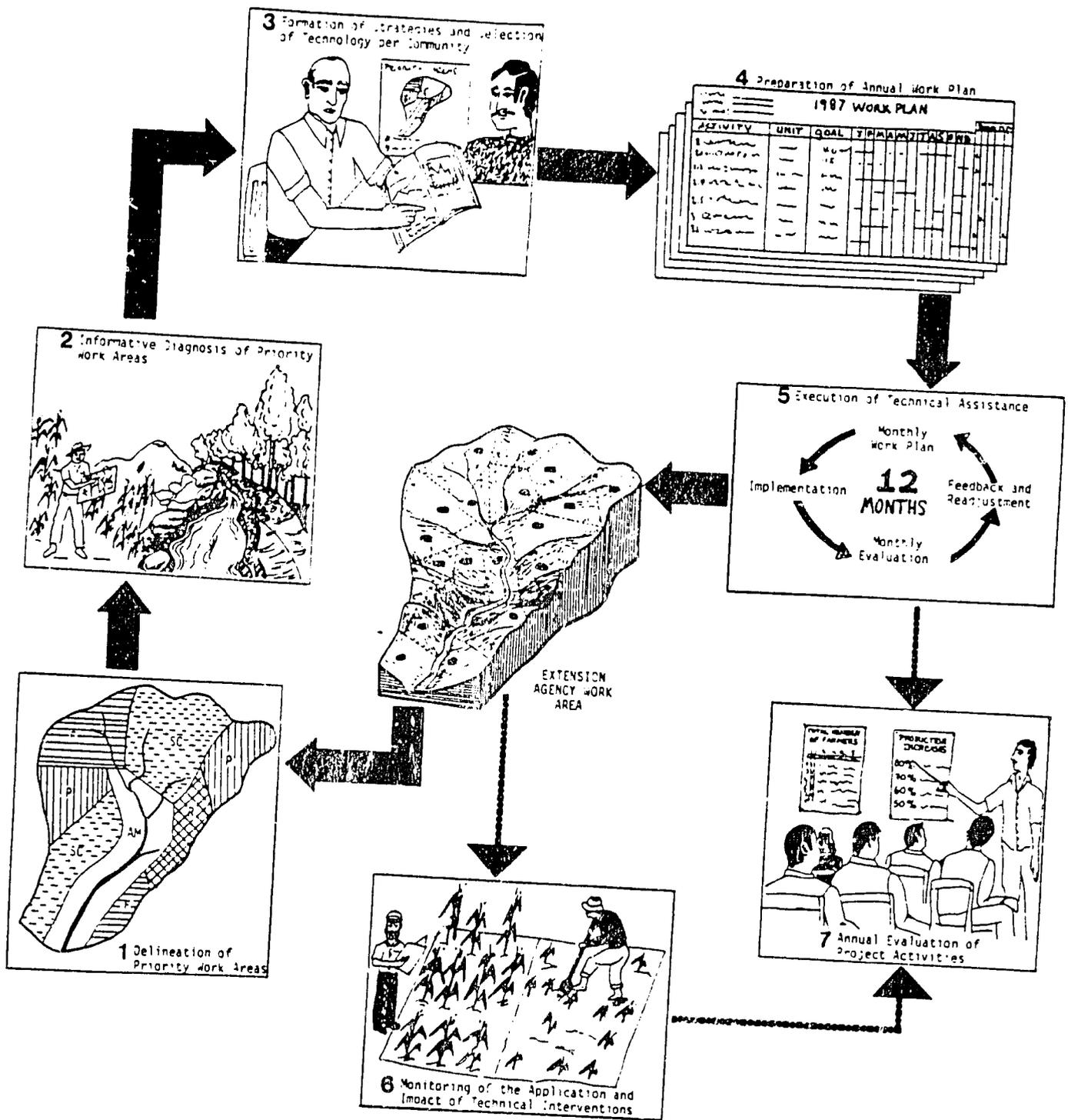


Figure 3--Sequential steps in planning, monitoring and evaluation of technical assistance activities.

case of communities that are already organized. Certain technical interventions are selected and assigned a percentage ranking according to their importance for each community or group. The more important an intervention is for a community, the greater percentage of time the extension team will spend on it. This phase also includes a preliminary estimation of numerical, physical and human goals for the community that will be included in the agency's annual work plan.

The annual work plan is then prepared by the extension agency team (fig. 4). The plan is a format comprised of four parts. The first is a listing of strategies for communities and/or farmer groups in the agency's work area, developed in the preceding phase. By aggregating the strategies for all the communities, it is evident to the team which interventions will take up the majority of their time. The second part of the plan lays out a summary of numerical physical and

NRMP--Annual Work Plan Part 1: Work Strategies and Priorities									
Community or Group	Soil Conserv. Ag. Practices	Pasture & Range Management	Reforestation Forest Mgmt.	Development of Women's Activities					
La Libertad	Rock walls, gr. manure, contour furrows (40%)	Cut pasture of Pennisetum (20%)	Living fences of Gliricidia (15%)	Home gardens, broom-making (25%)					

NRMP--Annual Work Plan Part 2: Summary of Goals by Component								
Community or Group	Pasture Management				Reforestation			
	Plant Improved Grasses		Manage Existing Pasture		Agroforestry		Closed Plantations	
	ha	Participants	ha	Participants	Mts.	Particio.	ha	Participants
La Libertad	14	23	55	42	25,000	61	4.5	6

NRMP--Annual Work Plan Part 3: Scheduling of Technical Assistance													Respons.					
Description of Activity	Unit of Measure	Annual Goal	No. of Particip.	Calendar of Execution												Manny	Moe	Jack
				J	F	M	A	M	J	J	A	S	O	N	D			
Soil Conservation																		23
- Promotion of techniques	Mtgs.	10	300	---	---	---	---	---	---	---	---	---	---	---	---	---	---	14
- Educational field trips	Trips	15	250	---	---	---	---	---	---	---	---	---	---	---	---	---	---	81
- Establishment of demonstrations	Plots	12																103
- Constructions:																		24
Rock walls	Mts.	12,000																11
Hillside ditches	Mts.	--																9
Bank terraces	Mts.	--																
Grass barriers	Mts.	15,000																

NRMP--Annual Work Plan Part 4: Materials and Equipment Needs			
Articles	Quantity	Date	
- 12-20-12 fertilizer	6 100-lb sacks	4-4-87	*
- Shovels	160	1-10-87	*
- Picks	200	1-10-87	*
- Soil test kit (HACH)	1	2-1-87	*

Figure 4--Four essential parts of the annual work plan.

human goals for the principal technical interventions to be promoted in each community or group. It is here that team members can visualize in graphic form where they will be concentrating their efforts. A third part of the plan is quantifying and scheduling technical assistance for the entire year. The agency's activities are divided by technical focus (e.g., reforestation, pasture management, agricultural practices), and a series of sub-activities described. These sub-activities are standardized on the annual work plan format used by all extension agencies; hence, reporting is also standardized. Each has a unit of measurement that is used to estimate the sub-activity's physical (number of hectares, trees, farm visits) and human outreach goals (number of farmer participants or beneficiaries) for the year. Sub-activities are then scheduled, indicating the season for realization of each and which team member has primary responsibility for coordinating the effort. The fourth and last part of the plan is a procurement form, designed so

that the extension agency team can request all the materials and equipment needed to carry out the work plan.

Extension agency teams fill out the format in draft, and these drafts are then circulated in the central project office for review by the project director and staff of the Planning and Technical Assistance Unit. At a three- to five-day meeting during the last month of the work year, project personnel meet to discuss each agency's work plan to arrive at a final annual work plan. Any changes or improvements are made during this annual planning event, and the plans are then approved.

Monthly Planning and Evaluation Process

The extension agency's annual work plan is the cornerstone for implementation of project-related activities. Because of the usual obstacles and unstable nature of this type of project (e.g.,

funding delays, politics, erratic rains, personnel changes), it is important to build in a certain flexibility and, at the same time, a mechanism to renew or "recharge" the plan. For this reason, the monthly plan and evaluation was developed, which is nothing more than a two-in-one format that is taken word-for-word from the annual work plan's schedule of technical assistance (fig. 5).

On the first day of each month, the agency team consults the annual work plan for the activities that correspond to that month. Where the calendar and month intersect, a monthly goal is set for the sub-activity, which is a portion of the annual goal for that activity. After 30 days of implementation, the agency team returns to the monthly plan on the first day of the following month and evaluates the level and quality of implementation for the planned activities. Problems or obstacles to successful implementation are detected and dealt with by the team and its supervisor after a review of the monthly evaluation; the format then forms the basis for reporting. After the preceding month's activities have been evaluated, the team fills out a new plan for the coming 30 days, and the cycle repeats.

It is important to point out that no annual work plan can remain accurate and true to date throughout the year. Activities that are not implemented during the month planned can be carried over to the next or otherwise revised on the next month's work plan. The process provides a cyclical mechanism whereby the extension agency's activities are tied closely to its annual work plan, yet subdivides the plan into a more manageable time frame. At the same time, the process facilitates ongoing assessment of the agency's progress, indicating problems or weak areas, yet permitting replanning of numerical goals according to the real capabilities of agency personnel and varying biophysical and socio-political conditions that affect implementation.

Monitoring Technical Interventions

The monthly planning and evaluation process is used to gauge the progress and efficiency of the extension agency teams in providing technical assistance to the target population. It is a mechanism for assessing the validity of the vehicle for technology transfer, not the technology. However, it is also of importance to assess the validity and efficiency of the technical intervention. Are the trees being planted really fast-growing? Will the new corn planting densities increase production per hectare by 50 percent? Can the introduction of a cut-and-carry pasturing scheme increase animal weight by 15 percent and milk production twofold? Is the investment of time and labor in constructing rock walls on the contour actually going to reduce erosion and increase the soil's water-holding capacity?

These are technical and economic questions that all farmers will eventually answer when they try the technical interventions on their own farms. It is best to know the production potential of the interventions before and during the life of the project, if only in relative terms. For this reason, a scheme was developed for monitoring technical interventions at the farm level. This scheme is not intended to provide a design for scientific investigation, rather it is a framework for gathering the minimum information needed for monitoring selected interventions to better understand and calculate their efficiency, outputs, applicability and cost/benefit ratio.

Extension agency personnel decide which techniques need to be monitored. They then select a sample of five to 10 percent of all the farms where a given technique is practiced. For each farm, a monitoring form is filled out. It consists of:

NRMP--Monthly Work Plan and Evaluation						Respon.			January 1987
Description of Activity	Unit of Measure	Monthly Goal	evaluation			MONEY	MOE	DACK	Narrative
			Executed	% of Goal	No. of Particip.				
<u>Soil Conservation</u>									
- Promotion of techniques	Mtgs.	2	1	50	35	*			2 nd meeting cancelled
- Educational field trips	Trips	3	5	+100	75	*	*		
- Establishment of demonstrations	Plots	1	1	100	5	*			
- Constructions:									
Rock walls	Mts.	2,000	1,200	60	15		*		Moe had the flu

Figure 5--Monthly work plan and evaluation format closely resembles Part 3 of annual plan. Thus, the 12 monthly plans represent the disaggregation of the annual plan.

- 3 copy of the agency's general topographic map showing the farm's location;
- sketch of the farm's layout before the intervention, depicting land use and an annotated legend detailing aspects of resource use, production systems, local soil and climatic factors, and other pertinent data;
- space for sketching the technical interventions as they are implemented, using the same scale as for the sketch of the current situation; and
- one or more data sheets, each for monitoring a particular series of interventions, such as reforestation and forest utilization, planting and management of improved pasture, or agronomic measures for cultivating corn.

The monitoring form is continually updated and used as the basis for closely following the application of selected technical interventions through planting and harvest cycles or each step of resource management and utilization. Inputs and outputs are calculated with the participation of both farmer and extension agent. Information from these monitoring forms is periodically synthesized by the agency and used to evaluate the validity of the interventions. Results are then extrapolated for all farmers practicing the techniques, and output figures can be calculated to analyze the impact of project activities for the agency's entire outreach area. Later, output and impact figures can be estimated for the entire project area.

Annual Project Evaluation

Just as the monthly plan has a monthly evaluation, so the year should terminate with an annual evaluation. The annual project evaluation is held in the last month of the planned year (in the case of NRMP, at the end of the calendar year) and is intended as an analysis of the project's methodology of execution and a feedback process in which all participating personnel can share in the experiences of the year, good and bad. Among other things, the annual project evaluation should include:

- a comparison of the year's annual work plan (in terms of orientation, strategy and goals) to recorded achievements;

- presentation and discussion of case studies for technical assistance experiences specific to each principal technical component to analyze corresponding successes and failures;
- analysis of the adaptability and acceptability of each intervention, from the perspectives of farmer beneficiaries and extensionists;
- identification and discussion of political, managerial, administrative and logistical obstacles that inhibit the timely provision of quality technical assistance to the target population;
- identification of technical "voids" and needs for training so that extensionists can be better prepared to transfer appropriate technology; and
- technical, administrative and managerial recommendations leading to a more efficient and successful operational methodology for the project in the coming year.

In general, the annual evaluation is an event that is prepared in advance by circulating questionnaires to the extension agencies which cover all the aspects just mentioned. Answers from these questionnaires are consolidated and presented in a plenary session during the annual evaluation meeting, thus providing a basis for the evaluation. Results of these discussions are recorded and a consensus formed concerning the project's more pertinent technical and managerial aspects. This consensus is then carried over into the annual planning process for the coming year to consider the results of the evaluation for the preceding year. Thus, the annual evaluation is the prelude to annual planning for the coming year, and both processes are covered during the same three- to five-day meeting during the last month of the year. The annual evaluation and planning meeting, like the monthly planning and evaluation process, is cyclical and provides a continuum for the project from year to year.

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