

## THE AGRICULTURAL COMMUNICATION PROCESS

from the  
Communications for Technology Transfer in Agriculture Project

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The Communications for Technology Transfer in Agriculture (CTTA) Project is a five-year research and development effort funded by the U.S. Agency for International Development and managed by the Academy for Educational Development. CTTA is designed to develop a methodology for applying mass media and social marketing to promote the adoption of agricultural technology to farmers in select countries.

This paper is one of a series of Issue Papers and professional communications distributed as part of the CTTA Project's Diffusion and Documentation Component.

## A. THE ISSUE OF TECHNOLOGY TRANSFER IN AGRICULTURE

Problems encountered in transferring improved, well-adapted agricultural technologies from the level of research to the farmer in the field continue to place a serious constraint on agricultural development in most developing countries. These problems encompass a series of interrelated issues, such as:

- Appropriateness, practicality, dependability, and potential economic viability of improved technologies developed through research in relation to the farmers for which they are intended.
- Capacity of the technology diffusion system to reach all farmers effectively with information about the improved technologies and to provide continuing guidance to the farmers in their application.
- Capacity of the agro-support sector to provide the inputs and services needed for adoption by farmers of the improved technologies, including availability of markets, processing facilities, etc.
- Pricing structures and government policies that provide incentives (or disincentives) to farmers who wish to adopt the improved technologies.
- Variability within the local setting with respect to the foregoing factors, and farmers and their circumstances.

Although technology transfer projects address the issue of technology diffusion most directly, coordination and collaborative action with projects and programs affecting other factors such as those just cited are essential to the achievement of the technology transfer objective. Communication technologies, methodologies, and skills are always used in some fashion to disseminate information to and receive feedback from farmers, and to exchange information among all the people involved with the project. Too often, however, the application of communication technologies is not adequately considered in project planning. This results in a lack of systematic planning and integration of communication-related activities. Thus, the communication component becomes a constraint to project success.

The potential for increasing the impact of a technology transfer project through appropriate and effective use of communication support has been well demonstrated. Nevertheless, no comprehensive communication model has yet been developed which has general applicability to agricultural projects, considering the wide variability between and within local settings. The communication systems and strategies developed through the CTTA Project will be directed toward meeting this urgent need.

Communication needs and potentials for accelerating the rate of technology transfer are discussed briefly below in relation to the major issues identified above.

## 1. Available Agricultural Technology

The first and foremost requirement for achieving technology transfer in agriculture is a continuing supply of appropriate well-adapted technologies that, if adopted by farmers, will increase their production and profits. The CTTA Project will not generate new and/or improved agricultural technologies. Therefore, it can have impact only in areas for which such technologies already exist but are not being used by farmers, and for which new/improved technologies are being generated through competent, problem-oriented research.

Lack of appropriate, locally adapted technologies has been (and continues to be in many areas) a serious constraint to agricultural development in the Third World. Too much agricultural research in developing countries has been planned and conducted largely in isolation from extension and the farmers, and has not taken advantage of research results, germplasm, etc., developed elsewhere. Results have been inadequately tested on farms to determine local adaptation before being given as recommendations to farmers. The traditional emphasis on single-discipline or single-commodity research often has not been consistent with the farmer's need to determine what combinations of inputs, practices, and enterprises will be most beneficial to him under his circumstances.

The CTTA Project will coordinate pilot project communication interventions and diffusion activities with the international agricultural research centers and programs to access research findings, germplasm collections, etc., from around the world, and to collaborate with outstanding scientists on needed research projects that would be impossible for the developing country to undertake independently.

## 2. Information Dissemination and Feedback

Although developing countries, supported by external donors, have invested heavily in extension as a technology diffusion vehicle since World War II, extension effectiveness and performance have failed to live up to expectations. Coverage of farm families by developing country extension services is still limited, and their effectiveness in accelerating the rate of farmer adoption of new and improved technologies has been disappointing.

The lack of available appropriate technologies for extension to transfer has been a major constraint; but the problem goes deeper. Typically, coordination, interchange, and collaboration between research and extension services have been sorely deficient. Many extension workers in the field are not adequately trained. The subject matter specialists

upon whom those extensionists must depend for technical backstopping are themselves often not sufficiently trained in the technical field for which they are responsible, are not well linked with research programs, and lack mobility and/or communication facilities to respond adequately and promptly to the extensionists' needs. Salaries comprise such a large proportion of the total extension budget that operating funds are minimal.

Communication support, particularly mass communication, is often ad hoc and not effectively integrated into the total extension program effectively (for example, farm radio programs may be produced without direct inputs and/or involvement of research staff or without synchronization with the activities of extensionists in the field). Comprehensive feedback reports may be required of field extensionists, but distribution to those who can act upon it--extension, research, policymakers, agro-support sector--is too often cumbersome, slow, and incomplete.

Programs for women are typically oriented toward family living topics, gardens, small animal production for which women are traditionally responsible, and the like, but include little on agricultural production even though women in many areas play an important role in decision-making and/or crop production/harvesting/marketing activities.

Nevertheless, extension represents a major resource for information dissemination and for collection and distribution of feedback from the farmers and rural communities. Systematic planning and effective use of appropriate communication methodologies, technologies, skills, and strategies as an integral component of extension (and other technology transfer) programs presents a major cost-effective opportunity to improve extension performance in both dissemination and feedback activities.

The potential impact of effective communication support in contributing to technology transfer has been well demonstrated in agricultural projects such as the Basic Village Education Project in Guatemala and the Masagana 99 campaign in The Philippines, and in health projects such as Mass Media and Health Practices in Honduras and The Gambia. Although these projects varied greatly in technical content and approach, they had a number of critically important characteristics in common. For example:

- Program interventions were preceded by extensive developmental investigation, and formative evaluation was a continuing activity.

- Mass communication strategies based on knowledge of target audience characteristics used a combination of mass media, interpersonal contacts and graphic/print media for mutual reinforcement to obtain maximum impact.
- Message content was scientifically sound. (In the agricultural projects, linkages were established with agricultural research institutions and researchers were directly involved in development of technical content.)
- Intensive staff training was given at all relevant staff levels.
- Effective systems were developed for planning, producing, and disseminating information through the media selected.
- Program materials designed for dissemination were pretested prior to use in media interventions.
- Feedback systems were developed and used that provided regular and reliable feedback that was distributed promptly to those who had need of or could act upon it.
- Institutions constituting the agricultural or health infrastructure were included in the project communication network, and their support enlisted.

The CTTA Project will build upon experience in the projects just cited; using elements of behavioral science, social marketing, developmental communication, and extension, as appropriate, in developing mass communication strategies in the pilot projects at the primary and collaborating sites.

### 3. Agricultural Infrastructure

Even though a farmer may be convinced that an improved technology is worthwhile for him and wish to adopt it, he can do so only if the agricultural infrastructure is sufficiently well developed to give him access to the required inputs (such as seed of an improved variety, insecticide, or vaccine) and credit (if needed) at the time and in the quantities needed, and a market at which he can sell his product at a fair price. Lack of farmer access to any of these can place an absolute constraint on adoption, particularly in the case of high input technologies.

CTTA Project communication interventions will not provide inputs, set prices, or market products. The system's capacity to meet these needs, however, will be improved because the Project will specifically include private and public agro-support sector institutions in the communication network, consult with them on message and communication campaign strategies to determine to what extent such goods and services

can realistically be expected, and alert them to potential needs and problems (identified through developmental investigation, formative evaluation, and feedback from the field) in their areas of activity. Their support will also be enlisted to assist in the dissemination of technological information to farmers through their field staff and other established channels.

#### 4. Prices and Policies

Price stability and levels that give the farmer confidence that he can realize a reasonable profit from the adoption of a new or improved technology are essential to achieving success in technology transfer programs. Although action related to pricing structures and policies are completely beyond the purview of the CTTA Project, it is reasonable to expect that such policies can be influenced through keeping policy and decision makers fully aware of information gained from developmental investigation, formative evaluation, and feedback.

#### 5. Integration of Agricultural Technology Development and Transfer System

The technology development and transfer process is a continuum which encompasses technology generation, testing, adaptation, diffusion, and adoption. Conventionally, technology generation is associated with research, and diffusion is associated with extension.

The testing and adaptation required to assess local adaptability and practicality, technical and economic feasibility, and social acceptance of new/improved technologies constitute a blend of research and extension in which both should be integrally involved with the farmer. Also both research and extension should be involved in identification of problems requiring research. In addition, research involvement is needed in formulating technical content to be disseminated to farmers by extension, in technical backstopping of field extension workers charged with responsibility for informing farmers about new/improved technologies, and in resolving problems encountered by farmers in adopting such technologies.

This high degree of collaboration and interaction between research and extension is not commonly encountered in developing countries, although some exceptions can be found. For example, the enlase tecnologico (technological linkage) which is now the policy of the Honduran Ministry of Natural Resources is a significant step in this direction, as are the adaptive research teams being established with AID and other donor assistance in Malawi. Effective communication between and among research, extension,

and the farmers is essential to development of viable linkages and the success of technology diffusion strategies and programs.

The CTTA Project will contribute toward developing and institutionalizing strong linkages and active collaboration between research and extension by involving researchers in the pilot region interventions, integrating the research system into the communication network, and collaborating with research in activities of mutual need and interest.

#### 6. Small Farmer Orientation

Small farmers in the primary and collaborating site countries can be generally characterized as having severe resource constraints, being reluctant to assume risk, using minimal cash inputs, and existing most often at or near the subsistence level with relatively little excess production available to take to the marketplace. The number of small farmers in an area is usually so great, and many are so isolated, that extension has found it exceedingly difficult to reach the majority through conventional extension methods.

Such generalizations are dangerous, however, if used as the sole basis for planning interventions such as those anticipated in the CTTA Project. Great variability exists among farmers and rural families within a local setting. Differences can include:

- Socioeconomic and cultural characteristics
- Perceptions of risk
- Resource limitations
- Attitudes toward change
- Management and husbandry skills related to their agricultural enterprises
- Degree of modernization of their agricultural enterprises
- Readiness to accept new ideas and products
- Sources of information which they believe to be credible
- Quality of the lands which they farm
- Tenurial status.

Developmental investigations (in which the principles of behavioral sciences and social marketing are used) to determine the nature and extent of such variation and to identify those characteristics of greatest consequence to communication interventions will be an essential first step in the planning of relevant and appropriate communication interventions.

Although by definition small farmers have limited land and other resources, they almost always are engaged in a number of separate enterprises that combine to make up

their total farm enterprise. For example, they may plant several different crops both to take best advantage of the types of land on their small farm and to minimize the risk of not producing enough to meet their family consumption needs. In addition, they will probably have at least a few animals (large or small), as well as some fruit trees and a garden. This diversity must be taken into consideration both in research programs and in designing communication interventions that will be advantageous and acceptable to the farmers.

## B. INTEGRATING COMMUNICATIONS, SOCIAL MARKETING, AND AGRICULTURAL EXTENSION

The experiences, results, and lessons learned from numerous agricultural communication, health communication, and social marketing projects have directed communications and social marketing professionals away from media-specific planning toward a systems approach to communications. This broad-based approach uses a variety of media and methodologies (radio, print, interpersonal contacts, audiovisual presentations, video, etc.) as part of an interrelated network of communication interventions targeted at specific change and driven by a consumer orientation. These three elements--consumer orientation, targeted change, and interrelated communication network--are the fundamental organizing principles for the process of developing an effective communications methodology for technology transfer in agricultural development.

### 1. Consumer Orientation

A fundamental premise upon which effective communications and social marketing programs have been designed is that the product (i.e., the information disseminated to achieve the desired behavior change) must be shaped to meet the consumer's wants, needs, and expectations. Thus, an effective agricultural communication methodology must consider the farmers, or target audience, first in order to offer "products" which will be of value to them. This consumer orientation requires an understanding of the farmer and also a recognition that not all farmers are alike.

#### a. The Farmer as an Active Catalyst

The farmer is not a receptacle into which new agricultural technologies are poured. He is an active catalyst whose needs, constraints, attitudes, and vocabulary must drive the agricultural communications program. Communication is not a link to the farmer; it is a link between the farmer and the researcher, planner, and extensionist.

New tools for understanding the farmer's perspective are available. Dependence on traditional survey research and anecdotal information has given way to behaviorally oriented studies. Concept testing, focus group interviews, behavioral trials, and intercept interviews--proven techniques used by social marketing programs--are sound village research techniques which can help to identify the hidden constraints a farmer may encounter in trying a new innovation. They help to select vocabulary which the

farmer will understand, and to integrate the innovation into the farmer's own view of his problems and needs.

The Basic Village Education project in Guatemala used a combination of traditional survey research and some of the newer market research techniques to identify the characteristics of farmers, rural families, and communities in its areas of action and to understand their perspectives and problems. The communication system of the PRODERITH project in Mexico places high importance on the need to understand the farmer's perspective. In Malawi, however, investigators question the communication program's philosophy of message content because of its failure to give adequate attention to understanding the farmer and his perspective.

b. Farmers Are Not All Alike

In the past, agricultural mass media broadcasts tended to group farmers generically, focusing more on their similarities than their differences. The prevailing view of mass media was allowed to dictate what was said and to whom the messages were directed.

Now, experience in projects such as Basic Village Education (BVE) and Mass Media and Health Practices in Honduras and The Gambia has shown that broadcasts can be segmented and directed at special groups. Differentiated message strategies for different groups or segments of farmers can be developed. Techniques such as message tone, characterizations, personalization, and scheduling can be used to localize the messages and reach important subgroups with relevant and persuasive information.

One of the core message themes of BVE in Guatemala involved credit needed by many farmers in the area. Information about why and when credit might be needed, how it should be used, and how to secure it was disseminated to farmers through various channels (radio, flipcharts, farm radio forums) using various types of presentation such as dramatizations, interviews, questions and answers, and spot announcements. The basic message, which was the same for all farmers in an area, was scheduled just ahead of the time that the farmers would need to apply for loans to produce their crops.

To improve the farmers' access to credit, BVE radio also informed its listeners of the dates on which credit agents would be in each community to help the farmers with their credit applications. They were informed, too, about what information and documents they would need to complete their applications. Through such localization of information, the number of farmers served by each credit agent--and there were not enough credit agents to serve all farmers in the area--increased dramatically.

In the Philippines, a key feature of the Masagana 99 mass media campaign was the localized production of radio programs by "farmcasters" who used information relevant to their specific micro-areas. In Mexico, rural communication subcenters have been established to achieve that same purpose.

## 2. Targeted Change

The second basic step in developing an appropriate and viable communication methodology is to focus on selecting and organizing the content of the agricultural messages. For example, to be effective, agricultural communication must be responsive to seasonal variation in the farmers' needs. In social marketing terms, this means identifying and establishing a definite organizational purpose with specific objectives. These objectives guide the message development to achieve targeted behavior change.

Farming is not like taking medicine--you do not get better after two tablets. Rather, it is an integrated and cumulative process which is necessarily reactive to unpredictable events; and the benefits of adopting a new technology will likely not become evident until the end of the season. Drought, floods, unexpected rises in fertilizer costs, lack of credit, pest attacks, or any one or several other problems can completely obliterate benefits from even the most carefully applied new practice. In this context, simple media messages about the wonders of a new crop variety, for example, may only produce frustrated and incredulous farmers.

Clearly the decision on messages to be presented must be analyzed from this perspective, and the messages carefully selected to ensure that the observable outcome is perceived as rewarding. This requires development of communication messages which help the farmer to deal sequentially with seasonal problems as they are encountered, and to understand the potential risks involved with the new technology in relation to those he encounters at present.

Other factors that must be considered in deciding on messages to be presented are related to how much information should be included. Based on developmental investigation and on continuing feedback, how much information can the farmer be expected to absorb in a given period of time? From the programs's perspective, how much information is the system capable of generating, transforming into presentations acceptable and understandable to the farmer, and disseminating through its media network? Difficult decisions are required concerning not only the sequencing of messages, but also the amount of information to be included.

In short, not everything can be taught at once; program managers must carefully decide their message priorities and focus the messages accordingly.

### 3. Interrelated Communications

No single media channel or communication methodology is powerful enough by itself. Dozens of studies were conducted in the 1950s and 1960s to determine which was better--radio, television, print, or extensionists. It is now clear that "What's better?" was the wrong question. A more relevant question is "What's better for what purpose?" We now have some answers to this question.

Broadcast media, radio and television, are better for reaching a lot of people quickly with fairly simple ideas. Print media are best for providing complex information or a timely reminder of information that people otherwise cannot be expected to remember. Interpersonal communication channels, such as extensionists, group meetings, community organizations, and demonstrations, are still the best way to teach and develop credibility.

Perhaps a more important finding is that all three components are needed to make an effective program. Large numbers of people must be reached quickly; they need a reference or reminder about what they have been told; and they have to believe in the integrity and worth of the program if they are to heed advice and information received. Effective communication is somewhat like a three-legged stool. With a leg missing, it is very unstable and of limited utility.

The challenge in developing an effective communication methodology, then, is to orchestrate the various possible inputs to maximize their total impact and to minimize costs. Not all channels can be used all the time because costs would be exorbitant. Elements must be selected from each of the media groups and integrated in a manner that results in achieving a total impact that is greater than the sum of the individual impacts.

### 4. The Agricultural Communication Process

In addition to these three critical elements for effective communications, the program management process must be designed and implemented to control and organize staff activities and functions so that programs operate efficiently and effectively. The key to success lies with carefully formulated project activities rather than trial and error.

The following process for developing, implementing, and evaluating an agricultural communications technology transfer program represents a state-of-the-art approach drawn from agricultural communications, health communications, and social marketing. The process is illustrated in Exhibit 1. The integration of disciplines is illustrated in Exhibit 2. The process provides a framework for solving agricultural technology transfer problems and achieving organizational objectives in an orderly and disciplined fashion. It relies on behavioral and communication research, technical guidance from agricultural research, and efficient program management to move from problem to solution. Finally, this process is iterative, with the last stage feeding back into the first in a continuous cycle of replanning and improvement, through feedback and feedforward mechanisms.

### STAGE I: Target Audience Analysis And Developmental Investigation

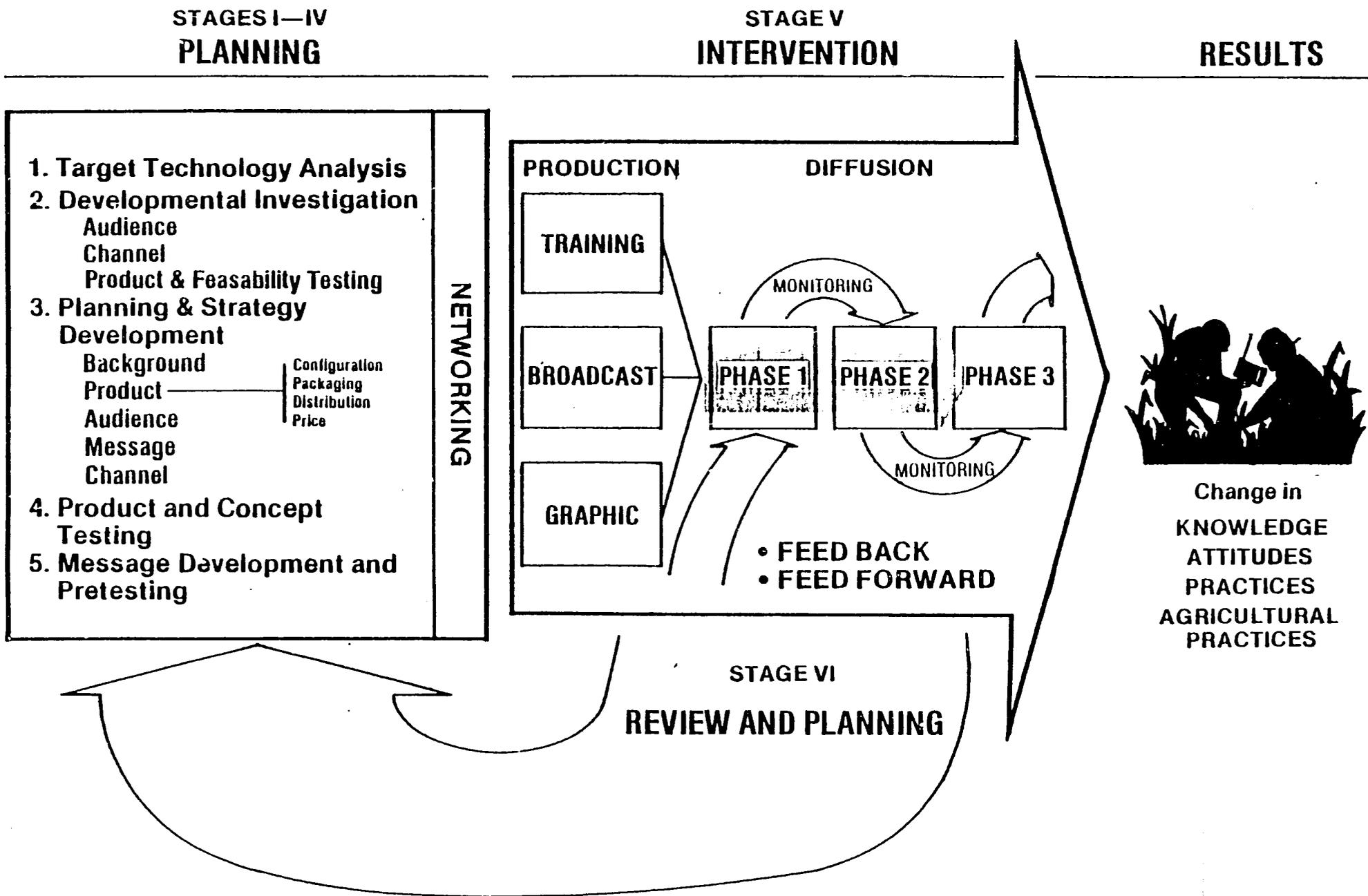
#### a. Target Audience Analysis

The communication program process begins with a developmental investigation of the characteristics of the potential target audience (farmers), the forms in which technological information should be packaged to make it acceptable to and understood by farmers, and the ways in which farmers receive and attach credibility to agricultural information. This investigation is essential for developing a communication program based on a consumer orientation.

In agricultural communication programs, the primary target audience is the farmer; however, program success also depends on such secondary audiences as researchers, input and service providers and retailers in the agribusiness sector, markets and cooperatives, government policymakers, and agricultural influentials such as leaders of farmer associations. The more that is known about each of these audiences, especially the farmer population, the easier it is to construct a plan to segment, reach, and motivate the desired behavior changes.

Prior to conducting an intensive developmental investigation, existing data are gathered and reviewed to determine demographic, geographic, economic, cultural, and social characteristics of the target population. Geographic characteristics are of special importance in agricultural communication, and include such factors as terrain, level of soil erosion, climatic conditions, and irrigation.

# COMMUNICATION FOR TECHNOLOGY TRANSFER IN AGRICULTURE PROCESS MODEL



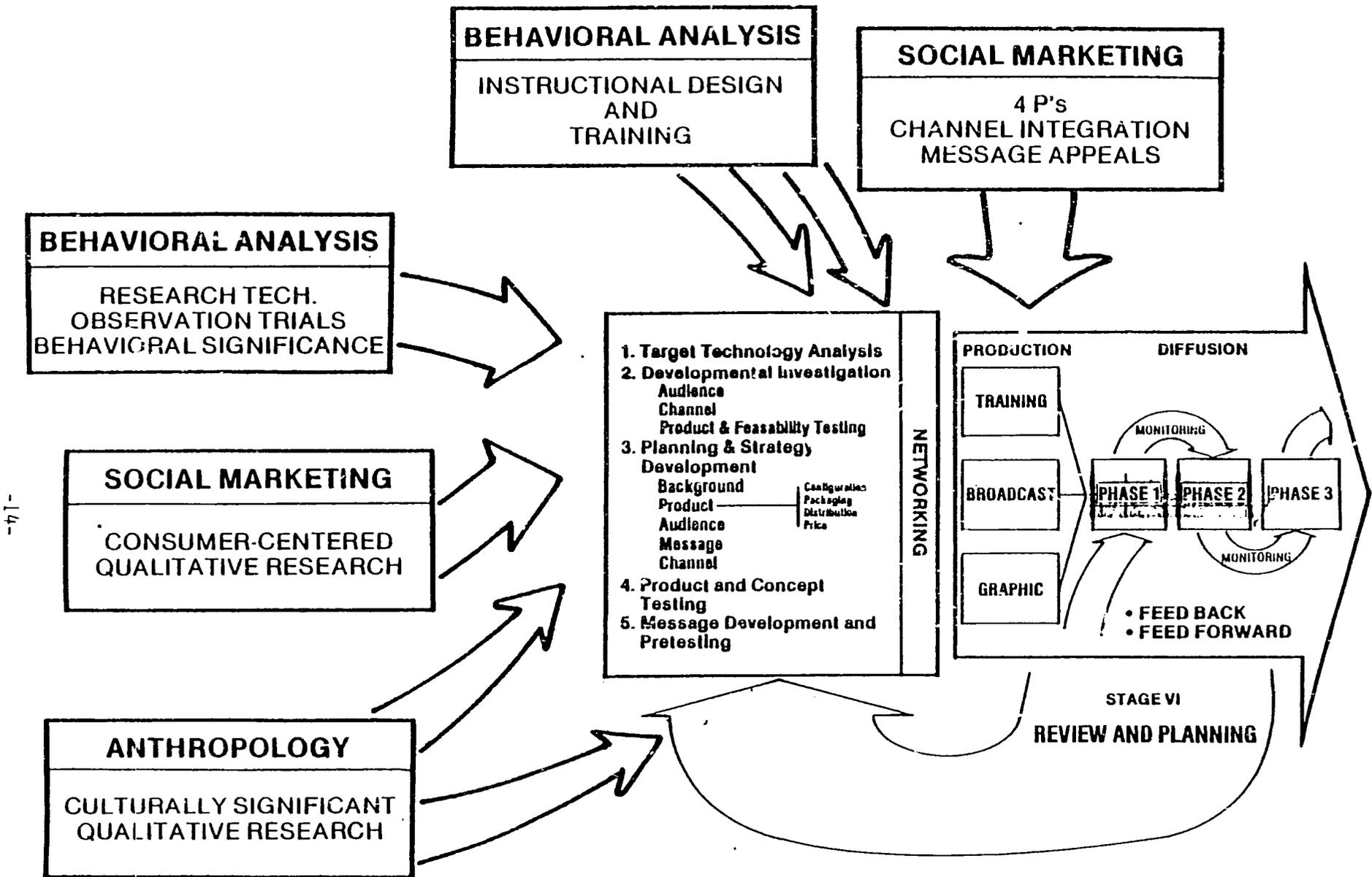


Exhibit 2

**INTEGRATION OF NEW DISCIPLINES**

Social marketers address the psychographics of the potential target audience as well. Psychographics include the knowledge, attitude, and behavioral attributes of the population, including an assessment of patterns of consumer response (expectations, satisfactions, dissatisfactions) with current or previous technological innovations, lifestyle and personality (e.g., degree of willingness to take risk), benefits sought from agricultural technology, and readiness to adopt innovations. In every consumer target audience, different audience segments are, at any given time, at different stages of use or nonuse. Social marketers segment the population along a usage continuum: unaware, aware, knowledgeable, interested, ready-to-try users, and possibly ex-users.

Finally, farmers' media patterns are consumer traits that must be analyzed in this assessment of target audience characteristics. What are the farmers' radio listening habits? Where do they get most of their information? What sources are perceived as most credible?

Secondary sources--census data, rationale surveys, recent agricultural research institution studies--are consulted first to gather this information. Often, communication planners find that available data are outdated, inconclusive, or cannot provide the direction needed for identifying target audience segments or for formulating specific program objectives. Developmental investigations are designed to fill these gaps and to find out directly from consumers typical of the target audience what they think and feel about a new agricultural technology.

Traditional survey research is expensive and time consuming. Although there is still need for such research, agricultural development programs often cannot await the results before initiating action. Behavioral studies are essential, therefore, to help to answer not only "How good is the idea?" but also "How good will the farmer think the idea is?" For example, there are at least five basic reasons why any new idea might not be accepted:

- A farmer may not have the skills or knowledge to use it.
- He may not have the tools or materials to apply it.
- He may see no benefit in using the new idea.
- He may receive benefit from doing something quite different.
- He may perceive the new idea not only as having no benefit, but actually as punishing in some way--more work, more costly, less status, etc.

b. Developmental Investigation Techniques

Behavioral analysis in this context refers both to a methodology and to a set of very specific activities. It will contribute to the Project's understanding of the basic viability of the technologies which the farmers will actually be applying. Behavioral evaluation criteria include:

- Agricultural Impact of the Behavior
- Positive Consequences of the Behavior
- Cost of Engaging in the Behavior
- Compatibility with Existing Practices
- Approximations Available
- Complexity of the Behavior
- Frequency of the Behavior
- Persistence Required for Accurate Practice and Observability.

Each new practice will be analyzed and then ranked on a probability scale. The actual usefulness of such a rating scale is not in selecting or excluding possible practices, but rather in determining areas where field research is most warranted. The goal is two-fold: to better understand the practice itself and to develop the best way to promote that practice with farmers. We need to know: Is this practice particularly complex; is it very different from what farmers are now doing; are there any natural reinforcers or negative consequences we can identify? We need to establish the parameters for potential costs to farmers in applying this new practice. This is largely an academic analysis, bringing together experts in the technology itself with professionals familiar with existing farmer practices. Again, the purpose at this stage is to identify where further research is most needed and not to make definitive judgments about the viability of one practice over another.

Once the key research issues are established, then Target Audience Analysis and Developmental Investigation activities begin. During the field investigation, on-site structured observation of the new practices are conducted. This research is part of the Observation Farm Visits which form an important part of the Project's early stages. Exactly how these observations will be conducted will vary from one practice to another. Some may require a phased observation approach, coinciding with seasonal changes in how the practice is applied; others may be more discrete and limited in time, requiring only a few hours on selected farms to gain insight into the investigation questions identified in the earlier phase.

Again, emphasis is given not only to the behavior itself, but also to the means by which the behavior can be best taught. The observation trials should constitute trial "teaching" sessions at which different approaches to transferring the new practices are tested.

These early trials are again looked at through the lens of the behaviorist, in close collaboration with the anthropologist, the technology specialists, and the farmer experts, to continue to refine and hone the practice itself and the approach to best transfer that practice to farmers. The behavioral perspective continues to be woven throughout the remaining steps of the process.

### c. Developmental Investigation Techniques

Agricultural communication must include developmental investigation for determining what "want" means, and how best to teach new skills. Some of the critical questions are:

- What benefits will the farmer experience, and when?
- Will the farmer relate the new technology to the resulting benefits?
- Will the farmer perceive the cost (time, money, risk, etc.) as being too high?
- How can the relative costs and benefits be described most persuasively to the farmer?
- What costs in relation to benefits will the farmer be willing to pay for giving up what he is already doing?

The answers to these questions are essential to the development of an appropriate communication strategy and, ultimately, to the success of any project in which the transfer of technology is an objective. Several research methods can be used to conduct the developmental investigation necessary to answer these questions. These include such market research techniques as focus group interviews, in-depth interviews, and central location interviews.

Focus group interviews have the advantage of obtaining qualitative information on consumers' perceptions, beliefs, practices, and language from several respondents at once. Further, the group atmosphere provides greater stimulation than individual interviews. Focus groups are especially useful for obtaining direction in the concept and

message development stage of the communication process to examine spontaneous reactions to specific topics and message concepts. In the formative stages of program development, focus groups can be used to develop the hypotheses or to broach research issues for larger quantitative studies. Thus, these interviews are extremely useful when little is known about consumer attitudes and perceptions of a new product, such as a new agricultural innovation. Consumer perceptions, misconceptions, and attitudes can be probed in focus groups to help to generate ideas and develop hypotheses which are then fully assessed in a larger quantitative study.

When the group interview situation may prevent individuals from speaking honestly about their own views and opinions; when intensive, sequential case histories are needed; or when respondents are difficult to recruit for a group, the individual in-depth interview is a better approach for developmental investigation. Because there are no group dynamics, the quality of the interview tends to be more personal and more related to the unique experiences of the individual respondent. The disadvantages of in-depth interviews, however, are that they are expensive and time-consuming and are only affordable for a limited number of interviews. As a result, the information gathered is considered to be an aid to professional judgment and should not be used to make broad generalizations without further research using quantitative methods.

Central location interviews involve stationing interviewers at a point frequented by individuals typical of the potential target audience and asking them to participate in a research interview. Locations for intercept interviews can be farmer cooperatives, retail outlets, or gathering places like markets or bazaars. The advantages of this technique are twofold. First, a high traffic area can yield a number of interviews in a reasonably short time and second, a central location for hard-to-reach target audiences can be a cost-effective means of gathering data. The major disadvantage of this research method, like focus groups and in-depth interviews, is that the results obtained are not projectable to the population and must be interpreted carefully.

Central location interviews can be used to assess farmers' perceptions of the advantages and disadvantages of agricultural methods, satisfactions and dissatisfactions, and questions related to product packaging and pricing. This method is particularly useful later on in the communication for testing communication messages and materials among a fairly large group of respondents. As in the case of the Mass Media and Health Practices project, these qualitative research techniques should be supplemented by quantitative studies of knowledge, attitudes, and practices to ensure that objectives and messages are appropriate.

## **STAGE II: Planning and Strategy Development**

The data collected and analyzed during the first stage now serve as the basis for Stage II, Planning and Strategy Development. This stage involves setting clear, measurable behavioral objectives, segmenting the target audience, specifying the communication and other marketing strategies that will be used in the project, and developing an integrated action plan.

### **a. Setting Program Objectives**

Specific, realistic program objectives must be set to guide the communication effort. These objectives may be stated in terms of the level of anticipated program participation, extent of technology transfer, and changes in farmer knowledge, attitudes, and behavior. It is important that the objectives be quantified and stated so that they can be translated into action. Further, objectives must be set according to priority. Not all objectives are equally important, and some must precede others.

### **b. Segmenting Target Audiences**

The target audience analysis and the developmental investigation undertaken in Stage I are now used to isolate high priority target audience segments and to tailor the communication program for each audience segment. Target audience segmentation requires that differences between younger and older farmers, richer and poorer, risk takers and non-risk takers be addressed in program planning. Addressing these differences among subgroups of the target population is essential for project success.

### **c. Specifying the Project's Communication and Other Marketing Strategies**

Once objectives have been set and audiences segmented, strategies can be devised for each element of the communications program. In social marketing, these strategies are organized around four key elements:

- The product or offering (i.e., the information to be transferred) and how it will be positioned and packaged.
- The distribution channels for disseminating the product to target audiences.
- The price (monetary, psychic, energy, and time costs).
- The promotion or communication.

Each of these strategy elements is described briefly below.

- **Product Strategies**

One product strategy decision is determining how to position the product at some point on the spectrum of what consumers want and expect, while avoiding a position where competitive offerings are located. Another product strategy decision regards shaping the attributes of the offering to encourage consumer acceptance. For example, if the farmers' criteria for adoption include dependability, practicability, and ease of management, the information package should be developed to provide such signals about the product which will influence farmer acceptance. For example, print materials should look as easy to read and follow as possible.

- **Distribution Strategies**

Decisions about the channels for disseminating the offering to target audiences must be made at this stage. In the case of technology transfer for agricultural development, information will flow to and from many sources. Program planners must determine whether information will flow directly or indirectly, such as through intermediary organizations like producer associations or otherwise. The potential complexity of communication networks and the importance of setting channel strategies is shown in the diagram on the next page (Exhibit 3), which illustrates the agricultural situation in Honduras.

- **The Pricing Strategy**

Farmers are businessmen and the bottom line in making a decision to adopt a new agricultural technology involves costs and profits. As such, agricultural communications programs cannot ignore the pricing issue and strategies must be formulated carefully on how to reduce the monetary, psychic, energy, and time costs or otherwise facilitate adoption and maintenance of the behavior being promoted.

- **The Communication Strategy**

Finally, the communication strategy is the cornerstone of the entire communication program. The communication strategy is a plan or design for changing human behavior on a large scale through the transfer of new information or ideas. Like the other strategies noted above, it is based on the target audience analysis and the developmental investigation.

The communication strategy contains the key messages and ideas to be communicated to each target audience, the reasons why, and the timing for information dissemination. Exhibit 4 illustrates the "who, what, why, and when" portion of the message strategy.

The message strategy also should include the primary benefits which the target audience can expect, supporting points to bolster the promised benefits (i.e., the reasons why), the specific action(s) the consumer is expected to undertake, and the tone or image of the communication that is to be conveyed over time. The purpose of the message strategy is to

# THE COMMUNICATION NETWORK: AN EXAMPLE FROM HONDURAS

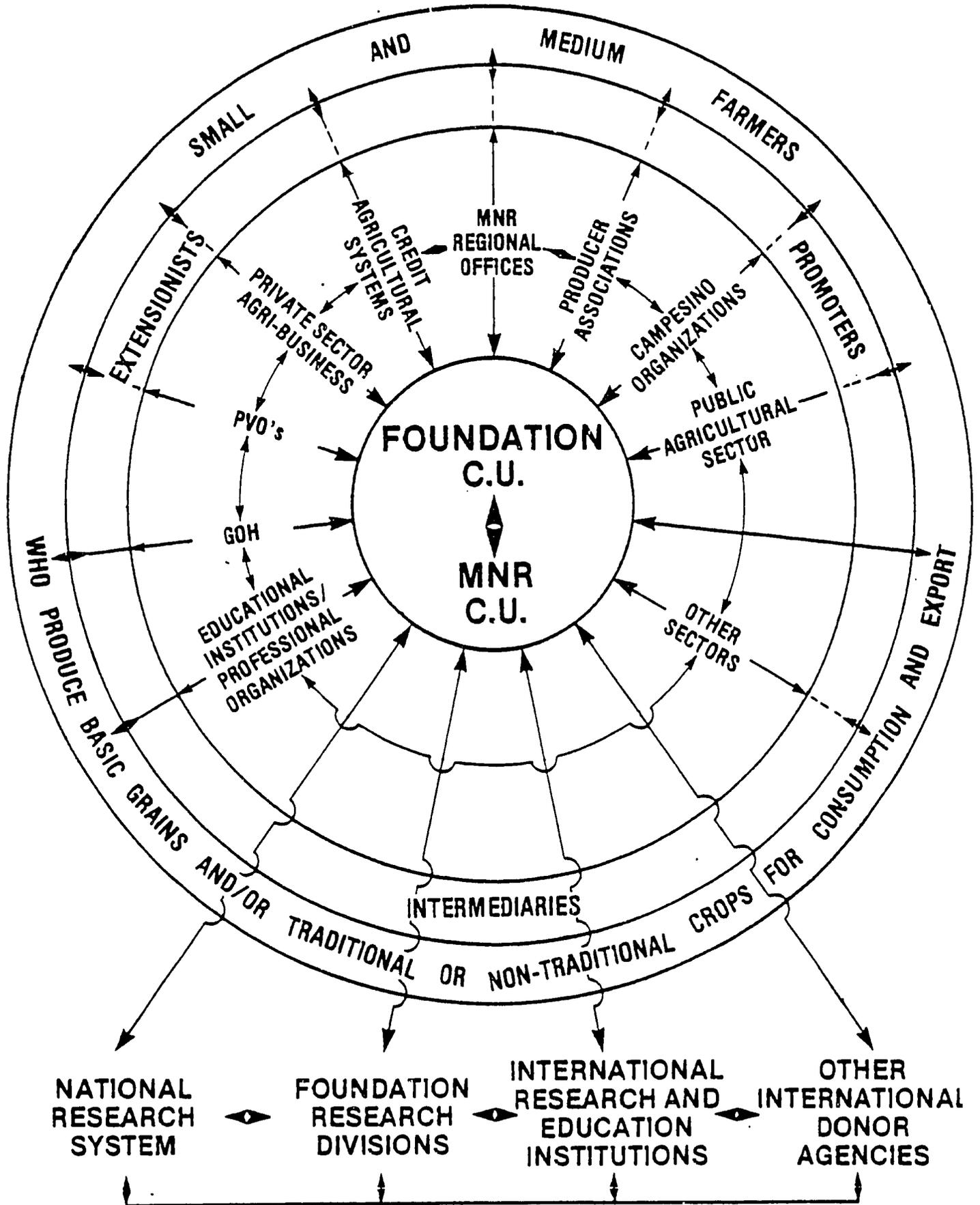


Exhibit 4

THE WHO, WHAT, WHY, AND WHEN OF PROJECT INFORMATION NEEDS

WHO	WHAT	WHY	WHEN
Farmer	<p>Knowledge about the technology and its potential benefits to him</p> <p>Instruction in how to use the new technology</p> <p>Where to get help if he has problems, and where he can obtain the inputs he needs</p> <p>Etc.</p>	<p>To make him aware that it exists and convince him to try it</p> <p>To enable him to try it successfully</p> <p>To give him confidence to try it, and enable him to get the required inputs</p>	<p>Ideally, the year before you want him to try it, but at least several months in advance</p> <p>The complete instructions at least a month in advance, repeating each step just before he will do it</p> <p>In the initial "knowledge" messages, and timed with "instruction" messages</p>
Extension staff in field	<p>Knowledge about the technology and its potential benefits to the farmer</p> <p>Details about how to use the new technology</p> <p>Sources of assistance and inputs that may be needed by the farmers</p> <p>Etc.</p>	<p>To enable them to take the information to the farmers, reinforcing what they have heard through other channels and providing more complete information</p> <p>Same as above</p> <p>Same as above</p>	<p>Before the information program is initiated</p> <p>Before the information program is initiated and periodically throughout the program</p> <p>Same as above</p>
Communication subsystem staff	<p>Detailed information about the technology, its potential benefits to the farmer, where and how the farmer can obtain help and inputs, and other information implied above</p> <p>Information and understanding about the farmers as discussed in Chapter VII</p> <p>Feedback from farmers about the comprehensibility, acceptability and reaction from the farmers' perspective</p> <p>Etc.</p>	<p>To develop message presentations in the various media to be used that will contain accurate and complete information</p> <p>To develop message presentations in the various media that are comprehensible, acceptable and convincing to the farmer</p> <p>To improve the output of the communication subsystem, and add, modify or delete communication media/methodologies as needed to obtain the desired impact</p>	<p>Before the program is initiated, and at least two months in advance of each of the steps above</p> <p>Before the program is initiated and periodically updated throughout its duration</p> <p>Continually throughout the course of the program</p>
Policymakers, administrators	<p>Resource requirements, with justification, program objectives, potential program benefits</p> <p>Reports of program progress</p> <p>Problems that require in-course adjustments in the program</p> <p>Revised estimates of resource requirements</p> <p>Etc.</p>	<p>To obtain the resources required for the program, and to generate support for it</p> <p>To maintain understanding of and support for the program</p> <p>To gain support for making such adjustments, and informed decisions regarding same</p> <p>To enable administrators to make informed decisions in making resource allocations</p>	<p>During the project design stage</p> <p>Periodically throughout the course of the program</p> <p>As the need arises</p> <p>At least annually, well in advance of deadlines for making budget submissions to government</p>
Researchers	<p>Feedback from farmers regarding their experience in using the new technology--successes and problems</p> <p>Etc.</p>	<p>To enable the researchers to help the farmers deal with problems encountered, and to continue to improve the new technology</p>	<p>Continually throughout the course of the program</p>
Agri-business firms	<p>Knowledge about the new technology and how it should be applied</p> <p>What inputs will be required, and where and when</p> <p>Etc.</p>	<p>To enable them to answer farmers' questions and gain their support for promoting the new technology</p> <p>To enable them to have the input available to the farmers at the time, in the place, and in the quantities needed</p>	<p>At or before the time the farmers are first informed about the new technology</p> <p>Several months in advance of the need for each given input</p>
Etc.			

establish long-term continuity for communication and to provide guidance and direction for creating the information and education materials.

A second major component addresses the communication channels that will be used. Channel strategies are situation-specific; they grow from an understanding of a particular country or region, a particular audience. They should be based on developmental research into such questions as:

- Who listens to what and when?
- Who reads--who can read?
- What are the costs of each media channel that could be used?
- How complicated is the message?
- How receptive to, or tired of, radio is the target audience? Of print? Of group meetings? Of extension agents?
- Who does the target audience trust? What media?

A channel strategy for mass media will identify the media that will be used and the weight that will be given to each in terms of budget and effort, the approaches that will be taken (e.g., publicity on existing programs, creating special programs, paid vs. public service advertising) and the timing of message delivery. Similarly, the channel strategy will identify the interpersonal channels (e.g., extension agents, organizations, influentials) to be used as well as other interpersonal communication approaches such as point-of-purchase promotion, village demonstrations, displays at farm fairs. Most importantly, the role and functions of the extension agent in the information dissemination process must be laid out at this stage.

When all of this planning is accomplished and reviews and approval are complete, the final step is to integrate all components into a single action plan. This plan is the blueprint for everything that follows. It incorporates all of the preceding elements and includes schedules for activities to be undertaken in the subsequent stages, milestones in program accomplishments based on feedback from the field, anticipated outcomes, and a total budget for the program.

### STAGE III: Product or Concept Testing

Based on the research and planning conducted in Stages I and II, a product concept is developed for testing with target audiences. This product concept is the transformation of the information from the agricultural research institution into a simple set of messages for transferring the technology to the target audience. The product

concept is shaped by what was learned in the developmental investigation regarding the farmer's knowledge, attitudes, and practices related to the technological innovation and the language he uses in describing related behaviors. Consideration of such issues as perceived risks and benefits, ease of management, dependability, and appropriateness of the technology guides the development of the product concept.

Prior to developing more complete mass media or interpersonal communication messages and materials, the product concept is tested in the field to determine how farmers react to the product--do they understand and accept the concept; do they have the necessary skills to perform the prescribed tasks; what inputs and services are lacking? The goal of this product concept testing is to determine how the information package needs to be adjusted or adapted. Also, the product concept trial stage may yield important information for reporting necessary adjustments in the technology to the agricultural research institution.

#### **STAGE IV: Materials Development and Pretesting**

As specified in the overall communication plan, numerous messages and materials will be developed, tested, and refined during this stage. Materials development should be based on the communication strategy and on the results of the product concept test to ensure that messages are accurate and likely to be understood by consumers. Broadcast and print materials are produced in rough or prefinished form and pretested with individuals typical of the target audience. The pretesting is designed to assess comprehension and message recall, to identify any strong and weak points, and to determine target audience reaction to the information. Drawing upon market and communication research, this formative evaluation research is designed to gather essential information for refining and improving materials before final production and widespread distribution. Focus group and central location intercept interviews are economic and efficient tools for conducting this research.

Message and materials refinement follows pretesting. Careful checks must be maintained at every step in the materials production process to ensure that content does not become distorted.

Another important element of the communication program which should be addressed at this stage is training of all internal staff members, extension agents, intermediary organization channels, and the like. This training must provide sufficient understanding to gain their support and to enable the extension agents, in particular, to take advantage of the communication support program as they carry out their own

responsibilities. Training materials are developed, pretested, and then refined prior to full-scale use.

Interinstitutional coordination is also essential at this stage. A series of meetings and seminars for all potential participants in the communication network can be held to inform them of the project's objectives, target audience, areas of action, organization, methodologies, and anticipated results. The purpose of these events is to gain support for the project and to identify any new opportunities for communication support.

#### STAGE V: Program Implementation and Ongoing Monitoring

At this point in the process, the full program is put into effect. This requires implementing the plan of action prepared in Stage II, monitoring program impact through systematic feedback and feedforward mechanisms, and monitoring the institutional performance of the organization.

In implementing the plan of action, the full expansion of the program is undertaken. Multiple media messages have been produced and are now disseminated on schedule as planned during Stage II. A well-organized and functional educational programming system, essential to communication program operations, has been established. Support of relevant authorities at all levels has been solicited. Internal staff and extension agents have been trained to carry out their roles and responsibilities. Also critical to successful implementation, priorities have been established and followed in order to maintain communication output quality. It is now essential to verify that all of these communication activities are operating as planned. Placement of paid or unpaid advertising on radio or in print, the amount of publicity generated, and the distribution of print materials must be checked and monitored throughout the implementation process. Ongoing monitoring of the organization's own performance is also needed to ensure that the organization is performing effectively.

Once the implementation proceeds, it is essential to monitor "the marketplace." This requires a systematic approach to collecting, distributing, and acting upon feedback from the farmers and communities in the project area of operation, and for researchers to obtain information from the field about the performance of the technology they have recommended and problems which will require further research. This is known as "feedback" and "feedforward." These information-gathering and forwarding systems must be comprehensive, frequent, and reliable. It is suggested that responsibilities related to feedback be assigned as follows:

- Design of the system, including a format for collection of feedback information and explanation of the types of information required, should be the responsibility of the communication staff working in collaboration with others who will need feedback from the field.
- Collection of information in the field and its transmission to the communication staff should be the responsibility of extension.
- Aggregation and summarization of information received should be the responsibility of the communication staff.
- Distribution of feedback information to those who have need of it should be the responsibility primarily of the communication staff.
- Frequent checks on the validity and completeness of the feedback information being received should be a joint extension-communication staff responsibility with communication staff taking the lead.
- Appropriate action suggested by feedback should be the responsibility of the person/institution concerned.

The system may be expanded over time, adding more sources and collectors of feedback, and refining transmission and distribution procedures.

This feedback and feedforward is part of a continuous monitoring process to identify the need for mid-course corrections in the communication program. In addition, formative evaluation studies are carried out to determine whether the messages disseminated to farmers have been timely and well received, and whether or not the various elements of the program are working. These studies, together with information received through the feedback system will be used in making mid-course corrections and adjustments.

### **STAGE VI: Review and Replanning**

As stated earlier, this communication process is iterative. There should be no let-up in monitoring of program impact and in responding with appropriate interventions. Therefore, the last stage must feed back into the first in this continuing process.

The monitoring and assessment that has occurred in previous stages has been undertaken to measure progress, to make as-needed program adjustments, and to prepare for replanning. Now, in Stage VI, preparations for replanning are undertaken. All of the information that has been collected (developmental investigation, target audience analyses, feedback from the field, and formative evaluation data) are reviewed carefully to uncover problems, identify weaknesses that must be addressed, and identify opportunities that can be exploited in the next cycle. On the basis of these synthesized

data, additional revisions may be undertaken in the communication program. Mid-course corrections, however, need not wait until Stage VI review and synthesis for replanning. They can be taken at any point.

The process model for communications programs reviewed in the preceding sections can bring order and discipline to bear on the problem of transferring technology in agriculture. The systematic approach to planning and implementing communication and other program strategies, and incorporating consumer/target audience research at critical decision points, can enhance the agricultural communication program's chances for success.

#### 5. Guidelines for Developing an Effective Communication Methodology for Technology Transfer in Agriculture

A critical precondition for the effective use of communications in support of agricultural technology transfer programs is the continuing supply of appropriate, well-adapted technology that, if adopted by farmers, will increase their production and profits. In social marketing, this is the product of behavioral change programs, and unless that product is a proven approach designed to meet consumer wants, needs, and expectations, the desired behavior changes are unlikely to occur. Further, certain marketing environment conditions must be met which will facilitate adoption of the product. These include: the availability and affordability of necessary inputs; credit to buy those inputs; access to markets for the products that result from the new technology; and a fair price for those products.

The communication process described above serves as an organizational framework for developing an effective communication methodology for technology transfer in agriculture. The application of this composite-process model by numerous communications and social marketing programs has resulted in a series of guidelines or principles for achieving greater impact.

As described in the introduction to the process model, three overarching principles must guide the development of an effective communications methodology:

- A consumer or target audience orientation
- A targeted behavior change effort
- Use of an integrated communications network for disseminating information.

The following guidelines stem from these principles and provide program planners with additional direction for maximizing their efforts to achieve successful technology transfer in agriculture. The guidelines that follow are organized around each stage of the communication process model to demonstrate their applicability toward achieving an effective communications methodology.

### **STAGE I: Target Audience Analysis and Developmental Investigation**

- Use an interdisciplinary approach in conducting the research. Consult social scientists, communication and market researchers, anthropologists, agricultural researchers, etc., and apply techniques from each of these disciplines in designing both qualitative and quantitative behavioral studies.
- Follow up target-audience analysis and developmental investigation conducted in the preliminary stage of the communication process with formative evaluations and assessment studies designed to monitor progress and assess overall performance.
- When possible, develop an in-house capability to perform target audience analysis and developmental investigations to ensure that research will reflect program needs.
- Base the research design on a clear statement of objectives, and design methodologies to gather complete and unbiased data translated for program decision making.
- Carry out the research with the relevant population for the program. Findings from one area may not apply to another.

### **STAGE II: Planning and Strategy Development**

- Make program planning a coordinated, integrated effort involving all key agricultural research and communications support staff.
- Solicit the support of relevant authorities, service delivery providers, agribusiness sector, etc., during the program planning stage.
- Allocate budgets and resources (staff facilities) efficiently so that program goals and objectives can be achieved. Gaps should be identified and measures taken to fill them.
- Specify clear, measurable behavioral objectives to guide all program activities.
- Segment target audiences according to the research conducted in Stage I.

- Prepare a comprehensive communication strategy and action plan to describe in detail all messages, channels, interventions, and activities to be performed. A complete schedule, staffing pattern, and budget should accompany the plan.

### STAGE III: Product or Concept Testing

- Be sure the product concept reflects the findings of the target audience analysis and the developmental investigation and is consistent with the statement of behavioral objective.
- Design the product concept test so that the findings are reliable and useful for the next stage of program development (i.e., messages and materials production).

### STAGE IV: Message Development and Pretesting

- Design the message development process so that agricultural researchers and communication staff work together closely. This will minimize the likelihood of inaccurate or incomplete messages.
- Develop messages that are consistent with target audience wants, needs, and expectations that emphasize the personal benefits and reasons why actions should be taken and that attract and hold audience attention.
- Tailor and localize messages to specific target audience segments.
- Keep messages technically accurate, simple, clear, consistent, and relevant, and repeat them often for maximum impact.
- Set priorities for message dissemination to minimize the potential for target audience confusion.
- Use an integrated, coordinated, multichannel approach encompassing mass media, interpersonal communication, point-of-purchase, and other appropriate channels in which messages reinforce and complement each other.
- Schedule dissemination of messages to achieve maximum impact.
- Select media and communication channels appropriate to disseminating different types of messages:
  - use broadcast channels to reach large numbers with simple messages;
  - use interpersonal channels for complex messages that require repetition and feedback;
  - use interpersonal channels primarily to convey new information.

- Use a participatory approach to the extension communication component. Involve representative farmers so that farmers' interests, needs, and wants are incorporated into the program.
- Pretest prototypical print, broadcast, and interpersonal messages and assess comprehension and reactions of target audience. Be prepared to make changes based on pretesting.

#### STAGE V: Program Implementation and Ongoing Monitoring

- Monitor staff performance to ensure that all activities occur as planned.
- Monitor project outputs and impact and make midcourse corrections to reshape and revise communications.
- Be sure feedback and feedforward mechanisms are working so that reliable, actionable information is flowing to and from appropriate channels.

#### STAGE VI: Review and Replanning

- Build continuity in the communication program so that it does not end before it has had a chance to succeed.
- Replan and adjust program elements based on ongoing monitoring and other research from the field.

#### Overall Program Management

- Be sure that communication support staff is fully integrated into the agricultural technology transfer program.
- Build and maintain a strong communication network of the people and institutions who need regular communication with the program.
- Develop and define clear lines of responsibility and communication between and among communication staff, project managers, and other project staff.
- Be sure program staff have developed a consumer orientation and understand the "marketplace" in which the program operates during the program planning stage and throughout program development and implementation.
- Provide continued, on-the-job training and staff development for effective performance.

- Prepare the organization to handle problems or make mid-course corrections quickly and efficiently without being diverted from key objectives.
- Be sure plans and budgets reflect the overall program's goals, objectives, and strategies.

In short, communication, social marketing, and agricultural extension methodologies will be integrated into the total agricultural communication systems.