



Syarahan **INAUGURAL**

Oleh

PROF. DR. SULAIMAN M. YASSIN

Timbalan Naib Canselor (Hal Ehwal Pelajar)

Universiti Pertanian Malaysia

LG
396
P4
S981
no.1

18 MAR 1997

Bib x 27/3/87

THE CHALLENGE TO COMMUNICATION RESEARCH IN EXTENSION

By: **Sulaiman M. Yassin** Ph.D

The Context

In rural development, communication forms an essential subsystem in determining the success and effectiveness of development programs. Communication by itself is unable to bring about necessary changes in rural areas. However, in consonance with other inputs or subsystems, communication facilitates the achievement of rural development goals. As Balit (1988) succinctly puts it, "no development strategy is complete unless communication policies and activities are incorporated into the diagnosis of needs, and into the design and implementation of priorities selected for a development action". Communication, besides being an important subsystem in development also serves as the nerve which connect and interrelate the various subsystems in achieving the stated development goals. It links the beneficiaries of development to the development agencies, and the agencies to the knowledge and research centers. This linkage provides opportunities for feedback on development programs and for the transfer of information from research centers to rural people. Understanding of the linkage and improving the system will increase the effectiveness of rural development programs.

The role of communication in rural development is being described as development communication and development support communication (DSC). The two terms are both in current use and refer to the same process, even though with some differences. Development communication is defined as communication strategies of a whole society or the communication component of a national development plan while DSC refers to the application of communication strategies specifically designed for concrete development programs (Jayaweera, 1987). The differences between the two terms are more than merely the size of their target areas. The significance of development communication lies in its tendency to create a climate within a whole society, and its capacity to influence the ambience or the consciousness within which development takes place. DSC is no less important but its scope of operation is program or project oriented. It is the communication plan and strategies to achieve the stated objectives of a given program or project.

1000510880

HADIAH

The effectiveness of development communication and DSC depend on proper planning, relating communication to other components of development, understanding the audience, and cognizance of the social, economic and political milieu. In order to ascertain these information, it entails research efforts. Research is therefore a requirement for an effective communication role in rural development.

The role of research in social science has been described as problem-solving, theory-developing and theory-testing (Wiersma, 1975). Communication researches in rural development were carried out based on these roles. Of greater import to development support communication is perhaps the problem solving role of communication research. The research concern is problem-oriented, issue involved and strategy-conscious (Samonte, 1975). This is communication research which deals with media selection, message formulation, success of a campaign and others. A great deal of human and material resources have been devoted to this aspect of research. This kind of research is important in planning communication strategies for rural development.

The theory-testing and theory building are two interrelated aspects which complement one another. Theory-building research is oriented toward clarifying a tentative guess in order to formulate a theory or to refine it further. Theory-testing research in essence requires some formulation of theory, usually through hypotheses which can be either supported or rejected (Wiersma, 1975). An example of communication theory-testing research in rural development is the diffusion research in which the theory being initially developed in the United States was tested in rural areas of developing countries. In the 1960s up to early 1970s the diffusion theory was accepted as the *sine qua non* of development. Its suitability to developing countries was not questioned.

The accumulative results of diffusion research, however, showed apparent flaws in the theory. This has led communication scholars to reexamine the conceptual framework of the prevailing or dominant theory of rural development. The critical appraisal of diffusion process revealed that, diffusion is essentially a source-oriented model. It focuses on the perspective of the agency or change agent which is the source of the innovation or is initiating the development. Diffusion of agricultural innovations was found to benefit the well-off farmers

1000210336

LG
396
P4

S981
no. 1

S
474-
C6
5940

rather than the subsistence farmers. McAnany (1980) questioned the transmission of information to the rural audience. He contended that,

Although information can help an individual adapt to a changing situation, it can do little to change the situation. The small subsistence farmers may not lack for information but often cannot use it in any productive way because of structural constraints such as land size or lack of credits

The critical appraisal of the diffusion process and related concepts helped to improve the proper understanding of the communication role in rural development, and thus contributed to the theory-building of rural development. The new theory of rural development stresses equal distribution of information and socio-economic benefits; popular participation by the people in the process of development; self-reliance and independence; and integration of traditional with modern systems to achieve development (Rogers 1976). The major paradigm involved is a transfer of technology (TOT) from scientists to farmers through extension. This new approach to rural development requires further research on the role of communication in encouraging local and popular participation and for the local groups to plan communication strategies to achieve their goals. The emphasis of communication is bottom-up rather than the traditional top-down flow of information. The emphasis is placed on the farmer who participates in the whole process. He/she is considered first and last in this new model.

Scope of Paper

This paper serves as a basis for further discussion about the role of communication research in the context of various extension and development systems of countries in the ASEAN region. As indicated earlier, the backdrop of this discussion is that of rural and countryside development.

Necessarily, the paper will cover aspects about the role of communication research, a general description of the research extension-receiver continuum and the linking relationships between them. The paper will then move on to discuss the important role that communication research is expected to play for these interphases in an effort to facilitate the viable linkages between them. In so doing, the various problems since faced and the challenges that communication re-

search has to address will be deduced. The paper further dwells into the emergent needs and considerations and finally draws some tentative conclusions.

Importance of communication research in extension system

Agricultural and rural development extension systems are designed to bring about changes in the life of rural people. Their aim is to improve the social and economic well being of the rural residents so that they can attain a higher quality of life and their opportunities for continuous progress are expanded. Communication is implicit in extension and is a vital component of all development programs.

Extension is traditionally viewed as the linkage system between the clientele of development and the technology or knowledge generation centers. It is the responsibility of the extension agencies to adapt the knowledge or technology generated into suitable messages to be disseminated to the clientele. The role of extension in the linkage system remained, even though the approach to development has undergone changes.

How then do we develop an effective extension system? This could be achieved if we look at the components of extension and analyse its requirements and relationships. We will be able to see that communication research is an important instrument in creating an effective extension system.

In an extension system we can identify at least four critical subsystems. These are the clientele, extension workers, planning and evaluation and development support communication subsystems. The logical starting point in extension is to find out whom a particular project is intended to benefit, what they are currently doing, and their feelings towards the new practices (Wood, 1982). We need to have adequate information on their knowledge, attitude and practices (KAP) on a particular innovation or idea. Additionally data on media consumption patterns and habits, media availability and reach, and other socio- psychological and anthropological environments of the clientele are needed. Adhikarya (1984) refers to the above information as the baseline data about the clientele. These data are obtained through audience research and analysis. Audience KAP and data analysis are very useful elements to plan effective communication

strategies. The research and analysis should yield the following information:

1. *The audience size and location; are they scattered or grouped in large or small groups, settled or nomadic; are they homogeneous in terms of age, sex, "culture" (language, religion and other relevant socio-cultural characteristics), or should we address them as separate audiences even though they are all potential "users" of the program (or "channels", or "decision-makers")?*
2. *Where shall we reach them? What are the possible locations for our communication events? Perhaps we shall reach them at home, in the fields, at the health station, fetching water from the well etc.*
3. *How is communication flowing within the group; between them and the outside world?*
4. *What is the literacy level, and what are the reading habits of this audience ?*
5. *What language(s), dialects are know and used; what are their visual perceptions and preferences (colour preference, symbol system, familiarity with abstract drawings etc.)?*
6. *Which media reach them and where (radio, newspaper, extension agents, television in the coffee shop, audiovisual van at the monthly market, religious leader at weekly service etc.)*
7. *How do they value and rate these media for different purpose e.g. film for entertainment , radio for news? Which medium has credible flavour for which communication task?*

The extension agents' training needs

Research is also needed to find out the strenghts and weaknesses of the extension workers at the village level to act as the facilitators for change. In the prevalent Transfer of Technology (TOT) model, they are generally the focal point at the village level for rural development projects. They must provide technical services, supply inputs and education/information (Wood, 1982). It is apparent that besides technical knowledge and skills the extension agents need skills in interpersonal communication and handling of audio-visual media to be used during extension activities. It is necessary to conduct surveys to determine the extent of their expertise in handling small media usually used during method demonstrations, exhibitions, and training of farmers.

This survey will enable the extension agency to plan in-service training for the extension workers. Fundamentally, in-service training must be able to help the extension agents to:

1. Formulate clear-out objectives of communication aimed and oriented to obtain positive changes in their clients' behaviour;
2. Develop communication strategies to accomplish the objectives;
3. Acquire ability to structure and deliver messages;
4. Nurture ability to perceive and utilize feedback information; and
5. Develop skills in using audio-visual aids in their work.

In reality the extension worker is often forced to play many a role. He requires a wide range of interpersonal skills because he has to start by assessing the constraints faced by the farmer, his concerns, localized needs and farm conditions.

Linking Research and Extension With Farmers

The final utilization of a total packaged technology by farmers is dependent upon the complementary functioning of five major agents, viz the researches, the extension workers, the farmers, the service institutions (for credit, farm inputs, etc.) and the government support services (incentives, subsidies and commodity support policies). It is pertinent to note, however, that of crucial importance to most countries in ASEAN today is the quest to make the agricultural sector more productive and fulfilling to the small farmers. Many approaches are experimented with but, in essence, the synergizing factors that move the strategies lie within research and extension.

As alluded to earlier, an examination of the communication mechanisms between research and extension is one important focus of this paper. The other is to look at the interphases between the extension or researcher with the farmer.

It is a recurrent theme in agriculture that the linkages between research and extension are weak or non-existent in many developing countries. As agriculture progresses, rather than operating as a continuum, these services often act in ways that reinforce their separation

rather than mutual support. In order to promote a balanced agricultural development the strengthening of these links is deemed necessary.

In many of these agricultural systems, there is insufficient cooperation between research and extension, despite their common ultimate goals. The reasons for this may go back to how the services were established, when it occurred without a built-in complementarity. Sometimes other institutional, political and sociological factors relating to the composition of these bodies, their location in the government administrative structure as well as the inherent values they possessed further caused their divergence.

As can be seen in many Asian countries, agricultural systems in which extension and research are in different institutions, are, however, probably more vulnerable to the problems of poor interaction and insufficient communication. More successful are the commodity-oriented cash crop systems funded by producers. An imperfection of this system is that the benefits may be captured by the larger and more vocal producers. The training and visit (T&V) system of the World Bank is another that has been most successful to link research and extension because within it are mechanisms that link the two groups of professional services. Learning from these successful systems are those useful to guide the forging of research-extension links in other systems.

The Antecedents to Research Extension Communication Status.

As we are aware, many reasons have contributed to the present status of research-extension gaps in various agricultural systems. Some of these are because of the service perspectives, due to service structures and conditions, while others are due to reasons inherent in the professions themselves.

With respect to the researchers' perspective, they are often out of touch with farmer problems and research programs could be designed in isolation of such problems (Sulaiman et al., 1984). When this happens, research programs become less relevant and adopts a "supply-oriented" approach as opposed to a "demand-oriented" approach to research response (Sulaiman and M. Fadzilah, 1983). As a result, extension workers are poorly served by, or are ignorant of, the output of research systems.

With respect to the extension workers, they could also be out of touch with farmers' problems, especially if the works regimes are poorly planned or supervised. Extension agents may further resign themselves not to attempt to understand or appreciate the research process. Their role in the research adaptation or in Farming Systems Research (FSR) may be completely ignored. Another common reason is that they lack an analytical approach to defining how farmers' problems might be susceptible to solution through the research process.

In terms of the weaknesses that could exist, historically, their establishment when without appropriate built-in complementarity and other institutional pre-conditions would surface as organizational values affecting their staff. Staff motivation, when so affected will cause more problems to this relationship.

It has often been noted that the public sector offers poor motivation and poor rewards for initiative. It does not readily give adequate priority to consistent funding, money for transportation and travel and support for information management services. Much worse is when agriculture is stagnating, thus the national system can impose a climate that provides little motivation for agricultural professionals.

Looking closer at the two services, we can see that research staff are usually somewhat more elitist because they have more opportunities for advanced degree training and thus often rewarded in the bureaucratic situation. Research staff, because of being more qualified, expect to be posted in the large cities with better employment and facilities for family development. This stance is further augmented as the researchers acquire additional prestige through the network of international research centers complete with training program participation in other countries. Also, researchers could readily look to their peers for ideas and support.

Within extension, however, agents have very infrequent contacts with their senior colleagues. Lower ranked agents, serving out in the rural areas, suffer intellectual isolation. This is even worse when agriculture is at a low level of development. On the other hand, when there are more progressive farming systems, the farmers themselves can challenge the extensionist to seek out solutions to his problems. This often result in him directly contacting the researchers instead. We can thus

see that the motivation of the extension staff (or of research) is a primary concern, if we are to forge better linkages to serve the farmer.

In a way, researchers and extension agents in particular have not been educated to see how the farm operates as an integrated system and in actual reality, when the small farmer has several types of crops, livestock and some fish culture on his farm. Rarely is the researcher or extension agent trained to be well-versed with the integration of these various enterprises which are of a small-scale, requiring adapted technology rather than the ideal types that they learn in the classroom.

More serious a concern is the lack of orientation of agents and researchers to view the farmer's problem from the perspective of the farmer. In many ways the farmer can be regarded as a professional when it comes to matters and assessing factors affecting his livelihood. (Later in this paper some discussion will be made on a Farmer First and Last (FFL) model of doing extension work).

Extensionists in particular may not be trained to accept this perspective and to direct their extension teaching to the farmer himself, rather than to routinely visit the farm to examine the crop, the animals or the aquaculture project from a technical perspective only. Keeping the small farmer at the front of the mind should enable agents to better plan the production, processing and marketing of the farm products. The agent must understand that only the client have a complete view of their own lives and activities, and he should act accordingly in order to be successful.

The rationale for Research-Extension Linkage

As stated earlier, although research and extension could be separate organizations, they are quite interdependent. In fact, in finality, their responsibilities are difficult to distinguish clearly.

We are quite familiar with the Cooperative Extension model of the United States where university academics provide research inputs into the extension system. More recently, the World Bank has introduced the T & V system in many countries with World Bank projects. In both models, there is a crucial dependence between research and extension to make the systems workable.

Other recent analyses of the extension systems have pointed out the basic differences of the present approaches. Chambers and others have classified them into two general ones, they being the Transfer of Technology (TOT) and the Farmer First and Last (FFL) approaches (Chambers R, and Ghildyal B.P. 1985., Chambers, R., and Jiggins, J. 1986).

The basic argument for the weaknesses of the TOT model for agricultural research include the built-in biases which favour resource-rich farmers whose conditions resemble those of research stations. Another is the assumption that the farmer is ignorant and thus extension must be used to educate the farmer. In this model, pressure groups and scientists determine research priorities, and then scientists design experiments, conduct these under controlled conditions on experiment stations, in laboratories and in greenhouses, and hand over the results to commercial interests and extension organizations for adaptation and transfer to estates and to farmers.

The FFL approach lays emphasis on farmer situations and conditions. The methodology is focussed to help the resource poor farmers. The important consideration of this model is that there is now much evidence and understanding that when the resource poor farmers do not adopt technology, it is usually not from ignorance, but because the technology does not fit their needs and their physical, social and economic conditions.

Farming System Research (FSR) in many ways lie in the middle of these two models. FSR sometimes means 'upstream' research, in which elements of a farming system are evolved and investigated on the research stations. This is more closely aligned with the TOT approach. In contrast, there is 'downstream' FSR which starts and ends with farmers, beginning with systematic attempts to understand the farm family and the farming system and conditions. This is more aligned with the FFL approach.

As many have observed, FSR is seen as an approach concerned with the whole farming system including the farmer. Most FSR also include on farm trials as a stage in the testing of recommended practices. In effect, FSR is an important adaptation of the TOT approach discussed earlier.

The following tables, adapted from Chambers and others illustrate some of these basic differences, which in turn can offer us insights as to the state of communication research in these complex systems.

TABLE 1
Non-Adoption: Changes in Explanation
Prescription

Level or stage of explanation	Model	Period when dominant	Explanation of non-adoption	Prescription
1.	TOT	1950s, 1960s	Ignorance of farmer	Agricultural extension to transfer the technology
2.	TOT	1970s 1980s	Farm-level constraints	Ease constraints to enable farmers to adapt the technology
3.	FFL	Latter 1980s for RPFs?	The technology does not fit RPF conditions	FFL to generate technology high does fit RPF conditions

Deducing from Table 1, the major reversal is that explanation of non-adoption shifts from deficiencies of the farmer and the farm level, to deficiencies in the technology and in the technology-generating process. The reversal of learning requires that scientists start by systematically learning from farmers, with transfer of technology from farmer to scientist as a basic and continuous process. The reversal in location requires that R and D take place on-farm and with-farmer, with research stations and laboratories in a referral and consultancy role.

TABLE 2

Typical Contrasts in Physical Conditions

(Not all apply all the time, but most apply most of the time)

	Research experiment	Resource-rich farm (RRF)	Resource-poor farm (RPF)
Topography	flat or sometimes terraced	flat or sometimes	often undulating and sloping terraced
Soils	Deep, fertile, no constraints	deep, fertile, no constraints	shallow, infertile, often severe constraints
Macro and micro- deficiency	rare, remediable	occasional	quite common
Plot size and nature	large, square small bunds	large, Small bunds	small, irregular bunds larger where present
Hazards	nil or few	few, usually controllable	more common- floods, droughts animal grazing crops, etc
Irrigation	usually available	usually available	often non- existent
Size of management unit	large contiguous	large or medium, contiguous	small, often scattered and fragmented
Diseases, pests, weeds	controlled	controlled	crop vulnerable to infestation

TABLE 3
Contrasts in Learning and Location

	TOT	FFL
Research priorities and conduct determined mainly by	Needs, problems perceptions and environment of scientists	Needs, problems perceptions and environment of farmers
Crucial learning is that of	farmers from scientists	scientists from farmers
Role of scientist	generator of technology	consultant and collaborator
Main R and D location	experiment station, laboratory, green house	farmers' field and conditions
Physical features of R and D mainly determined by	scientists' needs and preferences, including statistics and experimental design	farmers' needs and preferences
	research station resources	farm-level resources
Non-adoption of innovations explained by	failure of farmer to learn from scientists	failure of scientists to learn from farmer
	farm-level constraints	research station constraints
Evaluation	by publications by scientists' peers	by adoption by farmers

Transfer of Technology (TOT) and Former First
and Last (FFL) Activities and Their Location.

TOT		FFL	
Resource-rich conditions	Resource poor conditions	Resource-rich conditions	Resource poor conditions
<p>Scientists define problems and opportunities</p> <p>↓</p> <p>On-station research</p> <p>↓</p> <p>New high-yielding technology</p> <p>↓</p> <p>Demonstration and testing on-farm</p> <p>↓</p> <p>Other resource-rich farmers</p>	<p>?</p> <p>↓</p> <p>Resource-poor farmers</p> <p>← ?</p>	<p>Transfer of scientists →</p> <p>On-station referral of problems</p> <p>Resource-rich farmers</p>	<p>Scientists learn about farm families' needs, resources and priorities</p> <p>↓</p> <p>Joint definition of problems and opportunities</p> <p>↓</p> <p>On-farm with-farmer R and D</p> <p>↓</p> <p>Farmers test and evaluate</p> <p>↓</p> <p>Other resource-poor farmers</p>

As seen in Table 4, in the TOT model, we can see the scientist role as just a producer of new practices. In the second FFL model, the scientists have to orient themselves to new demands on their direct role. The latter situation implies more relevant approach to communication activities at the farm level.

Whether within the TOT or the FFL model, extension will profit from its involvement in research trials. This provides them with more insightful analysis of the farmer's problems. Research certainly gains from the direct contact with farmers with the availability of farmer reactions and the consequent application of research to farmers' production conditions. Research is also dependent on feedback from extension which ultimately is dependent on research for the appropriate technology to promote.

As noted in Cernea et al. (1985), rarely is the absence of physical resources regarded as a significant constraint on effective interaction between extension and research. More often than not, the critical factors are those of inadequate management, poor institutional arrangements, lack of policy support and the negative attitudes and interest of staff thus prevalent.

We are also very much aware that despite research and extension's intrinsic interdependence, various organizational forces promote their separation. Among these are their professional orientations, their means of accountability, their different methodologies or approach to work, and, the advantages of discrete organizational bases to promote appropriate resources allocation for both. It is thus imperative that when research and extension are the responsibility of separate institutions, the establishment of effective linkages between them should be strengthened.

Communication Support for Extension

The use of communication support has long been an accepted feature of many development programs. In the region, examples abound, especially from the fields of agriculture and population education.

Communication support invariably starts from audience analysis to provide useful information to plan communication strategies for an extension program or project. Characteristics, interests and informa-

tion needs of the clientele might be different, so audience segmentation into several different target groupings is usually necessary (Adhikarya, 1987). The different target groupings may require specific communication strategies. Priorities of target audience need to be determined based on the objectives of the program.

As part of the program planning process, the analysis of the target audience's characteristics such as their access to communication channels, their information-seeking habits, preferred information sources, patterns of media usage, communication network interactions and group communication behaviour would be useful in planning the appropriate use of multi-media approaches for extension campaigns and activities. The multi-media approach or media-mix is used in extension activities because communication research revealed that "combinations of communication sources is invariably more effective than any single source of communication in changing attitude and behaviour of the people towards new idea and practices" (Sinha, 1982). Media-mix also increase the efficiency and effectiveness of the communication system given the various communication objectives of the extension program (Adhikarya, 1987). This strategy also creates the redundancy effect of the message. The clients will be exposed to the messages of the program in various forms and in various places. The ubiquitous presence of the message will motivate the audience to identify themselves with the project.

An example of a successful media mix approach in extension is the Masagana-99 project in the Philippines launched in 1973. The objective of Masagana 99 project was to increase rice production so that the Philippines would be self sufficient in rice. The communication support components of Masagana-99 consisted of a promotional campaign and an educational communication strategy. For the promotional campaign the following methods were employed; radio jingles, radio mini-drama spots, jackets and T-shirts, multi-image slides, car stickers, banners and posters. The educational communication support strategies consisted of; straight radio talks, school on the air, brochures, comics and other printed materials. In educational communication support, the message delivered was the same; that is the 16 steps of rice production package jointly developed by various agricultural agencies in the country (Alvarez, 1981). Other factors were equally important in contributing to the success of Masagana-99 project.

These factors included massive interpersonal communication support at the village level; granting of sufficient loans to farmers; providing a stable price support for rice; and use of a package rice production technology developed jointly by various research institutions.

In designing the media-mix strategy the characteristics of the message to be developed are also important. These characteristics are :

1. *Is this message to reach many people, smaller specialized groups or "segments", individuals?*
2. *What is the main objective of the message? To create awareness, to provide information, to introduce a complex new behaviour, to train in a mechanical skill?*
3. *Will message need to be repeated often?*
4. *Will message need to be adjusted frequently?*
5. *Does the message need to be conveyed graphically and in sound perhaps even requiring the audience to touch in order to understand?*
6. *How will messages be phased relative to each other and relative to the programme?*
7. *Are there obviously competing messages reaching the same audience?*

While there is no proven formula in selecting media for rural development, certain guidelines emerged from practice and communication research. Radio for example is good at reaching a lot of people fast with simple messages; print media like posters and pamphlets are good for reminders or reinforcers of radio broadcasts; and interpersonal communication are useful for attitudinal change, teaching skills and adding credibility to media content. Combinations of small media at grass-root level such as portable-video, pamphlets and extension agent support has proven to be effective for direct training of farmers and for community development projects (Coldevin, 1988).

After the messages have been developed for the respective media it is important to pre-test the messages before they are widely used and distributed. Communication research is needed to determine the suitability of the messages to be disseminated in the various media. As Rosser (1987) observes:

It is the responsibility of the communication-research unit to ensure that the information being disseminated through the different media is being readily received and understood by the farming community. All audiovisual teaching and extension aids have to be pretested, and retested after revision where required. Technical terms have to be translated and simplified into the vernacular languages with extensive use of farming idiom and colloquial expression. Any implements, utensils or materials illustrated need to be in common usage, or of common knowledge, and to be instantly recognizable. Special audio and audiovisual programs have to be presented in an acceptable cultural format.

Communication research is also necessary in monitoring and evaluating all audio-visual programs for communication effectiveness, impact and reaction, and to analyse the clientele feedback. These information are needed to improve the messages as well as the strategy of the overall communication program of an extension project. Such data will also contribute to our understanding of the role of communication media in the extension system.

Communication Research and Extension Interphases

In this section, the foregoing discussion on the nature of the research-extension-farmer continuum and the differences between the TOT and FFL approaches is used as a background. This examination indicates that specific research that focusses on the actual interphases is lacking, although those that concern overall extension approaches or on components of the extension system have caught the attention of communication scientists.

On the overall approaches, we can come across a few that has looked at the Training and Visit System (T & V) (Judd, 1984). Others have examined the variants of the FFL approach that focus on relations with the farmers themselves. The CIMMYT's approach to planning technologies appropriate for farmers was examined by Byerlee (1981), Collinson *et al* (1980), and Collinson, (1981). Hilderbrand (1981) looked at the Sondeo method of rapid appraisal, while Rhoades and Booth (1982) looked closely at the farmer-back-to-farmer methodology of The International Potato Centre, Peru (CIP).

In the past, there has been some focus on the overall communication effort for a program or project. Included in this group is the study of the Masagana 99 for rice production in the Philippines (Alvarez, 1981) and the Rat Control Communication Campaign in Malaysia (Adhikarya,

1987). At the same time media studies have continued to feature well as purported by Sinha (1982), Roser (1987) and Coldevin (1988).

More recently, we do come across studies that have started to focus directly at the extension linkages such as the agricultural technology study of Crowder (1988), the adaptive research study of Byerlee (1987) and the extension system study of Bembridge (1987). Crowder examined the relationship and communication behaviour amongst extension agents, farm input vendors and farmers in Ecuador. Byerlee studied the process of stratifying farmers for extension advice and thereby facilitating the development of information generated from adaptive research that would meet the farmers' needs. Bembridge, on the other hand, investigated the functioning of the extension service in Southern Africa and found considerable deficiencies in the quality of staff, technical support, communication methods, administration and management at all levels.

As we can see, although communication research within extension can yield us many insights into how to improve extension functioning, concerted efforts have not been sufficiently mounted to address the problem. It still remains a very germane area for systematics and thorough study especially with regard to facilitating the interphases between research-extension-farmer and vice-versa (Cernea, Coulter and Russell, 1985). The audience for extension has also changed progressively as other sectors not related to agriculture such as health and urban development begin to operate their systems on the principles of extension. All the more is the need to know more about the role of communication in the relationship between research, extension and the community.

One major issue that has surfaced is in trying to know how much to invest in extension itself, if one looks at various sectors from the national perspective. This is a current concern of the Food and Agriculture Organization of the United Nations who has launched an effort to study the levels of investment and productivity of various extension systems in 34 countries, the results of which will be used as material for discussion in the Winter of 1989 (Adhikary and Kenmoore, 1989).

Considerations in Linkage and Communication Mechanism

In the foregoing, we have discussed the reasons for the current status of research-extension lack of proper communication and the rationale for the establishment of such mechanisms. In this section, discussion is focussed onto certain important considerations in establishing such linkages and thus facilitate the role of communication.

The Management Perspective: To the policy makers, they must accept that to become more effective and thus receive political and financial support, research has to be relevant to the farmers' needs. In this regard FSR and FFL have been increasingly recognized as being viable in identifying problems and needs. Of late, we are also alerted that research need to respond to farmers' problems which would also have to include their social and economic aspects rather than only the biological. At the field level, researchers, extensionists and farmers have to work together and administrative and/or government policies have to be changed to support this requirement. This will help to foster the two-way communication between researchers and extension with farmers.

Extension itself has to change from a top-down approach and become more communicative and participatory. In this approach, mobility is essential and thus require adequate transport and field allowances. For example, the T&V system, FSR and FFL require sustained budget funding over several years to envision appropriate results. In the management of these two services, we have learnt of the need for procedures for research and extension workers to carry out extension work jointly, to meet together on the farm, and to plan their seasonal and long-term program jointly.

Using the examples as found in the region, Table 5 attempts to describe the various selected types communication mechanisms found.

Selected Example of Research-Extension
Communication Mechanisms

=====			
	<u>Organizational</u>	<u>Example</u>	<u>Useful Lessons</u>
1.	Coordinating Committees	India	Those that include extension and research evaluation and training more successful
2.	Provide subject-matter specialist	Malaysia	Program require congruence with extension needs
<u>Functional</u>			
1.	Farming System Research	Thailand	Farmers must participate in program
2.	Training and Visit System	Bangladesh	Feedback from extension
3.	Action Research	Malaysia solving local	Community participation enhanced by problems in stages.
<u>Management</u>			
1.	Joint field visit farm/field days	Malaysia Philippines	Feedback from farmers and increased accountability of agencies
2.	Involvement of researchers in training	Thailand Indonesia	Identification of required technology
=====			

In other instances, it has been noted that regular monitoring of adoption rates by extension and field staff, by special evaluation assessments, and by diagnostic surveys made on joint visits of research and extension staff to farmers during the season, results in more feedback to both systems. However, this arrangement also implies a stronger element of decentralization than previously found.

The Social Science Perspective: Very often, the introduction of research-generated recommendations into farmers' practices are narrowly regarded as a strictly technical matter. As in the FFL model, this is a gross error. Farmers' production problems are by no means only technical, but also sociocultural, economic or managerial as farming is a way of life and not a mere profession. The sociology and the political economy of this way of life explain the adoption or non-adoption of novel agrotechnologies. The social perspective is most important because of the need for participation of farmers in the design phase as well as in the performance of research and extension program. (In Malaysia, the Muda Agricultural Development Authority (MADA) is an example of an agency that has used a lot of sociological data in program development). We all know that the farmer and his needs are the ultimate justification of both research and extension. The two way movement within the research-extension-farmer continuum means, in other words, that research can be and has to be driven by farmers' needs in as much as the farmers' practices can be and have to be enriched by research based upon farmers' own inputs.

In this respect, FSR and FFL are seen as viable and organized attempts to produce and introduce a more informed social science perspective for the benefit of both agricultural research and extension. Among other things it captures a set of social and cultural variables formerly overlooked and thus required to achieve a holistic understanding of the farm, the farm family, and its development strategy. This comprehensive approach to mounting a communication program in extension work is still very much lacking. Among the important variables include the farm decision-making patterns, the non-economic determinants of farmers' behaviour, the developmental cycle of the farm family, the social organization of family labour resources and the system of family authority and mobilization. Capturing such variables increases the explanatory power of FSR and FFL.

Farmer Participation: We note that despite its powerful contribution to research and extension programs, farmer participation is generally inadequate. Earlier, it has been noted that farmer participation has to occur at all stages of the research-extension process of identifying research needs, in experimenting different hypotheses and field-testing, in conducting demonstrations, in evaluating acceptability, and in elaborating on social, economic and institutional constraints. Farmer participation is also essential for gathering indigenous knowledge and for incorporating time-proven solutions into recommendations of improved technology suited to local situations.

Overt farmer participation further tend to elicit better accountability from research and extension staff. The interaction help keep the current problems in the spotlight and thus keep track of what research and extension staff are doing about them. Communication methods that enhance farmer participation in extension, where they are empowered, need to be closely examined so as to serve as guides for investment considerations by planners.

Emergent Training and Future Needs

Having discussed the role and importance of communication in the extension system it is pertinent here to highlight what are the emergent needs to enhance the functioning of a national extension system. Some of these aspects were discussed in the foregoing section on considerations in linkage and communication mechanisms. These were directed more towards the overall managerial orientation to extension and research. In this section, emphasis is directed towards identifying the direct issues to be addressed in the context of acknowledging the important role that communication research play in this system.

a. The Need for Strong Communication Between Research and Extension

As we are all aware, the functions of research and extension are the clear responsibilities of two groups of specialists who have had different emphases in training. The scientist in eventuality has to work on his own while the task of technology development requires working and collaborating with others who may be of different expertise and

disciplines, and patiently working with the end user. In many countries, most scientists have to learn to cooperate and to be competent at diagnosing the user's anticipated problems that require research. Agricultural research may often be mounted with little, if any, inputs from the farmers. This problem is further aggravated by weak linkages between research institutions and extension agencies. Farmers' knowledge and experiences, especially with regard to local farming systems, are not tapped to the maximum to increase utilization of agricultural technologies developed by scientists (Sulaiman and Rahim, 1984).

Extension agents on the other hand are very much field-oriented, trained and used to depend on his verbal skills and have not the skills or aptitude to collaborate with scientists. They lack the knack to patiently read journals and reports or sit in the laboratory and are not trained to package technologies. In general, the majority of extension agents are not well-equipped with skills to repackage technological information into reusable form that could be easily understood by farmers.

Thus these two groups must be somewhat linked and forced to communicate and share their responsibilities in order to generate relevant research, develop complete technologies and effectively allow utilization of research results. Various mechanisms such as the Technology Transfer Committee of RRIM-RISDA and the Rubber Smallholder Development Committee of the Malaysian Rubber Producers' Council in Malaysia, need to be established to enhance this function.

b. The Need to Reach Low Access Users

One persistent problem in development work is that farmers with few resources are not being reached and agencies tend to focus on the best resource-endowed farmers (Sulaiman et al., 1981). The general tendency is that unless extension agents engage an up-to-date system, they would tend to over estimate their level of contact with the farmer. In TOT systems, extension workers often claim they overtly communicate but farmers are non-receptive.

The recent interest in group farming systems augurs well for extension to reach these low access farmers who under group farming may be afforded a larger land resource and lesser but more certain group contact points (see Sahak Mamat, 1985; Mustapha Juman, 1985; Abu

Bakar, 1985). This advantage is beneficial both to research and extension work. The more recent FFL approach, of course appear to be most open for more two-way communication.

However, reaching small farmers and using a target category approach to the development of technologies is not enough. One must also create dynamic utilization systems among the small farmer groups by mobilizing and organizing them so that they appreciate what service agencies can do for them, make claims on those service agencies and develop their lobbying power to actually demand attention from these agencies.

Taking a cue from the above discussion and bringing it a step further, scientists need to spend a certain amount of time in direct interaction with farmers and FSR as well as FFL situations. Because of the complexity and the multifaceted nature of many farming situations, there is a need for teams of scientists representing different disciplines to cooperatively study, analyze and reach conclusions about ways of helping small farmers to cope with the existing constraints to production. The multi-disciplinary approach to solving problems faced by farmers provide inherent advantages in that it includes the views not only from the scientists but also from the extension agents and farmers. Nowadays, extension has to expand its scope further to go beyond production to encompass the processing and marketing needs of the farmer.

c. Systematic Training for All Concerned.

It is becoming more and more apparent that the pre-service training that the researchers and extension agents underwent would not prepare them adequately to face the challenging tasks of promoting utilization of research findings. At the same time farmers have to comprehend the role that they would have to play in such an effort. Invariably their training needs fall into the technical and communication areas of concern.

Agricultural scientists need to be trained regularly to up-date their knowledge and skills. Training programs (in-service or refresher courses) for agricultural scientists, however, focus mainly on their own particular disciplines. In the past, there were few training programs emphasizing the social aspects of technology generation designed for

agricultural scientists. In international programs agricultural scientists are being exposed to and made aware of not only new developments in their own particular disciplines but also in the social disciplines. The exposure to the social sciences for agricultural scientists would, hopefully, make them better communicators and more sensitive to the multifacted variables in a farming system and thus, spur them to generate technologies that are appropriate to the farming community.

Extension agents need to be trained regularly to up-date their knowledge and skills not only in the technical areas but also in the social areas (extension methodology, communication, leadership, etc.). One important skill which has been overlooked in the training program of extension agents in the past is the communication skill to simplify and repackage research results into useable form that could be easily understood by farmers. Training programs for extension agents should emphasize the development of this skill for it serves as the vital link between scientists and farmers. If this skill is not provided for, then the utilization of research knowledge by end users will still remain a major problem.

Farmer training in the village by extension agents or selected farmer-leaders attending training programs at local or regional training centres should be part and parcel of an agricultural development strategy. The approach in training, however, needs changing. The conventional mode of passing new technical ideas to them should make way to that of appreciating where they are and learning from them. In finality, the aim of development then is for farmers to be appreciated for their ideas which they should see being taken into consideration and consequently they being respected for taking action on the proposed activities that they had initially contributed ideas to.

d. The Future Need

In the Third World countries, there has been a rapid growth in the number of extension and research workers. In these countries, there is an accompanying growth of small farmer programs in health, nutrition, village organization, small industries development, community development and other activities that will require a substantial extension input to be effective. Consequently, research and extension has to be more creative in using currently workable communication mechanisms as well as developing new ones, so as to be capable of

facing the demands of the foregoing fields of development that extension has to contend with.

Another significant development is the study of the theory itself. The interface between extension and research is an interesting one. In several ways, queries are still made as to what happens to a research finding when it is transformed into a recommendation. The process of transforming research knowledge into acceptable farm-level knowledge is still being investigated. Particularly salient is that the collaboration of researchers and extension to package and transform research findings into utilizable recommendations still remains much to be desired. This suggests an emergent area to improve the functioning of research, extension and the farmer knowledge system. The idea is to make the separate functions of research, extension and knowledge utilization work synergically in what can be called a knowledge/information system (Rolling, 1986). This exciting new development in extension theory has led extension to link into systems theory and the exciting developments around such concepts as information and knowledge. In this regard, the recent developments augur well for the improvement in research-extension communication, the betterment of which will significantly benefit the end-users in any knowledge system.

Conclusion

Having examined the status of the research-extension-farmer continuum, the standard models of extension being implemented as well as the emergent needs and considerations to enhance the system, certain conclusions can be drawn to guide us further in our efforts.

First, it is imperative that no matter what research-extension model is emplaced, we see a real need to empower the farmers to communicate equitably in the development process. Cognizance of the social, economic and cultural conditions of the people involved as well as knowledge of their farm conditions should make better programs of change.

Second, it is timely to make planners realize that communication research has been and will continue to be an important input to the national extension system. Past works on media use, campaign

strategies and audience analyses have considerably helped facilitate the extension process. The fact remains that research and extension bears a gap and research and farmers are separated by a bigger gap. Even as new models to involve the farmers are found, the problem remains to transfer the researcher into a resource poor farming situation and thus require us to know more about the communication behaviour of researchers, extensionists and farmers in this interphase.

Thirdly, we can still identify the need for researchers and extensionists to be better skilled at adapting new-found knowledge into farmer situations or in infusing indigenous knowledge into on-going research regimes. This author strongly believes that the aim of development is for farmers to be appreciated for their ideas and these being recognized in program formulation.

Fourthly, we are beginning to realize that as more research begin to arrive at new suggestions for improving the extension system, it is timely to ascertain the value of the role of communication in the extension system itself. It is anticipated that knowing the relationship between the cost of investing in communication mechanisms and the actual benefits they bring to the extension system will be most useful for planners everywhere.

Finally, it is critical that all agricultural institutions, policies and procedures must be cognizant of the needs and concerns of all farmers, particularly the small farmers. At the same time they must be responsive and accomodative of national economic development goals so as to continually provide the overall guidance of the development of farmers. In this respect an overall communication system must be implemented that will provide the basis for this inter-relationship between what the national policies are, with the emphases of development agencies and the varied needs of the farmers. A comprehensive Development Support Communication System (DSCS) could be one answer in this direction.

References

1. Adhikarya, Ronny and Posamentier, Himo, (1987), Motivating Farmers for Action. Frankfurt. Germany: Detsche Gesellschaft Five Technische Zusammenarbeit (GTZ).
2. Adhikarya, Ronny; Kenmore P.,(1989) (Personal Communication).
3. Abu Bakar Mahmud (1985) "Group Farming - A Strategy in Rural Development". Paper presented at the AIM Group Farming Seminar, Kuala Lumpur.
4. Balit, Silvia, (1988). Rethinking Development Support Communication. Development Communication Report, No. 62
5. Bembridge, T.J. (1987) 'Agricultural Extension in Less Developed Areas of Southern Africa' Agricultural Administration vol 27 no.4 pg.245-265.
6. Byerlee, D. (1987) 'From Adaptive Research to Farmer Recommendations and Extension Advice' Agricultural Administration vol 27 no.4 pg.231-244.
7. Cernea, M.M., Coulter, J.K. and Russell, J.F. (1985) Research-Extension-Farmer, World Bank, Washington.
8. Chambers, R., and Janice Jiggins, (1986) Agricultural Research for Resource Poor Farmers: A Parsimonious Paradigm, Institute of Development Studies, Sussex.
9. Chambers, R. and Ghildyal, B.P. (1985) Agricultural Research for Resource-Poor-Farmers: the Farmer-First-and-Last Model. Institute of Development Studies, Sussex.
10. Crowder, L. Van (1988) 'Agents, Vendors, and Farmers: Agricultural Technology Transfer in Ecuador' Agricultural Administration, vol. 30, no.3 pp.215-220.

11. Coldevin, Gary, (1987). Perspectives on Communication for Rural Development, Development Communication Paper, FAO, United Nations.
12. Hilderbrand, P. (1981) 'Combining Disciplines in Rapid Appraisal: the Sondeo Approach', Agricultural Administration vol.8, no.6, pp.423-32.
13. Mc Annany, E.G. (1980). The Role of Information in Communicating With the Rural Third World, pp. 3-18. New York: Praeger.
14. Mustapha Juman (1985) "Group Farming - Practice and Prospects". Paper presented at the AIM Group Farming Seminar, Kuala Lumpur.
15. Malaysian Rubber Producers' Council Annual Report (1988) Kuala Lumpur.
16. Rhodes, R.E. and Booth, R.H.-(1982) 'Farmer-Back-to-Farmer: a model for generating acceptable agricultural technology', Agricultural Administration, vol.11 no.2, pp.127-37
17. Rolling, N. (1985) "Extension Science: Increasingly Preoccupied with Knowledge System". Sociologia Ruralis, 25,3/4.
18. Samonte, Virginia PB, (1975), Development Communication Research at Los Banos. In Juan F. Jamias (Ed) Readings in DevelopmentCommunication,pp. 101-117, Dept. of Devt. Com, University of the Philippines at Los Banos (UPLB).
19. Sinha, P.R.R. (1982). Information/Communication Suport to Extension. A paper presented in Workshop on Agricultural Extension for Small Farmers, Kuala Lumpur. 3-7 May 1982.
20. Sahak bin Mamat (1985) "Whither Group Farming". Paper presented at AIM Group Farming Seminar, Kuala Lumpur.

21. Sulaiman M. Yassin and Mohd. Fadzilah Kamsah (1983) "The Need for Information in Effective Community Participation in Implementing Agricultural Programmes" in Oli Mohamed and Wong Tuck Cheong (Eds.) Information for Productivity and Development,. Maruzen Asia Press, Singapore.
22. Sulaiman M. Yassin M. Yassin (1984) "Extension Training and Implications for Educational Reforms". Paper presented at Regional Conference on Scientific Agricultural Manpower, Kandy, Sri Lanka.
23. Sulaiman M. Yassin and Rahim M. Sail (1984) "Bridging the Gap Between Scientists and Farmers" in Proceedings of Communication of Scientific Information for Development Seminar, Shah Alam.
24. Sulaiman M. Yassin, Rahim M. Sail and Alang P. Zainuddin (1985) A Review of Extension Activities for Rubber Smallholders, Universiti Pertanian Malaysia, Serdang.
25. Sulaiman M. Yassin (1989) "Research-Extension-Smallholders Demonstration Project" MRPC SHDC Meeting, Kuala Lumpur.
26. Sulaiman M. Yassin, Saodah Wok and Zaharah Susan Keeney (1984) "Features of Research and Extension Work: Some Problems in Linkage and Dissemination" Extension Publication no.33, Universiti Pertanian Malaysia, Serdang.
27. Wood, John (1982), Making Rural Development Projects Move Effective: A System Approach. Development Training and Communication Planning (DP/UNDP), Bangkok.
28. Wiersma, William (1975). Research Methods in Education. Itaca, Illinois: F.E. Peacock.