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A New Look At Adopter Categories and an Alternative Proposal For Target Grouping of Farming Community*

Shankariah Chamala, A.W. van den Ban and Niels Roling**

In most agricultural development programmes it is implicitly assumed that an agricultural innovation is applicable to all the farmers in the area concerned. Undoubtedly some innovations are profitable and relevant to a large proportion of the farmers in a social system but many of them are not applicable across the board due to the different political, social, economical and cultural circumstances faced by the farmers, especially in developing countries. "Most diffusion research has an inherent pro-change bias" as pointed out by Rogers (1975, p. 12-13) "in that it assumes the innovations studied are 'good' and should be adopted by everyone." If some members of the community did not adopt or were slow to accept they were labelled as 'laggards', non-progressive', etc. Thus the cause of non-adoption was assumed to be internal psychological traits of the farmers, ignoring many other possible causes of non-adoption. These causes may very well lie in the social structure, economic distribution of wealth and property, cultural inheritance, differential access to information, inputs, credits, market, land and labour.

In the present paper, we intend to discuss the different aspects of adopter categories as one form target grouping of farmers, resultant strategies based on utilising these target groups such as 'trickle down' process and its consequences especially in developing countries and finally attempt to present an alternative proposal for target grouping which is applicable to most developing and developed situations.

Adopter Categories

Rural sociologists, interested in diffusion and adoption of innovations have attempted to categorise the members of a social system on the basis of time of adoption of one or more innovations. Five adopter categories are usually identified *viz.* innovators (the first 2.5 percent of population), early adop-

**This paper was written when Dr. S. Chamala was a visiting fellow at the Agriculture University, Wageningen, Netherlands in 1978.*

***Dr. S. Chamala is Senior Lecturer, Dept. of Agriculture, University of Queensland, Brisbane, Australia, Prof. A.W. van den Ban and Dr. N.G. Roling are at Dept. of Extension Education, Agricultural University, Wageningen, Netherlands.*

ters (the next 13.5 percent), early majority (the next 34 percent), late majority (the next 34 percent), and laggards (the remaining 16 percent), This schematic ideal type categorization is somewhat arbitrary, but is defended by Rogers (1962, page 192) with the argument that their general utilization by research workers should lead to a greater standardization of methodology. He further points out that "the five adopter categories are ideal types, conceptualizations that are based on observations of reality and designed to institute comparisons".

The adoption categorization has not only influenced research workers to use it as a more or less standard methodological tool but was extensively used by Extension Education specialists in training extension and other personnel involved in developmental programmes. This has led to wide spread use of adopter categories by most field workers in community development, agricultural extension and other planned projects. This categorization based on one or more innovation adoptions, however, consciously or unconsciously led many field workers to believe that this behavioural pattern of the clients or social system would last for the rest of its life time and would apply to all innovations. This led to the utilization of "the trickle down" extension strategy for introducing agricultural innovations, a strategy which gained acceptance in extension and related fields.

The evidence to this effect can be found in many studies of the way extension workers first select their innovators and keep on providing the information about all other innovations to the same people or group year after year. Before we look into the sociological effects of this approach, let us first examine more closely whether prediction of innovativeness based on adoption behabiour concerning some innovations, is tenable for all subsequent innovations.

Is there a general innovator?

There has been a tendency among many field workers and some serious researchers to talk about the innovator as a "superinnovator". They describe him with superlative words—

"Venturesomeness is almost an obsession with innovators, they are eager to try new ideas.....He desires the hazardous, the rash, the daring, and the risky" (Rogers, 1971, p. 183).

But how far there is a consistency in innovativeness of an individual towards all the innovations? Very few have raised this issue in the disciplines of agricultural extension and rural sociology. Rogers (1962) raised this issue in his earlier book, saying that "There is no clear-cut evidence as to whether or not innovating behaviour is completely consistent." He postulated however that "It is doubtful whether an individual who is innovative in one aspect is a laggard for another idea" (p. 187).

Innovativeness across all innovations

Presser (1969) investigated the conceptual and methodological aspects measuring innovativeness and categorizing people as innovators. His results indicated that inno-

vation, innovator and innovativeness have different meanings for different people in different places at different times. Types of innovations investigated may affect the consistency in innovativeness of innovators. General experience indicates that people tend to have specific interests and innovate mostly in their specific interest area. A typical example could be found in the case of animal husbandry and breeding practices recommended in India. Most of the innovators or early adopters showed more consistency towards animal nutrition and animal disease control than towards breeding methods such as artificial insemination, use of breeding-bull etc.

Numerous cases of high selectivity by innovators of seed and fertilizers were reported in "package programmes" in India. In other words innovative behaviour was not shown towards all practices recommended in a package of practices for the given crop" by the so-called innovators or early adopters of seed and fertilizer.

Evaluation of National Demonstrations in Bihar, India, studied the reactions of demonstrating farmers who are usually progressive, have big farms, and members of co-operatives etc. Their finding is that demonstrating farmers reacted to the innovations in a rather practical manner. They were concerned with high initial cost, complicatedness of techniques and the amount of risk and of course. with profit in relation to cost and with the amount of care and supervision required (Mishra and Singh, 1970). These few cases and other observations in the field indicate that even the so-called progressive farmer does not show ventureness towards all the innovations, just for the sake of it, rather he carefully examines the cost/benefit ratio, risks and more demanding aspects of technological management of innovations. The reasons for selectivity may be related to innovations and actual situations of farm and farmers.

Fliegel (1956) computed intercorrelations of adoption of eleven farm practices *viz.* featilizer, soil test, side dressing, registered sire, clip udders, baler weed control, artificial insemination, milking machine, milk cooler and fly spray. Some were negatively correlated, though statistically not significant. While many showed positive relationship except one, none was significantly related. Registered sire and artificial insemation were the only significantly related items.

Crouch (1972) studied twenty-nine farm practices covering the full spectrum of operations on wool-producing farms in New South Wales, Australia. From factor analysis results he states that farm development is a continuous process, all farm practices introduced into farm systems are inter-related and interdependent. And further suggests that adoption of farm practices follow stages in farm development.

Chamala and Crouch (1977) reported significant relationship between improvement of flock quality and level of pasture improvement and control of external pests and parasites. However there was no significant relationship between level of pasture improvement and control of external pests and parasites.

These findings indicate that there is high selectivity among the farmers in adopting new innovations, independent of innovativeness. The reasons may be various and different for different groups of farmers. However, there is need for more comprehensive empirical studies to make generalizations about consistency of innovativeness. in agriculture.

What are the findings in Consumer Research in relation to Innovativeness?

Consumer researchers have examined innovativeness of consumers in more than one product category. Graham (1956) studied diffusion of five diverse innovations and found that no social class was consistently innovative in responding to all of these innovations. Opinion Research Corporation (1959) has suggested that the "high mobiles" in the population which it identified were earlier to adopt a host of products from yachting club memberships to stereo equipment to ballet slippers.

Robertson and Myers (1969) examined relationship of innovativeness between product categories for appliances, clothing, and food products and reported some intercorrelations. These relationships of innovativeness by categories, though statistically significant were pragmatically low and authors dispute the notion that innovativeness is a general trait possessed by the individual.

King (1964) also disputes the idea of a general innovator. His argument is that innovators are active in product contexts which are consistent with their psychological make up. If they do innovate across product categories, it is likely to be in complementary categories. Studies conducted by White (1954), Robertson (1966), Andrus (1965), Arndt (1968) documented that innovativeness is consistent within a product category, such as electrical, food, durables etc., although minor disconfirming evidence is available. From Frank, Massy, and Morrison (1964), however, it can be interpreted that the "product category" may have to be as narrowly interpreted as beverages, rather than food, before consistency of innovativeness occurs. Relative consistency of innovativeness was assumed to extend beyond one product category to related product categories or related parts of the consumption system. However, there are difficulties in defining precisely a product category.

Laggards—Is there a universal laggard?

Laggards are described by the diffusion researchers as the people who adopt last, if they adopt at all. They are branded as "traditional" and alienated from the too fast moving world and non-innovative, fatatistic, lazy, ignorant, etc.

What are the reasons for non-adoption or slow adoption of some innovations?

1. Is it due to the irrelevance of innovations to some farmers' needs and resource capabilities?

2. Is it due to the prevailing power structure of the social system they belong to?

3. Is it because of the socio-structural

nature of the community?
(for example, land tenure system, money lending and bondage labour, etc.)

4. Is it the result of communication strategies adopted by Extension Personnel?

5. Is it really due to the individual's attitude, knowledge and other personality characteristics?

Most of the reasons mentioned above are discussed in detail by Rogers (1976) in his article on "Communication and development—the passing of the dominant paradigm". However, our concern here is to examine critically the behaviour and characteristics assigned to "laggards".

"Traditionalism" was one of the characteristics assigned to the laggards. Galjart (1971) pointed out that the concepts "modern" and "traditional" have failed to help us understand agricultural development in the Third World. He further argued that the quest for one single explanatory factor has prevented rural sociologists from recognizing the complexity of the problem. The use of this concept may even have led to a certain neglect by diffusion researchers, rural sociologists and extension people of the structural factors affecting development.

Small farm size, low education, low socio-economic status, are some times assigned to describe so-called "laggards". Let us examine how far this prevailing assumption held by some diffusion researchers and extension personnel is based on empirical data. Morse *et. al.* (1975) conducted a detailed study of 35 rural development projects sponsored by various international institutions operating in 11 African and Latin American countries with an aim to improve the design and implementation of projects to assist small farmers. Their findings indicate that project success was affected by a number of factors. One of the significant findings is that those development projects which took the time and effort necessary to build in an active and cooperating role for small farmers were significantly more successful than those projects which followed more traditional (externally-dominated) development approaches (Morse *et. al.*, 1975, p. 10-11).

Tetu Extension Project (in Kenya) was aimed at counteracting the inequity, increasing effects of the diffusion process and the de-facto progressive farmer strategy observed in the baseline study by aiming extension efforts especially at the less progressive farmers (Ascroft *et. al.*, 1973, p. 63). Chege, Roling *et. al.* (1976), report the findings of this experiment. Their findings on the eight innovations clearly indicated that small farmers were able and willing to respond very quickly to opportunities offered to them. They pointed out that their data suggested that the less progressive are not a bunch of fatalistic, apathetic and traditional hardcores, but a group of people which is struggling very hard to also get somewhere (p. 38).

Some projects undertaken by Block Development personnel in tribal areas in India have succeeded because of participatory approach and selection of technology

as applicable to these people. However, many projects failed due to faulty approach; selection of technology which is not relevant to the people or stage of development and many other institutional factors. Similar examples of it could be found in Taiwan where so-called "traditional, non-progressive laggards" types of farmers are responding to technology when appropriate measures are taken for delivery of information, inputs of production, marketing through their associations (Lionberger and Chang, 1970).

All this evidence suggests that so-called 'laggards" are not actually hopeless cases for development if given the right opportunities by selecting the right technology, information source etc.

Changes in adopter categories over time

There is a tendency among some extension workers to believe that adopter categories do not change over time. That is "innovators" continue to be innovators and "laggards" will be laggards for the rest of their life. As Rogers (1962, p. 189) rightly pointed out adopter categorization is similar to a snap-shot that pictures an individual at one time. He does not necessarily remain in the same position in a social structure at a later point in time.

Lackey (1958) and Rogers (1957 and 1959) found about half of their sample of farmers shifted from one category to another in ten and two years respectively. Roger's study in Ohio reports that more than 38 percent laggards would no longer be defined as laggards, after two years and moved to the "late majority" and "early majority" categories. Consequently some farmers who belonged to the "late" and "early majority" moved to "laggard" category.

Similarly, "innovators" of 1957 were no longer innovators in 1959 and changed to other adopter categories. And some others became innovators in 1959 who were not innovators in 1957.

Unfortunately, similar studies were not done since then. However, it is well known that some "low income" farmers may be forced to leave agriculture while some "rich" farmers may also leave, though optionally to take up other enterprises.

It is, therefore important to reiterate that farmers belonging to adopter categories change over time.

There is no general innovator or universal laggard for all innovations and over a period of time, as is often implicitly assumed by some diffusion researchers. This individual-praise (venturesome, innovative) or individual-blame may be the result of approaches taken by different social scientists working in many disciplines. Some of them are summarised below.

1. There was a general tendency among many diffusion researchers to look at the whole process from the innovation point of view. All the innovations were assumed to be relevant to every farmer irrespective of his resource capabilities, social and cultural aspects of the society to which he belongs.

2. Most of the research in adoption

and diffusion "points out the finger" at farmers for being laggard or slow to change and very rarely establishes the relationship of defects in delivery systems, administration, planning and implementation to low levels of change.

3. Break-throughs in agricultural sciences in the last two decades have contributed to increase in yields. However, the efforts to adopt the technology and emphasis on appropriate technology to make it relevant to people were limited. As a result, some of the innovations remain promising until the resources, infrastructure facilities are provided.

The analysis of literature and observations leads to the conclusion that adopter categories which can be empirically identified have been erroneously used in practice while the theory on which they are based is questionable. Empirical validity of such categorization is not universally found for all times and all social systems.

In the last ten years the "trickle down" strategy was employed in many countries for various organizational, personal and situational reasons. "Adoption categories" and findings from diffusion research were one of the major bases for this approach in many developmental projects. The consequences of "trickle down" and technology biased strategies were being reported in the last few years. It is beyond the scope of this paper to review the literature on consequences of innovations thoroughly here. However a brief account of major consequences is in order. In "trickle down" or "progressive farmer" strategy extension personnel concentrate their efforts on large, cosmopolitan leaders—in short progressive or innovative farmers—and assume that these people act as agents of change and through the multiplier effect continued flow to the rest of the community will be ensured. The consequences of this approach are briefly enumerated.

Functional consequences

1. One of the consequences is quick adoption of innovations by this section of the social system who own larger areas of production with good facilities. Consequently, quick increase in production. Increasing the productivity of the community is very important and could add to common good of the community.

2. Increases in the efficiency of inputs and extension personnel's time etc.

3. Progressive farmers could try new ideas and act as initiating sets in the community, etc. (Roling, Ascroft and Chege, 1976).

Dysfunctional consequences

1. Increase in knowledge and consequent adoption of innovations by the top level of the social system, increases the heterophilous condition among the different categories of farming communities. However, the lopsided distribution of extension benefits is not solely attribut-

able to this strategy. It may be due to the high demand for extension help by this section of the farming community (Ascroft *et. al.*, 1973, p. 23). But this strategy undoubtedly accelarates the process.

2. Increase in the knowledge gap increases the time lag from the introduction of a new idea to its widespread adoption. This is mainly due to relying on progressive farmers who in turn were supposed to disseminate information to the rest of the community.

In some cases this information flow was not only slow but information was deliberately withheld due to perceived competition among the farmers who were well aware of supply, demand and price, which they get for their products. In the Philippines when corn was over supplied in one season, prices dropped considerably. Progressive farmers were not happy with this and competitiveness developed among farmers, and Castillo states "what makes us think that peasants are more noble than Madison Avenue?" (Castillo, 1975).

In Kenya's Western Province, several farmers who adopted innovations did not disclose freely about the increase in yield or the income they received due to innovation adoption because publicized income differentials may give rise to a higher tax assessment, increased social obligations, jealousies, or even, rarely, accusation witchcraft (Leonard, 1977, p. 181).

Withholding important aspects of innovations' information by some members of the community, sometimes makes us wonder about the validity of assumptions of multiplier effects which are supposed to have been achieved through the diffusion process,

3. Another dysfunctional effect of reliance of "trickle down" strategy is distortion of information in the diffusion process. One of the studies of information diffusion in India showed that the farmers who first learned about an innovation passed only 28 percent of what they knew to other farmers. As the first learners themselves missed much of what had been taught, the farmers who got their information secondhand from other farmers learned only 14 percent of the points the Department of Agriculture had been attempting to communicate to them (Sinha and Mehta, 1972). This is rather a limited information source for any decision making. The information lost in "trickle down" diffusion processes may be very critical for decisions to adopt innovations.

4. Some of the innovations are not applicable and understandably not adopted by small farmers. To adopt an innovation requires adaptation of one's own resources. The less the innovation "fits" the more adaptation is necessary. Hence, many innovations developed only on scientific and technical grounds, require large adaptations. The

result is only well endowed farmers can adopt. The converse argument holds to small farmers.

5. The power elite in a social system screen out potentially restructuring innovations while allowing the introduction of innovations mainly affecting the functioning of the system (Rogers and Shoemaker, 1971, p. 385).

There are many other consequences like large scale migration to urban centres and social conflicts etc. Rogers and Shoemaker (1971) and Crouch and Chamala (1975) dealt with this in a little more detail and they could be referred to if necessary. In developed countries dysfunctional effects of the "trickle down" approach are not as glaringly visible as in developing countries because of simultaneous interventions by Governments such as structural adjustments, social science policies and increasing industrialization.

Target Grouping of Farming Community

So far, we have looked at the theoretical basis, empirical validity of adoption categories and large scale reliance on adoption categories for dissemination of information in development activities and in research. We are not suggesting to discard totally the adoption categories as it has some very useful functions in understanding the adoption process, but attempting to draw the attention of the field extension workers some of the dysfunctional effects of this target grouping and the "trickle down" strategy used in extension for rural development. Therefore, the analysis calls for a different approach to the categorization of the farming community. An undifferentiated approach to the community or social system is possible and effective if the whole system is homogenous, otherwise it will not be effective.

Similarly, it is not practical or worthwhile to study every individual member of a social system and then develop a 'tailor made' or 'customized' programme to meet technological and informational needs of each member. Instead the change agent or extension personnel should search for broad groupings of farmers or members of social systems who can be approached as separate homogenous (on certain variables or enterprises) groups. Then the change agent may choose to deal with all these groups or categories or to concentrate on one of a few of them depending upon the objectives of developmental programmes. The question then arises on what basis these groups could be identified within a social system ?

Before we discuss the variables or factors that should be considered in subgrouping the target audience, it is important to reiterate that target grouping depends on the objectives of the programme or the type of activity. Thus agricultural research needs information on groups which are homogenous regarding ecology, water, markets, farm size and access to inputs etc. Agricultural delivery or extension requires segmentation in terms of resource accessibility, stage of farm development and adoption process, language use etc. At present, agricultural interventions do segement or sub-group people on the basis of

ecology, crop-wise (sugarcane, paddy pastures, vegetable growers), hobby farmers or part-time farmers, etc

Benor and Harrison (1977), under the training and visit system, suggest that village Extension Workers should divide all the farmers in their jurisdiction into eight groups of about equal size. Grouping may depend on such factors as geography, size of the villages, and ease of communication.

However, in this paper we are concerned with sub-grouping or segmenting of target audiences for extension strategies for rural development. Market researchers have developed many ways of analyzing consumer market structure which is somewhat similar to extension strategies. Robertson (1977), and Kotler (1975) dealt with this problem in consumer market research in detail.

Target grouping variables

The fundamental principles that could be used in categorizing the target groups are the variables or factors that impede or accelerate the development of agriculture in particular and the people in general. Extensive documentation of variables associated with adoption of tecnnological and social innovations was done during the last two decades. Most of the researchers selected one or more factors and some have attempted to study them in depth.

It is impossible to list all those variables here. However, an attempt will be made to summarise major variables that are critically important in target grouping of client members.

Often some change agents and development planners think and deal with some particular target groups of social systems and after a while they may be upset by some fresh thinking on other variables and their major breakdowns. All the variables that could be used in target grouping fall into four major classes *viz.* geographic variables, demographic variables, personality variables and farm management variables. Not all target grouping variables are important or appropriate for every social system either in developing or developed countries. As mentioned earlier, it depends on the type of activity for which segmentation of audience is necessary.

Geographic target grouping

The earliest variables used for target grouping of developmental activities were geographic variables. The locations are identified by geographic units such as states regions, districts (counties or shires), towns, cities or neighbourhoods. Infrastructure and institutional development were located in these units. Research stations, banks, industries, administrative offices, schools, colleges, hospitals were located according to geographical units. In recent years, emphasis has been shifted and regrouped according to the irrigation facilities available in the state or region such as command area development in India. Large dams were built in the last two decades in India and canal systems were developed under these schemes. The whole area under these systems is brought to focus for development in order to exploit the production potentials, irrespective of previously earmarked geographic units. Similarly, high

Table 1 : Major Target Grouping Variables

Variables	Possible breakdowns
1. GEOGRAPHIC VARIABLES—	
Regional basis	Maintain, plane or district shire, county.
Irrigation	Gravity flow throughout the year; seasonal dams; groundwater, irrigation by borewells, pumps, lifts etc.
Rainfall (i) quantity	under 50 cm, 50-75 cm, 75-100 sm, etc.
(ii) distribution	Monsoonal or throughout the year etc.
Infrastructure variables	
Roads	well, average or poor
Markets	well, average or poor
Secondary industries	many, some, none
Banking	good, average and poor, borrowing facilities related to individual
2. DEMOGRAPHIC VARIABLES—	
Age	under 30 years, 30-50 years, 50 and above
Family size	large, medium, small
Family life cycle	young single or married, children with schoolgoing age, sons or daughters married and working on farm, old and no children to take over the farm etc.
Income	more than average, average, poor
Occupation	full-time farmers, hobby farmers or farming with other interests in business and industries
Education	illiterate, primary, secondary, college or special training
DEMOGRAPHIC VARIABLES—	*social structure variables*
Religion	Christians, hindus, buddhists, muslims etc.
Social class or caste	lower, lower-middle, middle, upper middle, upper class or caste, land owners, money lenders, village ruling caste etc.
Power structure	high, medium, some, none
Cultural Relationship	relationship to clearly definable or ethnic groups

Variables	Possible breakdowns
3. PERSONALITY VARIABLES	
Values	— -- —
Motivations	High, average, below average
Social participation	High, average, below average
Extent of information exposure	Unware, aware, informed, interested, interest but some input constraints
4. FARM STRUCTURE MANAGEMENT FACTORS	
Size of farm operation	small, medium, large
Type of farm ownership	owner, tenant, share-cropper, etc.
Farm specialization	mixed farm, specialised farm
Level of mechanization	above average, average, less than average and no mechanization
Stage of development	highly developed, average, below average
yield/per hectare/cow	high, average, below average and poor

Source : A modified version of Robertson (1971) and Kotler (1975)

rainfall zones, semi-arid zones, etc. were identified for developmental activities.

Demographic target grouping

Another form of target grouping is demographic, in which the social systems (communities or villages) are sub-divided into different groups on the basis of demographic variables *viz.* age, family size, income, education, social class, occupation and family life cycle etc. Demographic variables have long been the popular bases for categorizing target groups in developmental activities throughout the world because of two important reasons *viz.* they are reported to be associated with actual adoption of technological innovations and they are easier to identify and quantify more accurately than other personality variables. However, the extension workers have been in the past, concentrating information delivery to only one category of social system, namely high income, education, social status etc. In other words "trickle down" process was the one type of concentrated development strategy. The consequences of this approach were already briefly discussed early.

In the last few years, there has been a shift to emphasize on middle and low income segments of the social system. The reasons may be political, social and other

reasons, advocated in integrated development.

Personality target grouping

In the last few decades there has been a good deal of research in psychological factors and their relationship with acceptance of developmental programmes. Many indices and methods were developed to measure the attitudes, motivations, social participation and other personality variables. Identification and measurement is not as easy as demographic variables, especially for the local village level extension personnel. However they are very important for developmental programmes or serving the needs, aspirations of target groups very effectively. These variables like adoption categories, emphasize the individual behaviour and many have some limitations when categorization of target groups is done exclusively on this basis. However they are useful when used in combination with other important variables.

Farm structure management grouping

These variables are unique to the farming system and are very important in identifying the target groups. The farm management factors, to a large extent, independent of demographic or personality variables and help us understand the constraints of implementing technological programmes at the farm level. Lack of understanding or not using them to group people on this basis may even lead us to ignore the critical aspects at implementation level.

Some of the variables grouped under these four categories are sometimes interrelated while others may not be important to certain areas or counties.

The point, that this approach is focussing on is clustering of target audiences and it takes account of alternatives open (within those you know) and encourages change agents to think hard, we hope, about what are the key, leverage factors when making decisions.

The principles of selecting variables and methods of collecting information variables for target grouping

Large lists of variables mentioned above need not frighten, cause concern or convince field extension personnel not to use them. A comprehensive list is provided for guidance only. We are aware of the facilities and skills available at field level in many developing countries. Depending upon the objectives of programmes and the facilities available one could:

1. Select the few most variables befitting to each situation.

2. Information relating to some variables could be found in cencus, village records of often secondary sources.

3. For the variables where secondary information is not available, simple rating questions (scales) could be developed such as :

   Income—High-medium-poor
   Yield—Good-average-poor

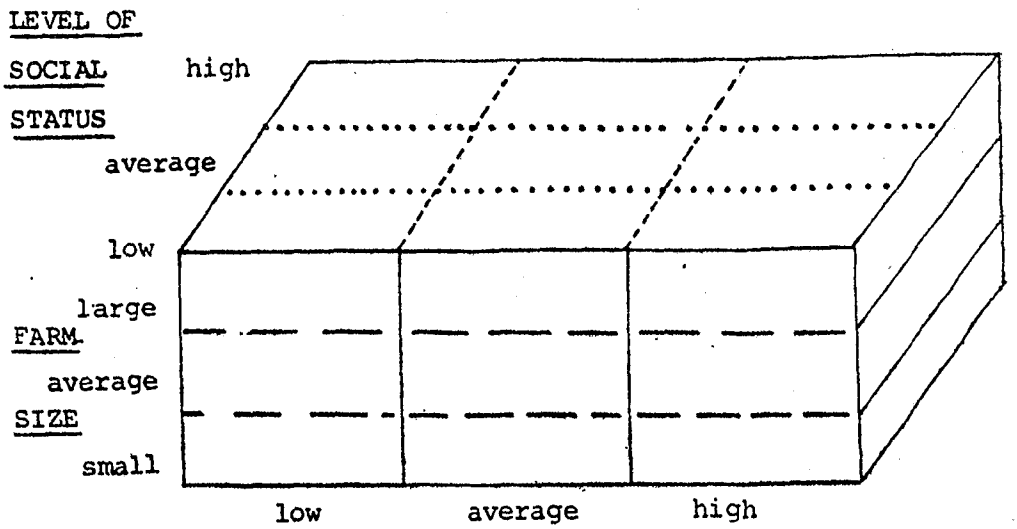

Fig. 1. Target grouping of agricultural programme by three variables

These breakdowns are very relative but serve the purpose. If there is need and facilities are available, regourone methods, and cluster analysis could be employed. Information for these variables could be based on personal experience of village level workers or village leaders of key informants from each section of the society or group.

For increasing the effectiveness in categorizing target groups one needs to employ more than one or two variables to these four categories according to the properties or objectives decided at regional and local level (village level). To give an example in most developing countries, increasing production and improving the equity among the farming community are the two important objectives. In that case, farm size, social status, and level of farm development, could be jointly used to categorize the target groups. Farm size, which is easily measurable, is most of the time related to income and level of production. Social status and level of farm development provide other important dimensions for categorization.

Level of farm development

Figure 1 shows a joint target grouping of farming community according to these three variables. Each variable is subdivided into three (or could be broken down into a number of levels deemed useful in analysis of implementation) levels. The result is 27(=3 x 3 x 3) distinct homogeneous (for these variables) target groups. Every farm family belongs to one of these 27 target groups. If you restrict sub-division of each variable to two the result is 8 (=2 x 2 x 2) distinct target groups.

According to the objectives one must use the set of variables most relevant to the situation. But the point we would like to stress, is to use matrix of variable rather than one or two only to delineate the population into homogeneous groups. The target grouping in the field situation could be done by the extension officers or by the farmers themselves. When Extension Officers try to categorise the farming community into homogeneous groups the above approach of using cluster of variables may help define "development groups".

Selection of the sub-groups could be done later on according to the resources available to the field extension workers. The groups could be rotated every season or year. For example, out of 7 or 8 distinct target groups extension workers may like to spend time with 3 or 4 groups for one season and another set of 4 groups for the next season.

Another rather important possibility of target grouping is by farmers themselves. Clark (1978) F.A.O. Leader of Small Farmers Development Team for Asia and the Far East, through his enthusiastic group-organisers and action research follows (or local extension officers) have encouraged formation of "small production groups of 10-15 like-minded people—farmers, tenants or landless agricultural workers—organised around some nucleus, income-generating activity." Groups are formed by farmers themselves, who are very well aware of the criteria to establish a homogeneous group with whom they have contact and confidence. Extension officers work with these groups, which also help among themselves. Under joint liability, group members are able to get individual bank loans to purchase low cost, income producing items *e.g.* buffaloes, goats, milk cows etc. These homogeneous groups also involve themselves in (a) studying the problem (b) presenting the problem to the group and discussing and solving the problem. These groups are seeking actively, information from extension personnel and sometimes put pressure on other government organizations to serve their needs. The resulting "group pressure" on its members also accounted for very high repayment rates of over 90 percent. These homogeneous groups with active involvement, right from the selection of members, to the problem solving stage, will emerge as "development groups". Clark reports on the basis of experiments in many Asian countries that contrary to the fear of many, this group approach has tended to reduce rather than highten community tensions.

Selection of innovations to meet the needs of target-groups

In the past, once a new technology is developed it was advocated to the whole farming system. May be these innovations are best with maximum potential for production but for some target groups with constraints on inputs and others may not be suitable. No doubt the "Green Revolution" technology led to impressive increase in Wheat and Rice yields in India, Pakistan, and the Philippines. But it also had other effects on society. However we argue, like Schumaker (1973) and others that there is more need than ever to develop 'intermediate' or 'appropriate' technology to meet the needs of the masses. One could learn and adapt from the Chinese experience. In China agricultural extension service has been merged with the research system to assure that research focusses on practical problems. Recommendations of improved practices, observed by the senior author, in different communes, was according to the stage of development and facillties available in the communes.

Until these 'appropriate' technologies are developed an attempt could be made to make an inventory of existing innovations and then extension personnel could select

some from this 'basket of innovation' to each target group. They may not be the best and latest technology but they will give some "optimum" results as they are appropriate to the target groups. We are not suggesting that high technology should not be used or developed but there should be some alternate technological solutions as well. To give an example there is need for a good car as well as for motor cycle or bicycles as these could be better than walking on foot. In fact, under "Training and Visit" systems, suggestions are made that recommentions of practices must be in accordance with the ability of the farmers.

Selection of media mix or communication strategy to reach each target group,

The next step after selecting appropriate technology befitting broad target groups, it is essential to have differential communication strategies for these groups. The points to be considered are target groups' communication behaviour, access to the sources and use of existing channels of communication. They be, folk, media or other interpersonal mass methods, including also TV or other group and mass media. This type of delivery system would ensure that information is reached by the "forgotten farmers".

The main aim of our paper is to start with the people and then categorize the social system according to some important variables into some homogeneous target group. We hope this approach will help develop the right attitudes among all the people involved in rural development and also may help to formulate and select appropriate technological innovations and communication strategies. It is also hoped that it avoids some of the dysfunctional effects of the past approach.

REFERENCES

Andrus, Romas R. (1965). Measures of consumer innovative behaviour, Unpublished doctoral dissertation, Columbia University.

Arndt, Johan (1968). Profiling consumer innovators, in *Insights into Consumer Behaviour*, ed. Johan Arndt. Boston : Allyn and Bacon, Inc., pp. 71-83.

Ascroft, Joseph, N. Rolling, J. Kariuku and F. Chege (1973). *Extension and the Forgotten Farmer : First Report of a Field Experiment*, Bulletin No. 37, Wagenigen : Afdelingen voor sociale Watenschappen aan de Landbouwhogeschool.

Benor, Daniel and Harrison, James Q. (1977). *Agricultural Extension—The Training and visit system*, Washington : World Bank.

Castillo, Gelia T. (1975). *All in a Grain of Rice*, South East Asian Regional Centre for Graduate Study and Research in Agriculture.

Chamala, Shankariah and Crouch, Bruce R. (1977). *Pattern of Adaptation and Factors Associated with Economic Success in the Wool Industry, North-West Queensland (1967/68-1971-72)*. Brisbane : University of Queensland.

Chege, F.A., N. Roling, F. Suurs and J. Ascroft (1976). *Small Farmers on Move : Results of a Panel Study in Rural Kenya*, memo paper presented at the Fourth World Congress of Rural Sociology, Torun, Poland.

Clark, G C., Crowley, M.M. and de los Reyes, B.N. (1978). *Second Annual Participatory Evaluation of Bangladesh's Action Research Project on the Development of Small Farmers and Landless Labourers in Eight Villages in Bogra, Comilla and Mymensingh*, Mimeographed report, F.A.O. Regional Office Bangkok, Thailand.

Crouch, Bruce R., and Chamala, Shankariah (1975). Communication Strategies for technological Change in Agriculture : Implications for Rural Society. Paper presented at ANZAAS Conference, Hamilton : University of Waikato, N.Z.

..... (1972). Innovation and Farm Development—A Multi-dimensional Model, *Sociologia Ruralis*, Vol. XII, No. 3/4 pp. 431-449.

Fliegel, Frederick C. (1956). A Multiple Correlation Analysis on Factors Associated with Adoption of Farm Practices, *Rural Sociology*, Vol. 21. No. 1-4, pp. 284-292.

Frank, Ronald E., William F. Massy and Donald G. Morrison (1964). The Determinants of Innovative Behaviour with Respect to a Branded, Frequently Purchased Food Product. In *Proceedings of the American Marketing Association*, ed. L. George Smith, Chicago : American Market Association, pp. 312-323.

Galjart, Benno (1971). Rural Development and Sociological Concepts : A Critique, *Rural Sociology*, Vol. 36, No. 1, pp. 31-41.

Graham, Saxon (1956). Class and Conservatism in adoption of innovations, *Human Relations*, Vol. 9, pp. 91-100.

King, Charles W. (1964). A Study of Innovator and Influential in the Fashion Adoption Process, Unpublished doctoral dissertation Graduate School of Business Administration, Harvard University.

Kotler, Philip (1975). *Marketing for Non-profit Organization*, Englewood Cliffs, N.J. : Prentice Hall Inc.

Lackey, Alvin S. (1958). The consistency of Sociological Variables in Predicting the Adoption of Farm Practices, Ph. D. Thesis, Ithaca, N.Y. : Cornell University.

Leonard, David K. (1977). *Reaching the Peasant Farmer Organization, Theory and Practice in Kenya*, Chicago : The University of Chicago Press.

Lionberger, H.F. and H.C. Chang (1970). *Farm Information for Modernizing Agriculture : The Taiwan System*, New York : Praeger Publishers.

Mishra, A.P. and R.P. Singh (1970). An Analysis of National Demonstration Programme, *Indian Journal of Extension Education*, Vol. VI, No. 3 and 4, pp. 63-70.

Morse, Elliott R., J.K. Halth, D.R. Mickelwait and C.F. Sweet (1975). *Strategies for Small Farmer Development : An Empirical Study of Rural Development Projects Executive Summary*, Mimeograph report, Washington : Development Alternatives, Inc.

Opinion Research Corporation (1959). *America's Tastemakers,* Research Reports Nos., 1 and 2, Princeton, N.J.

Presser, H.A. (1969). Measuring Innovativeness rather than Adoption, *Rural Sociology,* Vol. 34, No. 4, pp. 500-527.

Robertson, Thomas S. (1971). *Innovative Behaviour and Communication,* New York : Holt, Rinehart and Winston, Inc.

..... and J.S. Myers (1969). Personality Correlates of Opinion Leadership and Innovative Buying Behaviour, *Journal of Marketing Research,* Vol. 6, pp. 164-168.

..... (1966). An analysis of innovative behaviour and its determinants, Unpublished doctoral dissertation, North-Western University.

Rogers, Everett M. (1976). "Communication and Development : The Passing of the Dominant Paridigm", *Communication Research,* Vol. 3, No. 2, pp. 213-240.

..... (1975). *Where we are in understanding diffusion of Innovations,* paper presented at the East-West Communication Institute Conference on Communication and change : Ten years after. Hawaii : East-West Communication Institute.

..... and F.F. Shoemaker (1971). *Communication of Innovations : A cross-cultural approach,* New York : The Free Press.

..... (1964). *Diffusion of Innovations,* New York : The Free Press.

..... (1959). Unpublished data from a statewise random sample of 104 farmers in Ohio, originally interviewed in 1957, Columbus, Ohio State University.

..... (1957). Unpublished data from a statewide random sample of 104 farmers ane 88 farm housewives in ohio, Columbus, Ohio State University.

Roling, N.G., Ascroft, J. and Chege, F.W. (1976). The diffusion of innovations and the issue of equity in rural development, *Communication Research,* Vol. 3, No. 2, pp. 155-170.

Schumacher, E.F. (1973). *Small is Beautiful.*

Sinha, B.P. and Prayag Mehta (1972). Farmers Need for Achievement and Change proneness in Acquisition of Information from a Farm-Telecast, *Rural Sociology,* 37, No. 3, pp. 421-455.

Whyte, William, H., Jr. (1966). The Web of of Word of Mouth, *Fortune,* Vol. 50, pp. 140-143 and 204-212.