

The Role of Agricultural Extension and Information in  
the Acceptance of Innovations

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In many countries national income per capita is increasing. For a long time economists have thought that this economic growth was due to an increased use of capital. However, careful studies in several countries have shown that a more efficient use of the existing resources is a much more important factor. This is also true in agriculture, where improved farming techniques make a sizeable increase in production possible without increasing the value of the inputs used. In the Netherlands, for instance, the agricultural production on the same acreage increased with nearly 50 per cent, whereas in this period one third of agricultural labour force left agriculture. To a large extent this change is due to the application of agricultural science although increased investments in machinery, feeds and fertilizers are naturally other factors.

The extension service plays quite an important role in this application of agricultural science. This service provides the farmers with information on new developments in order to help them to make decisions which enable them to reach their own goals better.

Naturally it is only possible to provide this information if sound information is available to the local extension officers. In the first place this requires good agricultural research in the region on problems relevant to the farmers. Unfortunately this requirement is not fulfilled everywhere. On some tropical foodcrops not much research has been done and sometimes the research which

is being done is not directed towards the most urgent problems of the farmers. Here extension officers can play an important role by informing the research directors on the problems the farmers face. In many developing countries the social distance between the research directors and the normal farmers is quite large, which makes it difficult for these research workers to get this information without the help of the extension officers as intermediaries.

In the second place good communication is necessary between research workers and local extension officers. Research in the US shows that personal communication with research workers and extension specialists has a lot of influence on the new farm practices the local extension officers recommend.<sup>1)</sup> There communication through the mass media only is not sufficient to change the local extension officers. I assume that this is also the case in the developing countries.

### Use of Information

Experience teaches us that giving information is no guarantee that it will be used in decision-making. An example is the metric system, which was developed over 150 years ago and is more efficient than most of the older systems of measurements. Lack of information is probably not the major reason why it is not yet used in a number of countries. People will only use information if:

1. they are aware that they have a problem and
2. they define this problem in such a way that they see the information as relevant for their problem
3. they have confidence in the capabilities and the motives of the person who gives them this information
4. they are willing and able to experiment with new solutions for their problem.

There is no guarantee that these conditions will be fulfilled when the extension officer has information which he considers relevant for the problems of the farmers.

It is not unusual that an extension officer sees a problem on a farm of which the farmer himself is not yet aware. This is especially the case if the situation is changing gradually as might happen with a soil erosion problem or with changing price relationships. Perhaps it happens even more frequently that the farmer defines his problem in such a way that he cannot find a solution. Many Dutch farmers for instance are aware that their income is lower than the wages of the labourers, whereas they work much longer. Frequently they see as the cause the wrong policy of the government and not their own lack of adaptation to changing circumstances. Therefore they are not open to the information which they need according to the extension officers. Another example is the information about traffic safety. Many Dutchmen see traffic unsafety as a problem, because it kills some 3,000 people a year. However, according to most drivers the problem is that other drivers drive unsafely. One study found that 80 per cent of the drivers believe that they drive themselves better than most other drivers do. Therefore they consider it quite useful that one tries to educate these other drivers, but they will not give themselves serious attention to this information unless they first redefine their problem.

It is well-known that the farmers only accept information from extension officers in whom they have confidence. It is not only important that the farmers believe that their extension officer knows practical agriculture and understands their problems, but also that they trust that he tries to serve their interests. This last point is difficult to achieve if he gets not only the task to serve the farmers with information, but also to control whether they follow the rules of the government.

In some countries the government tries to increase the production of certain crops. This goal can only be reached with extension methods if it is in the interests of the farmers themselves. Otherwise one will have to use other methods such as force and persuasion. If the extension officers are required to do this I am convinced it will decrease the effectiveness of the extension service in the future, because in that case the farmers do not trust he serves their interests.

A serious difficulty in many developing countries is that farmers, who are aware of new farm practices and are interested to try them, cannot do this for lack of resources. Perhaps fertilizers and pesticides are not available at the right time in the right quantity and quality, perhaps the farmers do not have and cannot borrow the money to buy these resources. It is also possible that the prices for which they can market their increased production are so low that it is not profitable for them. This can also be a result of the land tenure structure. In these situations it may be possible to find other new ideas which can be introduced by the extension service, but there are also situations where extension education is only effective if it is combined with other measures which try to change the structure of the society. It seems for instance that the rapid increase in agricultural production in Taiwan is a result of the execution of a land reform act in combination with a good extension service.

#### Methods of Communication

Also in Europe frequently a long time elapses after a new farm practice has been developed at the research institutes until it is adopted by most farmers. From the previous discussion it follows that it depends on the way in which the farmers see their problems how much information they get on new farm practices and therefore how rapidly they adopt these practices. The result is that the farmer's linkage with the outside world and his secular orientation are factors influencing his adoption level.<sup>2)</sup> This will probably be discussed in more detail in Sen's paper.

Not in all stages of the adoption process the same information sources are most important. Several studies in the USA and Europe found that people become first aware of important new ideas through the mass media, but do not adopt them before they have discussed these ideas personally with somebody in whom they have confidence. It is not yet quite sure how this process works with illiterate people who do not have a radio, but there are indications that for them demonstrations are frequently an important source of the first information about new ideas.<sup>3)</sup> This makes it impossible to say what is the most effective method of communication. It is most effective to use a well-planned combination of different methods such as publications, radio, demonstrations, lectures, group discussions, farm visits, etc. Let me make a few remarks on each of these methods.

Publications have probably not much influence on the adoption of farm practices in most developing countries. Partly this is a result of illiteracy, partly of the way in which these publications are used by the extension service. In recent years a large number of peasants and members of their families have learned to read, but frequently there is a lack of printed material which is of importance to them. Many newspapers give the urban news, but little information which is relevant to peasants. Leaflets, especially leaflets written for new literates, on agricultural problems are scarce. On the other hand there is frequently a lot of interest in reading. Perhaps the result is that the finding from US research that mass media tend to reinforce existing conditions<sup>4)</sup> does not hold true for the situation in developing countries. In some countries mimeographed newspapers which give local news and some information about new ideas in farming, health, etc., seem to be very effective.<sup>5)</sup> Even if the adults cannot read, their children will read this valuable information to them.

A problem which has as far as I know not yet been studied carefully is the language which should be used in publications and for the radio. In many countries there is quite a difference between the language one speaks in the countryside and the literary language which is spoken by the urban upper class and is used for most publications and radio broadcasts. I am inclined to believe that one will be better understood if one writes and speaks for the radio the language which the farmers speak in their day-to-day life. Communicating through the mass media is difficult, because the reader/listener cannot ask questions to the communicator. Therefore the latter will have to express himself very clearly. For the radio this can probably better be done by an interview with a normal farmer, who has tried some new ideas on his own farm than by a speech of a research worker.

Also with lectures in the villages there is the danger that the language and the whole way of thinking of the speaker makes it difficult for the villagers to follow him. Perhaps the more traditional communication methods such as singing groups and puppet shows are more effective, but very little research is available on this point.

Group discussions can be a very effective extension method. US research shows that it can be more effective than lectures or even individual contacts,<sup>6)</sup> but it is not yet known whether this is also true in other cultures. Some of the reasons why group discussions can be effective are:

1. they can help the clients to redefine their problem in such a way that it can better be solved.
2. they can help to change the group norms which have a large influence on human behaviour.
3. a well-trained discussion leader can help the group members to solve the problems they consider important rather than teach the farmers what they should do. Such a teaching role usually creates some resistance.

Quite probably the effectiveness of group discussions depends to a large extent on the quality of the discussion leader. In several countries one now uses role-playing techniques to train these leaders.

These role-playing techniques can also be important to train extension workers for individual contacts with farmers. With some training in counselling techniques extension officers can help the farmers to redefine their problem in individual contacts. A technically well-trained extension officer is often inclined to give his information as soon as he has recognized the problem, but as long as the farmers have not yet recognized this problem in the same way as the extension officer they will not give much attention to his information. The behaviour of the farmers is also influenced to a large extent by their emotional feelings. When the extension officer shows that he understands and accepts these feelings, it will become easier to help the farmers with problems. When a farmer feels that he is condemned by the extension officer for his traditional feelings, it becomes quite difficult for him to accept the help of this officer.

Demonstrations are a very important extension method especially in developing countries. For their effectiveness it is in the first place important that they are a success from a technical point of view. If the plot with fertilizers does not give higher yields than the farmers get on their own field it will not convince them, but it will confirm their traditional distrust in outsiders. Unfortunately not all demonstrations are successful. Sometimes the extension officers are city boys, who have learned in the agricultural college only the theoretical aspects of farming. This is a serious problem if they are not willing to accept that the farmers know many important things they do not know. It also happens that the extension officer gets a target for such a large number of demonstrations that it is impossible for him to give serious attention to each.<sup>7)</sup>

The choice of the demonstrators has also much influence on their effectiveness.<sup>8)</sup> For political reasons it is often desirable to have demonstrations with the well-to-do farmers in the village. Frequently this does not convince the average farmer. He will explain the better results of the demonstrator not from the better farming techniques he uses, but from the extra resources and perhaps the better quality of land he has. It can be desirable to have also some demonstrations under the average conditions of the village by demonstrators in whom the other farmers have confidence. In villages with strong factions it might even be necessary to have a demonstration with each of the factions.

Effective extension methods create a linkage between the social system of the farmers and the social systems in which the agricultural research is done. There are indications that this can be done by "animation rurale." This method is used in several French-speaking countries in Africa and at the East Pakistan Academy for Village Development.<sup>9)</sup> The key person with the method is not the local extension officer who goes to the villages, but the village leaders who are designated by the villagers to go to a regional training centre for a series of short courses on modern farming methods. They are supposed to convince the other villagers. Schuman found that in villages which had sent their leaders to the Pakistan Academy for Village Development the way of thinking of the people was considerably more modern than in control villages where one did not have an opportunity to send leaders to this Academy. Also an Indian study found that one of the major factors explaining the differences in the adoption of new farm practices between villages was the contact with change agencies and the secular orientation of the leaders.<sup>10)</sup> On the other hand there are indications that this method of "animation rurale" does not work well in villages with strong factions, where the villagers cannot agree in which leaders they have confidence.



The radio farm forum can be another effective method of linking the villagers with the agricultural scientists.<sup>11)</sup> With these forums a weekly radio programme is discussed by groups of 15 or 20 villagers. In order to establish a two-way pattern of communication the secretary of the discussion group sends their questions after each meeting to the radio station and receives an answer either in the next week's programme or by mail. Experiments show that with this method new ideas can be accepted quite rapidly. However, an unpublished study of the Planning Research and Action Institute in Lucknow gives the impression that it is difficult to generalize from these experiments, because more attention was given there to a good execution of the programme than is usual with large-scale application. With the experiments, e.g., one took care that all radios were in operation, the secretaries of the forums got money in time to buy paper and postage, the groups were actually meeting, etc. If this is done and the radio programmes are well written for the problems of the farmers these forums can be both a cheap and an effective extension method.

#### Directive Versus Non-directive Approach

The extension officer uses a directive approach, when he tries to persuade the farmer to do what he considers good for him. With a non-directive approach the aim of the extension officer is that the farmer decides for himself how he can best reach his own goals on the basis of the best information which is available. The culture in many developing countries is in favour of using a directive approach. This can be the best way in cases where the goals of the extension officer are the same as the goals of the farmers, for instance with an urgent attack of a plant disease.

In other situations a non-directive approach may be more effective. The extension officer may feel that the farmers are better off if the farmers change their cropping system in such a way that they get a higher income with less leisure. When the farmers feel differently they will only follow the advice of the extension officer when they are compelled to do so. Usually the extension officer does not have the power nor the time to exert this compulsion. In such a situation he can either help the farmers to achieve their own goals better or help them to decide that a different set of goals is better. A major advantage of this non-directive approach is that it helps to develop the major resource developing countries have: their people.<sup>12)</sup>

An extension officer who uses a non-directive approach will raise questions, also on problems which the farmers like to evade. In addition he will help them to find an answer to these questions. He might give them information on the consequences they can expect from several alternative actions, but will not try to make a judgment which consequence should be preferred.

#### Organization of Extension Services

In several countries it is difficult for the local extension officers to act in a non-directive way towards the farmers, because their superiors behave in a rather authoritarian way towards them. These local extension officers may get a target to plant next cropping season high-yielding rice varieties on 30 per cent of rice-acreage in their village. If such a decision is taken by their superiors it is difficult for them to leave the final decision whether or not these new varieties will be used completely to the farmers. Many observers believe that a disadvantage of this system is that it makes the communication from the local extension officers to the top of the extension organization quite difficult.<sup>13)</sup>

The result can be that at the top not the best decisions are taken for the development of agricultural production, because of lack of proper information on local conditions. This will not motivate the local extension officers to work very hard. However, one attempt to prove that the authoritarian pattern of leadership in the Indian Community Development Organization is disadvantageous to the effect of this organization failed.<sup>14)</sup> Further research in this field seems desirable.

In several countries the local extension officers are transferred every few years in order to prevent favouritism towards certain farmers. It seems to me that a serious disadvantage of this system is that it makes it quite difficult for the extension officers to gain the confidence of the farmers and to get an understanding of their circumstances.

Perhaps the achievements of the extension service are better if one selects capable extension officers, especially at the local level, pays them well and gives them some freedom to do their work as circumstances demand than by using the same amount of money for a larger number of extension officers of lower quality. At present the local extension officers in several countries receive a lower salary and less favourable working conditions than other government officers of similar educational qualifications. This makes it difficult to find the best people for this important job.

For an effective extension organization it is also necessary to have specialists in fields as fertilizers, plant protection, farm management, etc. These specialists can integrate the findings of a large number of research workers in such a way that they become usable by the local extension officers. They can also support these local officers by providing them with advisory aids,

such as leaflets and pictures. In addition they can prepare newspaper stories and radio programmes for the farmers. Most important is perhaps that they can bring the difficulties the local extension officers face in their work on the farms to the research workers and ask them to find a solution.

In many countries the extension service does not only provide the farmers with information, but also with fertilizers, pesticides, etc. They may also have a commercial function in selling the increased production. When agriculture is changing from subsistence farming into commercial agriculture, frequently nobody else can play these essential new roles. It is important, however, that taking these commercial functions, does not prevent the extension service from fulfilling their real task of helping the farmers with the solution of their farm problems by providing new information. It is not yet sure how this can be realized. Sometimes one sees that the commercial and administrative tasks of the extension officers do not leave them any time for their educational task. It may also harm the confidence the farmers have in their extension officers. Perhaps the best solution is that the commercial and educational roles are fulfilled by different people, but more research in this field is desirable. It would be possible to make a comparative study of the roles of the extension officers as seen by themselves and by the farmers in areas where this commercial function is organized in different ways.

### Summary

The information from the extension officers will only be used by the farmers if they are aware that they have problems for which this information is relevant, have confidence in the extension officers and can experiment with new solutions for their problem. Therefore it is important that an extension officer learns to listen to the farmers.

New farming methods can be introduced most effectively by a combination of different extension methods, which link the social system of the farmer with that of the agricultural scientist. Mass media and demonstrations can create an interest in new ideas, but usually personal communication is necessary before a person is willing to adopt an important new idea. Group discussions can be very effective; they can be used on a large scale in a radio farm forum programme. Perhaps also "animation rurale" can be effective to introduce change in the villages. With all extension methods, however, the way in which they are used is at least as important as the choice of the method. In many circumstances it can be more effective to use a non-directive approach than to tell the farmers what they should do. Research on the organization of the extension services is quite scarce.

#### Footnotes

- 1) E. M. Rogers and M. D. Yost, Communication Behavior of County Extension Agents, Ohio Agr. Exp. Station. Research Bull. 850, Columbus (Ohio), 1960.
- 2) e.g. P. Roy et.al., Agricultural Innovation among Indian Farmers, National Institute of Community Development, Hyderabad, 1968.  
B. Benvenuti, Farming in Cultural Change, v. Gorcum, Assen, the Netherlands, 1961.
- 3) See: E. M. Rogers, The Diffusion of Innovations, Free Press, New York, 1962, and  
S. A. Rahim, Diffusion and Adoption of Agricultural Practices, A Study in a Village in East Pakistan, Techn. Publ. no. 7, Pakistan Academy for Village Development, Comilla, 1961.
- 4) J. T. Klapper, The Effects of Mass Communications, Free Press of Glencoe, Ill., 1960, p. 8.

- 5) R. de T. Lawrence, Rural Mimeo Newspapers, Reports and Papers on Mass Communications, No. 46, UNESCO, Paris, 1965.
- 6) K. Lewin, Group Decision and Social Change, in: Maccoby, Newcomb and Hartley, Readings in Social Psychology, Holt, New York, 1958, pp. 197-211.
- 7) K. N. Singh and V. K. Kumar, Result Demonstration - Purpose, Process and Technique, Indian Journal of Extension Education, 1 (1965) 2 (July), pp. 92-101.
- 8) E. Hruschka and H. Rheinwald, The Effectiveness of German Pilot Farms, Sociologia Ruralis, V (1965) 2, pp. 101-111.
- 9) H. Schuman, Economic Development and Individual Change; A socio-psychological study of the Comilla Experiment in Pakistan, Centre for International Studies, Harvard University, Cambridge, Mass., 1967.  
A. Mollet, La pédagogie des stages d'animateur ruraux à Madagascar, International Review of Community Development, 17-18 (1967), 139-158.
- 10) F. C. Fliegel et.al., Innovation in India, The Success and Failure of Agricultural Development Programs in 108 Indian Villages, National Institute of Community Development, Hyderabad, 1968.
- 11) J. C. Marthur and P. Neurath, An Indian Experiment with Radio Farm Forums, UNESCO, Paris, 1959.
- 12) T. R. Batten, The Non-Directive Approach in Group and Community Work, Oxford University Press, London, 1967.
- 13) e.g. C. C. Taylor et.al., India's Roots of Democracy, Orient Longmans, Bombay, 1965, Ch. 23, Role and Status Relationships in Programme Administration.
- 14) A. W. van den Ban and S. S. Thorat, Administrative Relationships Influencing the Effectiveness of the Community Development Organization in India, Indian Journal of Extension Education, forthcoming.