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AGRICULTURAL EDUCATION AND EXTENSION

A. T. Mosher
The Agricultural Development Council, Inc.

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As I understand it, my assignment is to review what is known about agricultural education and extension by persons who have made a special study of this topic, and that might be useful in development activities, primarily in Southeast Asia.

Both agricultural extension education, and agricultural education in schools, have been the topic of so many research studies that it is not practical to make an inventory of all of them in a paper of this length and for purposes of the present discussion. Moreover, most of these studies have been conducted each in a single cultural region. Most of the attempts to synthesize these research results in relation to their validity across cultural boundaries have not been conducted within the framework of formal research but take the form of conclusions by persons who have been operating in the field of extension and school education and making an attempt to retain only those findings of formal research which appear to remain valid across cultural lines.

For the above reasons I have decided to cast my paper in the form of fourteen propositions that seem to conform with the findings of formal research and that seem to stand up as valid in field operations. Most, if not all, of these are already widely known and should come as no surprise to anyone. On the other hand, few if any of them are fully honored in existing developmental programs whether under the auspices of national governments or within the context of technical assistance. To point this out should not be considered a personal criticism of any of the individuals who are working in these fields in Southeast Asia. Many field operators would like to honor these propositions more fully but they are inhibited in this either by the political or administrative restraints under which they must work in a particular country or by the policies of the headquarters offices of the various technical assistance agencies. This fact underscores the need for these propositions and others like them to be much more widely known and understood by persons in positions of responsibility throughout technical assistance agencies; it is not sufficient that they be understood only by those who are serving as technicians within programs of agricultural extension or of agricultural education in schools.

The propositions I have selected for inclusion in this paper fall into three groups. The first four of them bear on the question of where projects of agricultural extension should be established. The next seven have to do with the use of different techniques of agricultural extension. The last three relate to agricultural education in schools.

Location of Extension Projects

1. There is in every agricultural locality a range of variation in the practices used by, and in the managerial ability of, individual farmers. Analysis of this variation can give an extension program enough "improved practices" to begin with, but a point is soon reached, at least for the better farmer, when practices new to the locality and generated by systematic research become necessary.

In the last few years several agricultural economists have argued that farmers in low income countries are all now doing the best they can with the resources at their disposal, and that there is no hope of increasing agricultural production in such regions except through the introduction of the results of new research from the outside. This point of view is so nearly correct that its impact on current thinking is to be encouraged insofar as it underscores the need for much more and much better research seeking new agricultural technology. But it is not quite true. A number of specific research studies have corroborated the experience of field operators that there is a substantial amount of variation in the production being secured by different farmers with essentially the same body of resources and techniques available to them. The importance of this variation to agricultural extension is that it is never too early to begin with an extension program because there are local opportunities to increase agricultural production almost everywhere, except by a few of the very best farmers already in the region.

2. In the earliest stages of the commercialization of agriculture the role of the extension worker is primarily that of an "encouraging friend devoted to progress".

Technical agricultural knowledge on the part of the extension worker is useful even in the beginning but it becomes of critical importance a little later, after several farmers have begun to accept new practices. At the earliest stages of the commercialization of agriculture when farming is still largely traditional, the extension problem is to get farmers to begin to recognize the alternatives open to them and to begin to experiment with new methods. The role of the extension worker at this stage is primarily that of reinforcing and encouraging the will to experiment by the very few farmers in the locality who may have some inclination to experiment but who are held back by prevailing social values, and by the fear of being ridiculed by their neighbors if the experiment fails. At this stage the task of the extension worker is to encourage such farmers. He needs to be able to observe and draw attention to the differences in production already existing on different farms; he needs to get farmers to talking and thinking about these differences; and he needs to encourage individual farmers to innovate.

It is slightly later in the process, after a number of farmers have begun to innovate, and after the amount of progress that is possible within the initial local variation among farmers has been largely exhausted, that the extension worker needs to be technically competent in agriculture and becomes dependent largely on outside research as the source of new practices that can be recommended to farmers for experimentation.

3. Programs of agricultural extension education can be effective only where three conditions, external to the extension program itself, are met: (a) locally adapted improved farm technology has been developed and has been tested locally, (b) the necessary farm supplies and equipment to put the practices into effect are locally available, (c) the use of the new practices offers a substantial margin of cash returns over increased costs.

In far too many instances projects of extension education have been down-graded in importance when the real reasons for their relative failure lay in one or another of these three pre-conditions, external to the extension programs themselves. The first of these pre-conditions requires the presence of an effective research program, not just at one central point in a country but with the recommended new practices thoroughly examined for local adaptability in each locality where an extension program is carried on. Such tests of local adaptability may be conducted by the research organization or by the extension service itself; but without a body of locally adapted and tested new practices no extension program can be expected to succeed.

The second pre-condition, the local availability of the farm supplies and equipment necessary to put the new practices into effect, is really a problem in commerce and industry. It requires that fertilizer be manufactured or imported and transported to local markets within easy access of individual farmers. It requires that the seeds developed by research be multiplied and similarly distributed. Pesticides, implements and other requisites of increased agricultural production also must be locally available before an extension program can be expected to succeed.

Finally, each new practice must be financially profitable. This again requires local calculations. The amount of increased yields to be expected depends upon local soils and soil moisture. The cost of new inputs is heavily influenced by costs of transportation as these affect the actual prices farmers have to pay for seeds, fertilizers, pesticides, implements, etc.

It is only where these pre-conditions are met that an extension service can be expected to be helpful and can fairly be evaluated as to the efficiency of its performance as an extension service.

4. Innovations in farming are most readily adopted when they apply to crops for which a cash market exists; they are much more difficult to introduce with respect to crops grown only for home consumption.

The reason for this is clear. Most improved practices require cash outlays. Farmers are generally willing to make such additional expenditures only when they will get an increased amount of cash in return. No matter how cogently it is argued that the nutritional needs of rural families call for the production of increased amounts and qualities of foods for home consumption, innovations to make this possible are only adopted later in the process, after farmers have developed a habit of adopting new practices in order to increase the production of crops that are marketed.

Extension Methods

5. An extension program must make frequent contact with each farmer it hopes to influence (probably at least once every three weeks).

It is a universal principle of education that repetition is essential to learning. The importance of frequency of contact of an extension service with individual farmers grows also out of the fact that all farmers, and particularly those who live close to their neighbors in nucleated villages, are surrounded all day and every day by influences tending to hold them within traditional farming methods. If any outside influence is to have any chance at all to be effective it must come regularly and frequently. Most extension services in Southeast Asia violate this proposition regularly. A common argument for the less frequent contacts usually achieved is partly that there are not enough trained extension workers, and partly that the cost of a program reaching each farmer more frequently would be prohibitive. Unless individual farmers are contacted frequently, however, the process is not extension education and it has no hope of having any appreciable influence. To expect it to have is analagous to expecting one balanced meal a month to improve the health of an undernourished person.

6. The more different extension teaching techniques are used with respect to a particular new farm practice in a given locality, the greater will be the rate of adoption of this farm practice by farmers.

Frequent repetition is one principle of learning; variety of teaching methods is another. It has been well documented by many studies in many countries that a new practice which is presented to farmers through farm visits, method demonstrations, result demonstrations, field trips, group meetings, posters and radio broadcasts is adopted more quickly and widely than where the same practice is presented through only one teaching technique no matter how frequently that one may be repeated.

7. The farm visit is an indispensable extension teaching technique particularly at early stages of the commercialization of agriculture.

The temptation is great, because of the large number of farmers to be reached by an extension service, to try to do this exclusively through group meetings, group demonstrations, and other group activities. All of these group activities are important and they certainly should be used. At the same time, recall that where agriculture is still largely traditional individual farmers need personal support in bucking existing social values. Most of the changes that have to be made on farms if agricultural development is to ensue depend on individual decisions and individual actions by individual farmers. Moreover, in pre-literate and pre-scientific societies persons place far more credence in what is aid to them by friends than in that which is written, or is advocated for group consideration.

Farm visits personalize an extension service. They show the interest of the extension worker in the individual farmer. They take into account the individual differences among farms. The importance of using a variety of extension techniques, and the valid usefulness of group activities, should never be allowed to cover up the need for many, many farm visits.

8. Group methods of working with farmers are important both in the beginning and at later stages of development.

While most of the decisions and actions leading to higher farm production must be made by individual farmers, each farmer is influenced substantially by the attitudes of his neighbors and of the various kinds of leaders in the locality. Group meetings, demonstrations, fairs, etc. can help substantially in influencing the climate of public opinion within which individual farmer operate. This is the most important reason for using group methods in the earliest stages of an extension program, although the other reason--that group methods allow an extension worker to contact many farmers simultaneously--is important at this stage also.

Later on, after changes in agricultural practices have become more numerous, the two reasons for using group methods still apply but the relative importance of each shifts. The climate of public opinion has become somewhat less of a problem, and the possibility of reaching more farmers at the same time through group methods increases in relative importance.

9. Mass media, and radio particularly, can play a supplemental role in the dissemination of new farm practices. They cannot, however, be an adequate substitute for resident extension workers.

Even in advanced dynamic agricultural economies research studies have shown that whereas mass media information plays a role in the adoption of new practices it is relatively powerless when unaccompanied by local trials and by the personal influence of neighbors. Even in such advanced economies, the resident extension worker still plays an effective role in the total process. Research studies in India and Latin American have led to the same conclusion.

But while mass media standing alone are relatively ineffective they can play a very important supplementary role where the other more personal extension methods are also being used. It is one of the real tragedies of agricultural extension programs in many countries that much greater use is not being made of radio, with programs broadcast in local dialects and with both the subject matter and the personnel developing the radio program being constantly and closely coordinated with the work of resident extension agents.

10. Demonstration farms are never an effective form of extension education.

The myth persists that having progressive "demonstration farms" scattered through a region will help substantially in increasing agricultural production on the farms of the region. Every study made of this reaches the opposite conclusion. The reason seems to be that, on the demonstration farms, too many new practices are demonstrated in conjunction with each other. Farmers feel they cannot duplicate all of the changes that would be required to make their own farms like the demonstration farms, and therefore assume that the demonstration farms are simply part of a different world from their own.

What farmers need is the demonstration of single new practices or of the joint effect of a very few new practices applied to the same crop (the "package-of-practices" idea). They do not learn from demonstration farms.

11. Regular and frequent in-service training is essential for extension workers.

The subject matter with which extension workers must deal is constantly changing. The local circumstances within which they need to use their subject matter keep changing. To be effective, they must keep changing also. While some of this progressive development of extension workers can be expected to take place simply as the result of experience in the field this is wholly inadequate. One of the greatest weaknesses of most programs of agricultural extension education in Southeast Asia is a lack of repeated and frequent in-service training for all extension workers.

School Education

12. Vocational forms of agricultural education as part of the primary or secondary level of schooling are inefficient and not worth the effort.

For what vocations might primary or secondary education in school prepare pupils? So far as agriculture is concerned these would either be farming or a career in some non-farm public or private enterprise related to farming.

So far as farming is concerned, the amount of vocational training that could be given in primary schools is of relatively little intrinsic value and takes time away from other more general studies that are more important at that stage of schooling. As for secondary school graduates, practically none of these will become a farmer if he can help it in Southeast Asia, because of the relatively small size of most farms and the unlimited income that can be expected as a farm operator. As for positions as a technician in public or private programs related to agriculture, secondary schooling cannot provide enough vocational training to meet the need. The time will quickly come, if it has not already arrived in most places, where only university graduates will be considered for such posts. Moreover, any school training that is really vocational in a how-to-do-it sense will quickly become out of date. Consequently, it is more important, both in primary and secondary schools, for students to get a broader general training than it is for any time to be spent on agricultural vocational studies.

In those places where it is not yet possible to secure university graduates for all of the personnel needed as technicians in programs related to agriculture, vocational training can be much more efficiently accomplished by relatively brief periods of specific pre-induction training, and by regular and continued in-service training, than by vocational studies as a part of the secondary school curriculum.

13. It is doubtful that a specifically rural or agricultural curriculum is wise for rural children at the primary or secondary level. Instead, a common curriculum stressing "education for development", both agricultural and industrial, rural and urban, is important at the primary and secondary level for both rural and urban youths.

Here the issue is somewhat different from the one discussed above. It is frequently argued that rural schools should be designed particularly with the needs of rural living in mind. One of the real problems when this is attempted is that it frequently leads to curricula in rural schools that do not give graduates from rural schools easy entry into various forms of higher education.

While it is not desirable to have a separate rural or agricultural curriculum, it is highly desirable to have a general revolution in primary and secondary school curricula for all pupils, rural and urban, in the "developing" countries. To far too great an extent present curricula follow the old pattern of trying to bring students up to date with respect to the past, instead of preparing them for participation in dynamic changes in the future. An "education for development" that encourages scientific attitudes, inquiring minds, preparation for full citizenship, and orientation to a rapidly changing world is badly needed in all of the developing countries. Such a curriculum, particularly at the secondary level, should help people to understand the role of agriculture in the national economy, the needs for agricultural development, the role of industrialization, the problems of achieving an increasingly open society, and general preparation for greater professional training in any one of a wide variety of fields. Many children going through rural schools will spend most of their lives in the city. Many of those going through urban schools are going to enter career where an understanding of agriculture and agricultural development is important, in one way or another. It is this general education for development that needs to be encouraged in primary and secondary schools, rather than an orientation specifically to either rural or urban problems.

14. Teaching without textbooks, or with poor or outdated textbooks, is wasteful. It is particularly wasteful when teachers have mediocre training.

This certainly is a well established finding of many studies related to school education everywhere. Nevertheless it still receives scant attention throughout Southeast Asia. The preparation of textbooks in that part of the world is seldom profitable. Training of teachers gets relatively greater attention than the preparation of teaching materials. The provision of much better textbooks, and the constant revision of these, should receive far greater attention both by national governments and by agencies of technical assistance.

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