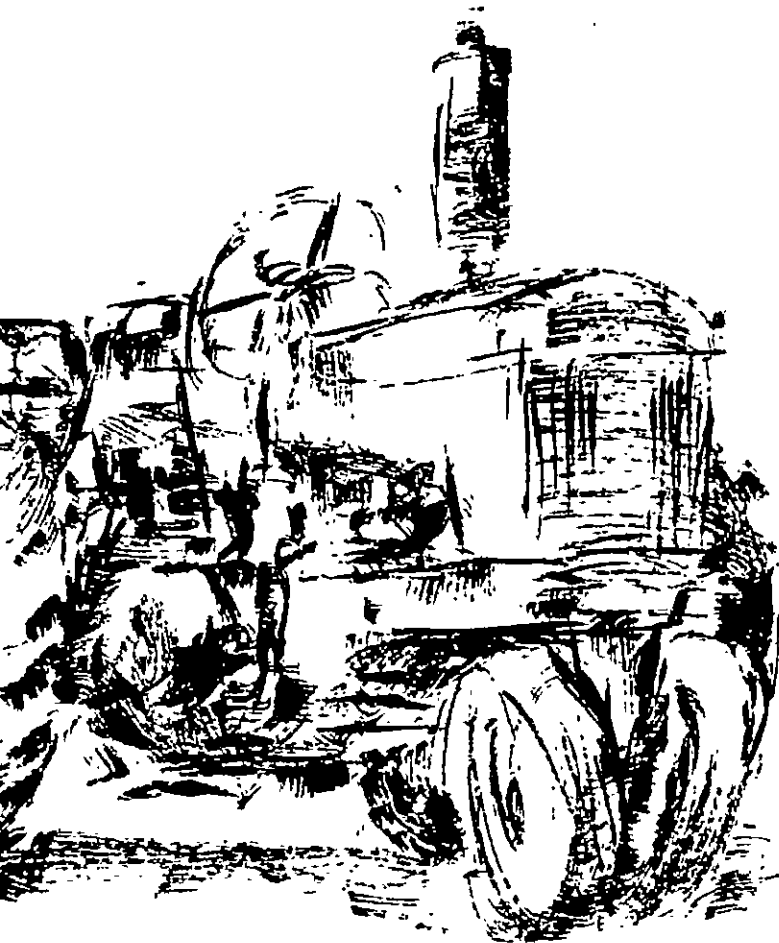


THE ADOPTION OF NEW PRODUCTS:



Process and Influence



The Foundation for Research on Human Behavior

Ann Arbor

Morgan

THE ADOPTION OF NEW PRODUCTS:



Process and Influence

In November and December, 1958, businessmen concerned with marketing met with social scientists to discuss new research findings on social factors important in the adoption of new products, methods, and ideas. This is a report of that meeting.

The price of this report is \$3.00

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Introduction

THE ADOPTION of New Products: Process and Influence is the report of two seminars held by the Foundation for Research on Human Behavior in late 1958. This is the second series of meetings on this general topic held by the Foundation. A report of the meetings held in 1956 was published by the Foundation under the title Group Influence in Marketing and Public Relations.

Following the 1956 meetings, the Foundation made grants to Iowa State College and to the University of Missouri to support research work on problems which were identified as priority next steps in this area. The findings of this research were reported at the 1958 meetings, along with other new research on group influence and the adoption of new products.

Four distinguished social scientists acted as discussion leaders:

George M. Beal, Department of Economics and Sociology,
Iowa State College.

Herbert F. Lionberger, Department of Rural Sociology,
University of Missouri.

Theodore M. Newcomb, Departments of Sociology and
Psychology, University of Michigan.

Everett M. Rogers, Department of Rural Sociology, Ohio
State University.

Samuel P. Hayes, Director of the Foundation, was chairman. A complete list of seminar participants appears at the end of this report.

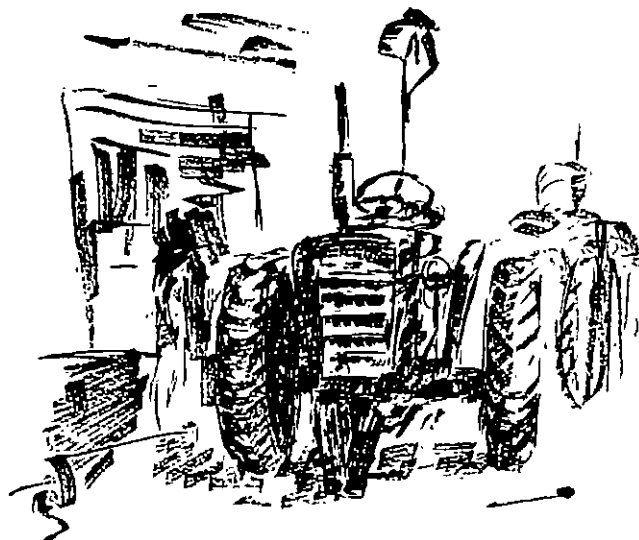
A great deal of the research on the adoption of new products has been done by rural sociologists concerned with improving farming practices and increasing agricultural productivity. They have studied the adoption of new pesticides and fungicides, new fertilizers, new machinery and equipment, new seed varieties, and new home practices such as the use of synthetic fabrics. Their research findings, however, also have implications for the adoption of other products and in other settings. There are

undoubtedly many differences between farm and non-farm situations, but a number of basic principles appear to apply to both.

This report begins with a general description of the adoption process, the kinds of change involved, and the different adopter categories which have been identified. The second section discusses some of the important factors determining the influence of different reference groups and the importance of different information sources. The four subsequent sections outline four sources of information and influence which are particularly important: informal personal sources, agency sources, commercial sources, and mass media. A brief summary at the end gives the highlights of the report.

The research which is reported here will give some notion of the complexity of the forces at work in the adoption process. However, most of this research is exploratory in nature and should not be accepted as final. As more research is done and more becomes known, some of the generalizations which are given here will be refined and changed. In the meantime, these tentative findings may well be helpful to other researchers, to businessmen concerned with marketing, and to other people who are interested in bringing about change.

In addition to the kinds of behavior discussed here, the Foundation supports research and holds seminars on aspects of organizational effectiveness, economic behavior, and public communication. Further information about the Foundation, including a list of available publications, appears at the end of this report.



The Adoption Process

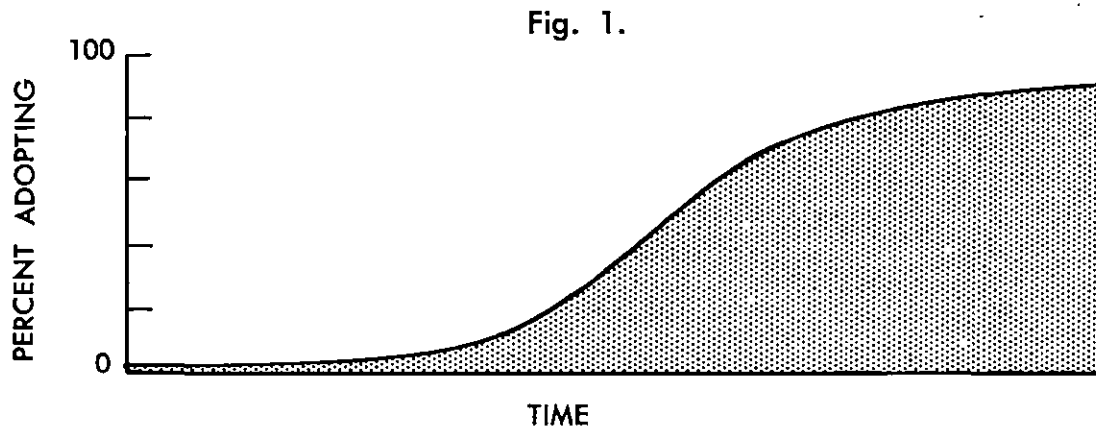
FOR MANY PRODUCTS, the process of adoption follows a rather uniform pattern, from the time the new product is developed until it is widely accepted by the ultimate consumers. More is known about the adoption of agricultural products and practices than about others. Rural sociologists have been concerned with the introduction of new practices and with new product adoption in agriculture for a number of years, and they have systematically studied the process by which change takes place. In addition, some studies have been made of other kinds of innovation, including the adoption by doctors of new wonder drugs for treatment (11, 21*), the adoption of new educational practices by school systems (24), and the adoption of color television (1). The process of adoption in all these cases has been quite similar. There are exceptions to the pattern; for example, black and white television. The general pattern appears so widely, however, that it is the central theme of this report.

Researchers have charted the course of a new product by determining when people adopt it. The curve which results is a simple one, the well known probability curve, in cumulative form (30). A few people adopt a product at first, then a few more, followed by a rather sharp increase and finally a leveling off when most of the potential consumers have adopted the product.

Such a curve is presented in general form in Figure 1. No scale is given for the time dimension, because this differs from product to product. A number of studies indicate, however, the form of the curve remains constant, and therefore that knowledge of the time required for

*Numbers refer to bibliography items listed on pages 45 through 49.

a first relatively small group to adopt a new product will, by establishing the time scale for that product, make possible fairly accurate prediction of the rate of adoption by the rest of the applicable universe.



The Kind of Change

The time it takes from introduction to wide-spread acceptance depends, in part at least, on the kind of change involved. The adoption of a new product can be viewed as a special case of attitude change. Almost by definition, such a change encounters resistance. The new product or method usually alters or replaces something which is already part of the individual's pattern of thought. If the change under consideration is a really major one, it is quite likely that the attitudes and feelings associated with the old way are strongly held and will account for a great deal of resistance. On the other hand, if the change is trivial, the associated attitudes may be taken on easily. (They may also be cast off easily, of course.) Most new products or practices probably encounter resistance somewhere between these two extremes.

When new products are being adopted, there are different levels of complexity of change. The greater the complexity, the more resistance is aroused, and the longer the period required for adoption. Researchers have listed four levels of complexity in the changes usually confronting farmers who are adopting new products or practices (30, 41). Least complex is a simple change in materials or equipment. Such a change

might be the decision to try another brand of fertilizer or to increase the amount already being used. A change in technique is slightly more complex. The farmer must learn to use the new method and this may involve more risk. An example might be applying fertilizer along planted rows, instead of broadcast over the field. The third level involves both a change in materials and a change in technique. A farmer who has never used fertilizer faces such a change. He must adopt the new material, acquire the equipment to apply it, and learn how to use the equipment. The most complex change is a change of enterprise; for example, a change from cotton growing to dairying.

Obviously there are shadings in complexity among these four types of change, and other kinds of new products may involve a wider range of complexities than do farming practices. However, the level of complexity is an important factor in determining the time it takes for a new product to be adopted. Fifteen years elapsed between the introduction of hybrid seed corn and its adoption by almost 98 per cent of the farmers (34, 35). Other changes take longer. The adoption of new educational practices by school systems took 50 years (24). Some changes take place quickly.

It is not always easy to tell how complex a change is involved in a new product. Hybrid corn is one example. Initially, this seemed like a simple change in materials. Actually, it was a far more complex change. Farmers feared the total reliance on commercial sources for seed corn, something they had previously produced for themselves. Furthermore, many farmers took pride in their ability to select good seed corn from their own crop, and they were accorded status for this skill. The new hybrid corn not only made the farmer feel more dependent, it also did away with an important source of prestige. A large majority of farmers had probably adopted hybrid corn within five years of the initial distribution, but it took fifteen years before almost all farmers were using it. Now, when a new hybrid variety of anything is introduced, it is adopted much more quickly. Examples are hybrid chickens and hybrid hogs.

The complexity of the change is only one important factor in determining the time required for adoption. There are others. For instance, cost is important. The more costly the item, the longer it takes before it is widely adopted. Rate of return and visibility of return are also important. A change which has rapid and obvious results is adopted more quickly than

a change with slower, less visible results. In the long run, of course, the change which produces slower results may return more, but it still is not adopted as quickly. A new fertilizer is likely to be adopted more quickly, for example, than soil conservation practices.

The Individual Adoption Process

The decision to adopt a new product is not simply a "yes" or "no" decision, nor is it something that happens all at once. When an individual is confronted with the possibility of change, he goes through several mental stages before he finally makes up his mind to adopt or not to adopt. Five stages in the decision-making process may be distinguished (30). Farmers readily recognized these stages when questioned regarding their decisions to make changes and adopt new products.

Awareness comes first. At this point, the farmer learns about the new product. He knows it exists, but he has only general information about it. The interest or information stage follows. If interested, the farmer begins to collect more specific information about the new product. If his interest continues to grow, he wants to know the potentialities of the new product for him; whether or not it will increase his income or contribute to other ends considered by him to be important. The next step is the mental application or evaluation stage. The farmer goes through the change mentally and asks himself, "How would I do it? Can I do it? If I do it, will I be better off?" The final stage before adoption is the trial stage. At this point the farmer tries the product out on a small scale if this is possible. Many farmers purchased a small can of weed spray and used it on their gardens before they used it on their crops on a large scale. A great many farmers planted six acres of hybrid seed corn the first year, the acreage one bushel of the new seed would sow. Some products cannot be tried out on a small scale, and it seems quite reasonable to expect such products to require a longer adoption time. However, people seem to be quite ingenious at finding ways to try new ideas. Some housewives prepared small amounts of food for freezing, and either rented locker space or used a neighbor's freezer before they gave up traditional canning methods and bought the necessary equipment for themselves. Marketing people have been aware of the value of free trials for many years. The trial stage appears to play a crucial role in the decision-making process. However, the other stages are important too, and probably give meaning to this final step before adoption. They should not be ignored.

The last stage is the adoption stage. At this point the farmer decides to adopt the new product and begins using it on a full scale. Presumably he is a "satisfied customer," at least until some other product comes along to replace it and the adoption process starts again.

Adopter Categories

Obviously, not all people adopt a new product at the same time. The adoption curve illustrates this point and suggests that some people arrive at a decision more quickly than others. Some people adopt very quickly. Others wait a long time before they take up the new product, and still others never adopt. There has been a great deal of interest in these individual differences and a great deal of speculation about "innovators," those who are first in a community to adopt a new product. To explore these individual differences, the Iowa State researchers took the data from a number of independent studies of new product adoption by farmers. They divided people into groups according to time of adoption*, and then studied each group. Significant differences appeared among them. These were the groups they distinguished and studied:

<u>People Adopting</u>			<u>Cumulative Total Adopting</u>
First	2.5%	Innovators	2.5%
Next	13.5%	Early adopters	16.0%
Next	34.0%	Early majority	50.0%
Next	34.0%	Late majority	84.0%
Last	16.0%	Laggards	100.0%

*Note: For convenience in making comparative studies, researchers used standard deviations of a normal distribution to establish the percentage breaks between categories. People who fall within one standard deviation above the mean are considered in the early majority; people who are between one and two standard deviations above the mean are early adopters. Similarly, people within one standard deviation below the mean are late majority, etc.

"Innovators" are arbitrarily defined here as the first 2.5 per cent to adopt the new product. Based on the data compiled, these generalizations appear for farm innovators (29, 30, 31).

They have larger than average farms, are well educated and usually come from well established families. They usually have a relatively high net worth and--probably more important--a large amount of risk capital. They can afford and do take calculated risks on new products. They are respected for being successful, but ordinarily do not enjoy the highest prestige in the community. Because innovators adopt new ideas so much sooner than the average farmer, they are sometimes ridiculed by their conservative neighbors. This neighborhood group pressure is largely ignored by the innovators, however. The innovators are watched by their neighbors, but they are not followed immediately in new practices.

The activities of innovators often transcend local community boundaries. Rural innovators frequently belong to formal organizations at the county, regional, state, or national level. In addition, they are likely to have many informal contacts outside the community; they may visit with others many miles away who are also trying a new technique or product, or who are technical experts.

The "early adopters" are defined as the next 13.5 per cent of the people who adopt the new product. According to the researchers, early adopter farmers have the following characteristics.

They are younger than the average farmer, but not necessarily younger than the innovators. They also have a higher than average education, and participate more in the formal activities of the community through such organizations as churches, the PTA, and farm organizations. They participate more than the average in agricultural cooperatives and in government agency programs in the community (such as Extension Service or Soil Conservation). In fact, there is some evidence that this group furnishes a disproportionate amount of the formal leadership (elected officers) in the community. The early adopters are also respected as good sources of new farm information by their neighbors.

The third category of adopters is the "early majority," the 34 per cent of people who bring the total adoption to 50 per cent. The number of adoptions increases rapidly after this group begins to adopt. (See chart.)

The early majority are slightly above average in age, education, and farming experience. They have medium high social and economic status. They are less active in formal groups than innovators or early adopters, but more active than those who adopt later. In many cases they are not formal leaders in the community organizations, but they are active members in these organizations. They also attend Extension meetings and farm demonstrations.

The people in this category are most likely to be informal rather than elected leaders. They have a following insofar as people respect their opinions, their "high morality and sound judgment." They are "just like their following, only more so." They must be sure an idea will work before they adopt it. If the informal leader fails two or three times, his following looks elsewhere for information and guidance. Because the informal leader has more limited resources than the early adopters and innovators, he cannot afford to make poor decisions; the social and economic costs are too high.

These people tend to associate mainly in their own community. When people in the community are asked to name neighbors and friends with whom they talk over ideas, these early majority are named disproportionately frequently. On their part, they value highly the opinions their neighbors and friends hold about them, for this is their main source of status and prestige. The early majority may look to the early adopters for their new farm information.

The "late majority" are the fourth category. These are the 34 per cent of farmers who have adopted the new product after the average farmer is already using it.

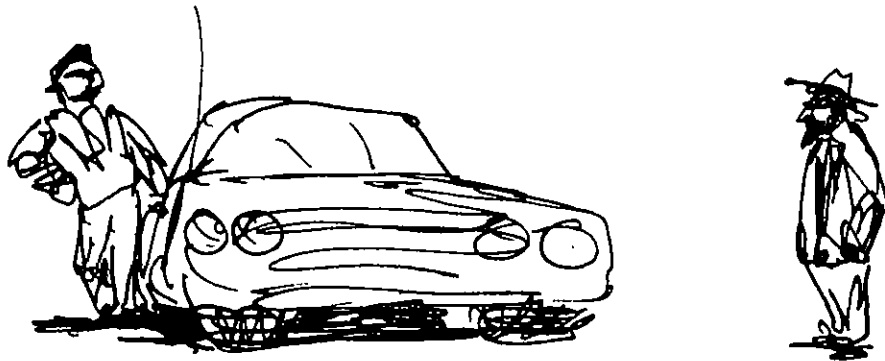
Those in this group have less education and are older than the average farmer. While they participate less actively in formal groups, they probably form the bulk of the membership in these

formal organizations. Individually they belong to fewer organizations, are less active in organizational work, and take fewer leadership roles than the earlier adopters. They do not participate in as many activities outside the community as do people who adopt earlier.

The last category, the final 16 per cent of those who adopt a new idea, are the "laggards." This group may include the "non-adopters" as well if the new product is not used by everyone.

They have the least education and are the oldest. They participate least in formal organizations, cooperatives, and government agency programs. They have the smallest farms and the least capital. Many are suspicious of county Extension agents and agricultural salesmen.

These are some of the important differences among the adopter categories. They may provide useful guidelines for further exploration. For example, each of these categories plays an important role for the others in the adoption process. Innovators are the pioneers, and early adopters wait to see the innovators' results before trying the new product themselves. The early adopters, in turn, often influence the early majority. In addition, each of these categories seems to rely on different sources of information and influence, other than the sources already described. Some of these important interrelationships, and the important sources of information and influence for each category, are discussed in detail in the following sections.



Sources of Information and Influence of Reference Groups

BEFORE detailing the sources of information and influence which appear to be important to each of the adopter categories, it will be helpful to look at some of the factors which are known about the credibility of information sources and about reference group influence.

Information Sources

One of the factors in attitude change and new product adoption is the receipt of new information by the individual. "Information" is used here in its broadest sense, and refers to any input into the mental system. The information must be believed if change in attitude is to occur. Usually, people must rely on second-hand sources of information rather than their own direct observation. Before they accept new information, they want to know the motives and credibility of the human source behind the information. Their decision to accept or reject new information and, hence, their willingness to adopt a new product, depends partly on their appraisal of the information source.

Sources of information can be divided into two general groups, personal sources and impersonal sources. Impersonal sources include the mass media. Communication through mass media is largely one way. Unlike personal communication, there is little opportunity for interaction between the source and the receiver. The receiver can only turn off the television set or put down the magazine. He cannot ordinarily ask a question of the source. Personal sources include all those where face-to-face interaction is possible. Personal sources of information can be informal (between friends, family, neighbors) or formal (between people and experts or representatives of organizations). Informal personal sources of information are generally regarded as being the most credible, since friends are

generally understood and trusted. Personal sources of information are therefore generally more effective as "decision clinchers" in securing adoption than the impersonal sources. In face-to-face exchanges, questions can be answered, the giver can "editorialize" the information he gives, lend support, or deny support to the information. Credibility of the formal personal sources may be slightly more difficult to establish, particularly if the source has a vested interest, as a dealer has, for example. A relatively high degree of credibility of mass media communication is more difficult to establish. Whether or not the information is accepted depends upon the motives ascribed to the source. For example, advertising is less credible than a news item.

Sources of information are specialized to some extent, whether they are personal or impersonal sources. A source may be regarded as credible for one kind of information, but not for another. Farm journals may be acceptable sources of information on new farming methods, but not as sources of political information. A farmer neighbor may be regarded as a reliable source of information on farming, but not on politics or religion. Expertness is not necessarily the only criterion people use in selecting a source of information as credible. Some people would rather trust a good friend, for example, than they would a scientist at the agricultural college, or the extension agent. The good friend probably knows far less about the subject, but he is already the object of trust, and he is readily accessible. He may also have tried the thing out locally. For some, this trial is a must before adoption.

Reference Persons and Reference Groups

People singly or in groups also influence the adoption of new products by serving as reference persons or reference groups.

A "reference person or group" is one to which an individual refers when forming an opinion, making a judgment, or when deciding to act in one way or another. The reference person or group may not need to be physically present, of course. In fact, most such "reference" is internal, an imagining of what someone else would think or feel about some projected action or about an anticipated or real event.

The concept of reference groups and individuals is not new, even though the label is a rather recent one (10, 22). The significance of reference groups and persons comes from the fact that man's behavior is influenced in many ways and sometimes very importantly by references to other people. In the broadest sense, our society is a reference group which has a tremendous impact on individual behavior. There are accepted standards of behavior to which people conform just because they regard themselves as human beings. There are smaller reference groups as well, and these, too, play a major role in determining individual behavior. It is not only groups that influence behavior through the references people make. Reference individuals can perform the same functions as reference groups.

Two principal kinds of reference groups or reference persons may be distinguished, called normative and comparative reference. A comparative reference group is just that--a group that an individual compares himself with in evaluating himself and his situation. The importance of these groups has been documented repeatedly by research. One study concerned the morale of Negro troops during World War II (23, 37). Contrary to expectations, the morale of Negro troops stationed in the North, where conditions in military camps were relatively good, was lower than the morale of those stationed in the South. The reason for this was found in their comparative reference to others. Negro soldiers in the North compared their lot with northern Negroes, many of whom had well-paying jobs in industry, and they felt worse off. Negro soldiers in the South compared themselves with other Negroes in the South, and they felt better off. Similarly, scientific personnel in industry may be dissatisfied although far better paid than their fellow scientists in universities. When the industrial scientists compare themselves with men in certain administrative positions of their company, requiring perhaps less skill and training but considerably better paid, they feel at a comparative disadvantage. The groups people use to evaluate themselves become extremely important to feelings of worth and success, and they are an important determinant of behavior.

Normative reference groups are groups which establish the norms or standards of expected behavior (13). The kinds of norms these groups have determine the direction of the influence they exert on the individual. For example, if a neighborhood group has a norm which favors the adoption of a new product, the group will exert social pressure or influence accordingly. Influence can be direct and take the form of negative

sanctions such as ridicule, or positive sanctions such as praise. The influence does not have to be overt. It is enough if the individual expects it. Members usually know what the group's norms are, and they act accordingly to avoid expected negative sanctions and to achieve expected positive sanctions.

The normative and comparative functions can be performed by different groups of people. Different norms and comparisons can exist for different areas of a person's life, including family, consumption patterns, job, community roles, etc.

Other distinctions among reference groups are important. For example, some are membership groups. These are of two types: (a) either small, face-to-face groups in which association is usual--such as family or friends or associates, whether business, social, religious, or political--or, (b) membership groups where association is not common--such as political party membership for the people who do not participate actively. There are role reference groups, which are almost automatically prescribed by the individual's age, sex, education, occupation, marital status, and so on. People have some sort of perception of what society expects a person of their particular age, sex, education to do in a given situation. Reference groups can also be anticipatory rather than actual membership groups. The individual may not belong to the group, but he would like to do so; so he behaves in a manner which he thinks is acceptable and appropriate to it. There are also negative reference groups, the ones the individual is trying to dissociate himself from, the ones he doesn't want to be like. If, for example, a farmer does not want to be identified with innovators, he will hesitate to adopt a new product until it is known to be acceptable.

It has been suggested that there may be some people who are not influenced by reference groups. If the concept of reference group is defined broadly enough, there are probably no exceptions to reference group influence. Communication or face-to-face interaction is not necessary for reference group influence to operate. People's behavior may be affected by groups or individuals they have never seen or met. Scientists or artists, for example, may have in mind other great scientists or artists, of past ages; or they may be waiting for future generations to approve, appreciate and accept their contributions. People who appear

to be independent of such influence may be using invisible reference groups. The groups important to them may be people long since dead or people they imagine in the future.

Reference groups or reference persons thus play a very decisive role in determining behavior. They establish norms and standards and levels of aspiration. They produce conformity as well as contentment or discontent. They are very important factors in the adoption of new products.

Sources of Information and Influence

The balance of this report outlines some of the sources of information and other kinds of influence which affect the adoption of new products, relating these sources both to adopter categories and to the stages in the adoption process. There are four kinds of sources considered here: (I) informal personal sources such as neighbors, friends, and family; (II) government agency personnel and publications; (III) commercial sources, both personal and printed, and (IV) mass media.

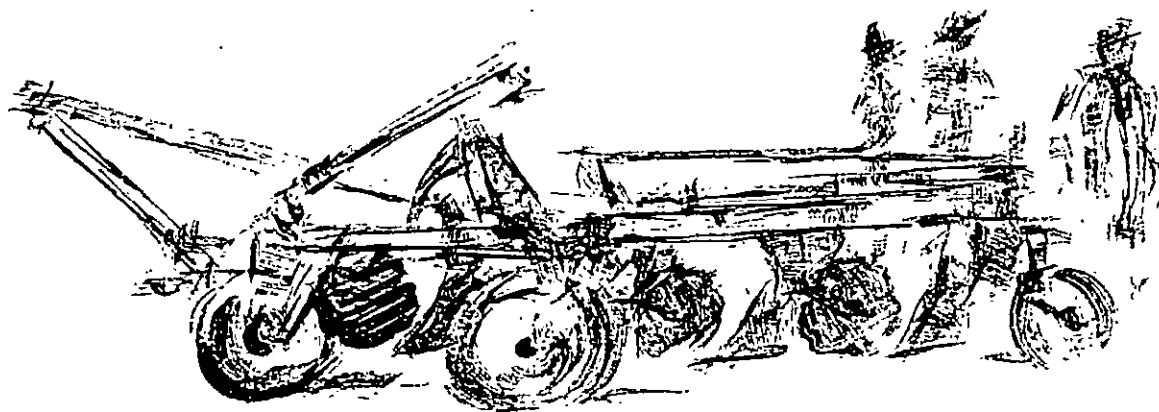
The Research

The discussion is based on a summary of some 35 studies undertaken at land-grant colleges in the United States, three of which were done at Iowa State College and the University of Missouri. All were concerned with farm people. The two at Iowa State College approach influence and information by studying five separate adopter categories (6, 30). The first of these was a survey of farmers done in 1955, using a questionnaire about new product adoption, and attempting to establish information sources and sources of influence important to individual farmers. The second Iowa study was a pilot project undertaken to test projective techniques as a method of securing information about influence (33). As answers to direct questioning are sometimes unsatisfactory, because of the tendency of farmers to give socially acceptable answers. Projective techniques help to avoid this problem.

The research done at the University of Missouri represents a somewhat different approach (17, 19). In their latest study, reported here, the researchers talked to all the farmers in two widely different Missouri

communities, to determine what new products or farm practices they had tried recently, and to explore sources of influence operating at different stages in the adoption process. Particular attention was directed to interpersonal patterns of communication and influence.

The results achieved so far must be viewed as tentative and exploratory. However, the results reported here provide some insight into the way the adoption process occurs and suggest the complexity of forces which must be considered by people interested in achieving change, or by marketing people who are concerned with promotion of new products.



Informal Sources of Information and Influence

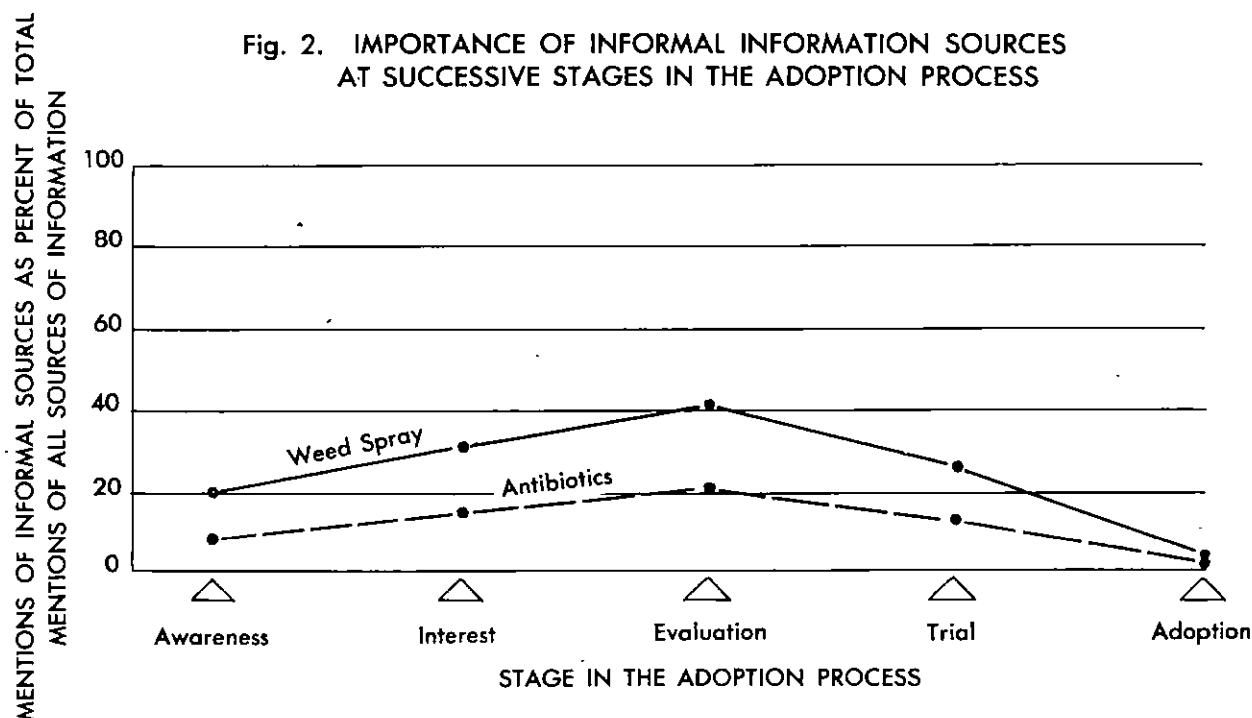
INFORMAL sources include neighbors, friends, family, innovators, and influentials. These are not mutually exclusive categories, since neighbors can also be innovators or early adopters as well. Although people may thus be playing more than one role, each of the roles is important in the adoption process and can be considered separately.

Informal Sources of Information

The research indicates that informal sources are very important as sources of information (2). However, informal sources are more important at some stages in the decision-making process than they are at others, and to some people more than others. For two new products, antibiotics in hog feeds and a new weed spray, the importance of informal sources is shown in Figure 2. Informal sources are charted as a per cent of all the information sources mentioned by farmers at each stage of the adoption process.

As Figure 2 shows, informal sources of information are found to be most important at the evaluation stage. This is the stage where farmers are making a mental application of the new product and are asking themselves, "Can I do it; will it work for me?" This is the time they rely most heavily on friends, neighbors, and family for information and advice. This stage is an especially important one in the adoption process, for it is at this stage that the decision for trial is made. Adoption usually follows trial rather directly.

Fig. 2. IMPORTANCE OF INFORMAL INFORMATION SOURCES
AT SUCCESSIVE STAGES IN THE ADOPTION PROCESS



This general pattern appears when all farmers are considered together. However, there are important differences among adopter categories. For example, innovators do not mention informal sources as important at any stage in the adoption process. On the other hand, laggards rely on informal sources to a very considerable extent. Table I breaks down each of the curves from Figure 2 and shows the relative importance of informal sources for each adopter category at each stage in the adoption process.

For all adopter categories, informal sources of information are relatively most important at the evaluation stage. The people in the later adopter categories (late majority and laggards), however, rely on informal sources of information at all stages much more than the earlier adopters and early majority do. The fact that innovators do not use such sources makes sense. Presumably, informal sources, such as friends and neighbors, do not have any information about new products which would be important to the innovator.

Table I

Mentions of Informal Sources as Percent
of Mentions of All Information Sources.

2-4D Weed Spray

<u>Adopter Category</u>	<u>Awareness</u>	<u>Interest</u>	<u>Evaluation</u>	<u>Trial</u>
Innovator	0%	0%	0%	0%
Early Adopter	20%	15%	15%	10%
Early Majority	11%	25%	39%	21%
Late Majority	18%	32%	48%	25%
Laggard	45%	55%	60%	60%

Antibiotics

Innovator	0%	0%	0%	0%
Early Adopter	9%	9%	18%	18%
Early Majority	3%	18%	21%	7%
Late Majority	6%	13%	15%	35%
Laggard	23%	18%	41%	35%

Sources of Influence

Neighborhood groups. An exploratory, pilot study carried out at Iowa State investigated the importance of different reference groups. The neighborhood reference group was mentioned as important but not very important by the majority of the farmers responding in this study. Again, however, differences appeared between the adopter categories. The neighborhood group was reported by late majority and laggard categories to be more important than it was by innovators and early adopters.

Different adopter categories perceive their neighborhood groups differently. Innovators and early adopters see a neighborhood group as one in which farmers exchange information about new ideas and new farm practices very openly. Laggards and late majority farmers see such an exchange as taking place more as a by-product of a social visit,

discussed indirectly. They are reluctant to ask questions or discuss technical problems in such a group, perhaps lest they show their ignorance. Laggards and late majority appear to use the neighborhood groups as a comparative reference group, which may account for their reticence. They compare themselves with their neighbors; their neighbors' opinions of them are important; and they exhibit tendencies to be competitive and anxious. Innovators and early adopters do not see such neighborhood groups as an important measure of their own worth and importance, and they seem to care less about their neighbors' opinions of them. Generally, innovators and early adopters tend to be oriented outside of their immediate community. They have wider social horizons than other categories; they use different reference groups and different sources of information. Innovators often travel to other states to visit with other farmer innovators.

Friends reference groups. Friends reference groups were important for all the farmers interviewed. Friends appear to perform three functions: (a) they are sources of information, (b) they provide a sounding board for ideas, and (c) they are used to confirm the correctness of decisions already made. Friends as a reference group appear to be more important for early and late majority farmers and less important for laggards.

The late majority tend to "merge" neighbors and friends. These roles are apparently performed by the same people. For early adopters and innovators, friends and neighbors are often quite different groups of people; their friends may live at a considerable distance. Most adopter categories use friends extensively as a source of information, and communication between them is regular and frequent. Laggards are the only group where interchange between friends is perceived as "just conversation," and not as a source of new ideas.

Family reference groups. Most of the farmers studied see their families as important reference groups, but the late majority and laggards place a greater importance on the family than the earlier adopters do. This finding tends to support other research which suggests that dependence on family ties and a tendency to adopt new products are negatively correlated; i. e., the greater the dependence, the less the tendency to adopt new products (33, 40).

Innovators. Innovators perform an important function in the adoption process. They make the new product or method visible in the community and take risks others are not willing or able to take in demonstrating local adaptability. Also they are influential on farming matters in their own special way. They are watched, but may not be closely followed. In communities where local standards dictate caution in accepting the new, they are not frequently sought for advice by the great majority. In communities more favorable to change they may be. There are several reasons which may account for reluctance to accept their advice uncritically. For one thing, these innovating farmers have larger enterprises and more risk capital than their neighbors. This may make it difficult for other farmers to identify themselves with innovators. Where income differences are very great, small farmers may say, "It will work for him, but that doesn't mean it will work for me on my farm." It is also true that innovators experience failure as well as success in their enterprises. Some farmers simply cannot afford these failures, others tend to regard such failures as an inexcusable waste or causing intolerable loss of prestige. Furthermore, the innovators do not particularly care about the opinion of their immediate neighbors and do not permit the attitudes of neighbors to affect their own behavior. The other farmers are more inclined to sense this, and react against it. One of the first Iowa studies on the diffusion of farm practices suggested that other farmers were inclined to scoff at innovators and regard them as close to the "lunatic fringe." However, when projective techniques were used, most farmers were found to be grudgingly grateful to the innovators for trying out the new product or practice (33). In spite of their superficial attitudes, farmers watch carefully what the innovators do, and probably respect them more than they care to admit.

There is a second important set of factors determining the influence of innovators, and these are largely community factors. Some communities seem to have progressive traditions, while other communities are traditionally more conservative. In the context of progressivism, the innovator may be more generally accepted and more influential in the community than he is in the traditionally more conservative communities (20). In either case, there are some people who prefer to wait for someone else to try it locally, and who do not wish to be thought of as the first to try it.

Early adopters and early majority as influentials. In terms of our time sequence, early adopters are the second group of people to adopt the new product or practice. These farmers tend to have less risk capital, and hence must be more cautious than the innovators. It is possible that some would be innovators if they could afford to be. However, they wait until the product or practice has been tried out and there is some measure of its local success. It will be recalled that these early adopters are often in positions of leadership in community organizations. They also provide persons most sought for advice and counsel in matters related to farming. When they adopt a new product, it is given still greater visibility in the community, and information about their experience is pumped into the formal organizational channels and the informal communication networks. The early adopters demonstrate the new product to their neighbors. When influentials begin to adopt, others follow in rapid succession.

The early majority differ from the early adopters mainly in degree and not in kind. They belong to many formal organizations, where the experience of early adopters may be available to them. Their decisions to adopt a new product are often greatly influenced by the success or failure of these early adopters.

The influential as a special functionary. The work done at the University of Missouri on influentials represents a somewhat different approach to studying the diffusion process. In the Missouri study, "influentials" were defined as persons named as most important influences in final decisions to change farm practices and purchase farm supplies. In this sense, they are "decision clinchers." The research was done in two very different communities in Missouri; one in which farmers were regarded as slow to change, and one in which a high degree of rationality in decisions to change was assumed to prevail. Sources of influence were secured for some one thousand decisions involving farm practices and an equal number involving farm supplies. The influential, it appears from this research, is the special functionary whose influence is decisive, but who may exert this influence on people in any adopter category and may himself be in any of the earlier adopter categories.

It may be that some influentials have dual roles and are both formal and informal sources of influence at the same time. In the progressive community (called Prairie) 39 per cent of all the influentials were other

farmers, friends, and neighbors--informal sources. Forty-three per cent were of this informal kind in the more conservative community (called Ozark). However, in each of the two communities there was one farmer who was also a dealer, and these two people received, respectively, 13 per cent and 15 per cent of all the mentions of individuals who clinched a decision.

In both communities, there was a high concentration of influence in a relatively few individuals. When people were ranked according to the number of times they were mentioned as influentials, the results shown in Table II were obtained.

Table II

Concentration of Influence Among Farmers.

<u>Number of Mentions</u>	<u>Number of Farmers</u>	
	<u>Prairie</u>	<u>Ozark</u>
None	150	192
1 to 2	54	39
3 or more	15	7

These influentials did not appear to differ greatly or consistently from other farmers in age, residence in the community or in schooling. However, they did operate larger farms and had much higher incomes than people not designated as influentials. They had decidedly higher prestige scores, and their level of living was somewhat above average. Influentials were much more active in formal social groups, particularly those drawing their membership outside the community. In this particular study, they were no more likely to be members of social cliques that serve as barriers to communication than were other farmers. On the contrary, the influentials seemed to be more available to the community than people who were not named as influentials. They were named as close friends and associates twice as often as people who were not designated as "decision clinchers." Although influentials were almost always in the upper social strata, social distances did not block effective communication. Other persons rating at the bottom of the

prestige scale sought advice from influentials at the top of the scale. Influentials were very well qualified to give advice on farming matters. Most of these influentials were using a great many of the improved practices. Non-influentials were using an average of 30 per cent of the practices considered in Ozark; the influentials were using up to 65 per cent. In Prairie, the figures range from an average of 48 per cent for non-influentials to 72 percent for people mentioned three times or more as influential. Their competence to give advice is corroborated by the active manner in which they were seeking new knowledge and the quality of the sources they used to get it. In a sense, they serve as intermediaries between direct information sources and other sources. Sometimes farmers will accept advice from influentials when the same advice through direct channels would be rejected. When an influential says something is all right, it means just that for many people. It is when these people enter the adoption picture that the adoption curve takes its sharp rise.

Some attempts have been made to get local farmers who are especially influential in farming matters to help speed up the rate of adoption of a new product or practice. However, people singled out to help in this way are often viewed with skepticism by their peers. Their motives may be questioned or they may be accused of moving too fast, or being talked into it, or acting like an innovator. Informal leaders may in this way lose their ability to influence other farmers quickly. Similarly, these leaders may be "worn out" if the county Extension agent works too closely with them. Then neighbors no longer trust them as a credible source of new farm information.

The adoption process may be speeded up by directing special efforts to influentials, but it must be done in a subtle manner and must not arouse the suspicion of those who trust them. It is possible that change may be speeded up by short-circuiting the diffusion process, but effort directed to facilitating the process as it normally operates is likely to be more fruitful.

The early adopters add credibility to the new product or practice when they adopt it. When the early majority begin to adopt, the reference group influence of neighbors and friends, which is so important for the later categories, begins to operate; and more and more people take up the new product or practice.

Influentials serve as key communicators, advisors, interpreters, and legitimators within these reference groups. They form an important communicating link between originating sources of information and farmers who require the advice of acceptable local associates before acceptance. In a sense, they are the key reference individuals. County agents, agricultural salesmen, and others working with farmers may more effectively reach their goals if they work through these leaders, but they must exercise care in the way they do this.



Agency Sources of Information and Influence.

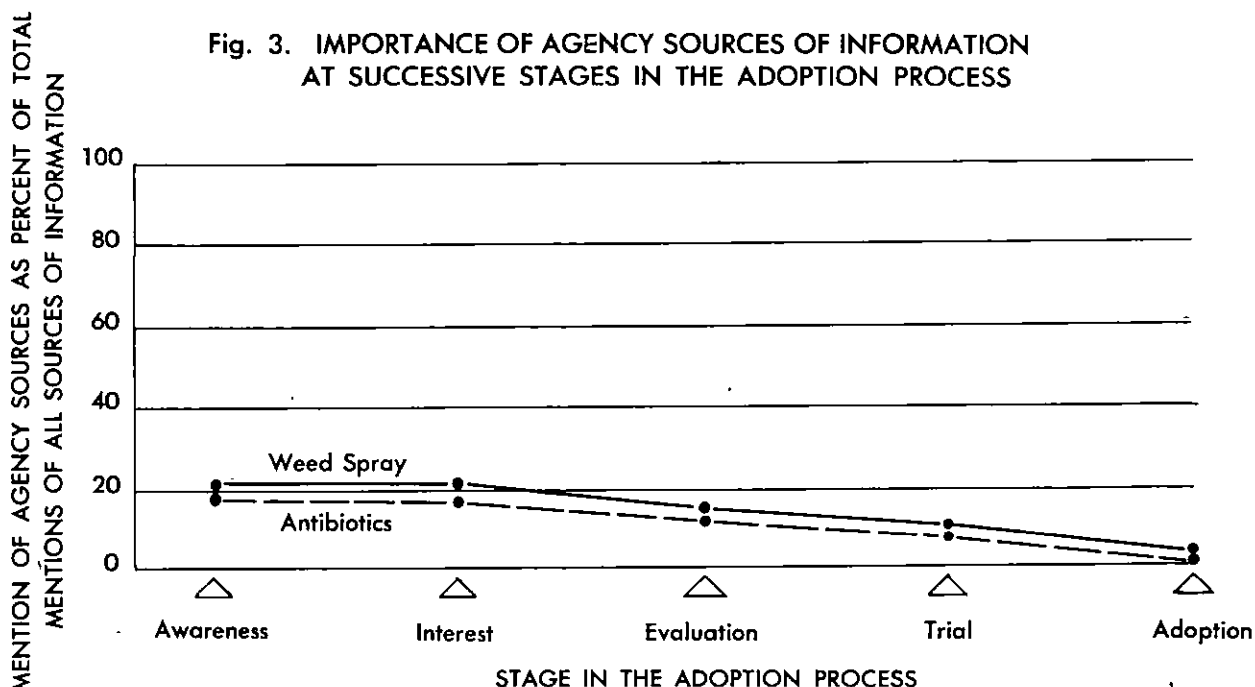
THE TERM "agency sources" is used here to include U. S. Department of Agriculture personnel, extension agents, university personnel, including researchers, and other impartial experts. Sources such as these are "non-partisan" in the sense that they do not have anything to gain personally by the adoption of new products. Consequently, they presumably enjoy more credibility from farmers than a commercial source such as advertising. Agency sources are probably more important in farming than they are in any other sector of the economy; but business schools, universities, and government agencies such as the Food and Drug Administration or the Securities and Exchange Commission may perform a similar, if less active, role for other industries.

Agency Sources of Information

Agency sources are important, but again they are more important at some stages in the adoption process than they are at others. The importance of agency sources of information at each stage for all farmers is shown in Figure 3.

Agency sources appear to be most important at the awareness stage, but they perform some function at all stages. The importance of agency sources is more obvious when the adopter categories are treated separately.

Fig. 3. IMPORTANCE OF AGENCY SOURCES OF INFORMATION
AT SUCCESSIVE STAGES IN THE ADOPTION PROCESS



The case of the new weed spray is the more dramatic example of the place of agency sources in the process of adoption. However, in both cases, agencies are of tremendous importance to innovators. It is from agency personnel that the innovator learns about new products, and agencies are important to a considerable extent in every stage of the innovator's adoption process. When asked about their "friends," innovators frequently mentioned agency personnel, including Extension Service people and personnel at the universities and agricultural colleges. In some cases, innovators by-pass the Extension people near at hand and go directly to the source of information, the researchers at the agricultural college. Apparently such trips are not unusual for innovators; nor is it unusual for an innovator to travel a considerable distance to talk with people who are innovating in other areas of the state or even elsewhere in the country.

Table III

Mentions of Agency Sources as Percent
of Mentions of All Information Sources.

2-4D Weed Spray

<u>Adopter Category</u>	<u>Awareness</u>	<u>Interest</u>	<u>Evaluation</u>	<u>Trial</u>
Innovator	80%	60%	80%	40%
Early Adopter	30%	25%	10%	10%
Early Majority	14%	18%	11%	11%
Late Majority	21%	21%	13%	9%
Laggard	5%	10%	10%	0%

Antibiotics

Innovator	50%	25%	25%	25%
Early Adopter	9%	9%	9%	1%
Early Majority	32%	21%	14%	7%
Late Majority	10%	15%	13%	9%
Laggard	18%	23%	6%	23%

Agencies as a Source of Influence

Agency personnel, agricultural scientists, and other innovators probably provide the innovator with his most important reference groups, so far as innovation is concerned. These are the people he compares himself with, the standards he sets for his behavior, and the people he regards as most like himself.

The county Extension agent is generally regarded by farmers as a line of communication to agricultural researchers. Only the innovators and

early adopters suggest the possibility of going directly to the scientists themselves for information. Early adopters and innovators tend to be on a friendlier basis with their county Extension agent than later adopters. They have more frequent contact with Extension Service personnel, have a better knowledge of Extension Service activities, and tend to have a more favorable attitude toward those activities. They expect the agent to drop in for a friendly chat as well as a technical chat. Some early adopters suggest that the agent might even come to see them in connection with an experiment that they might be performing together. Early majority farmers, on the other hand, say the agent would come out to see them only if they actively solicited his aid. Unlike the innovators and early adopters, the early majority are not on a first-name basis with the county agent.

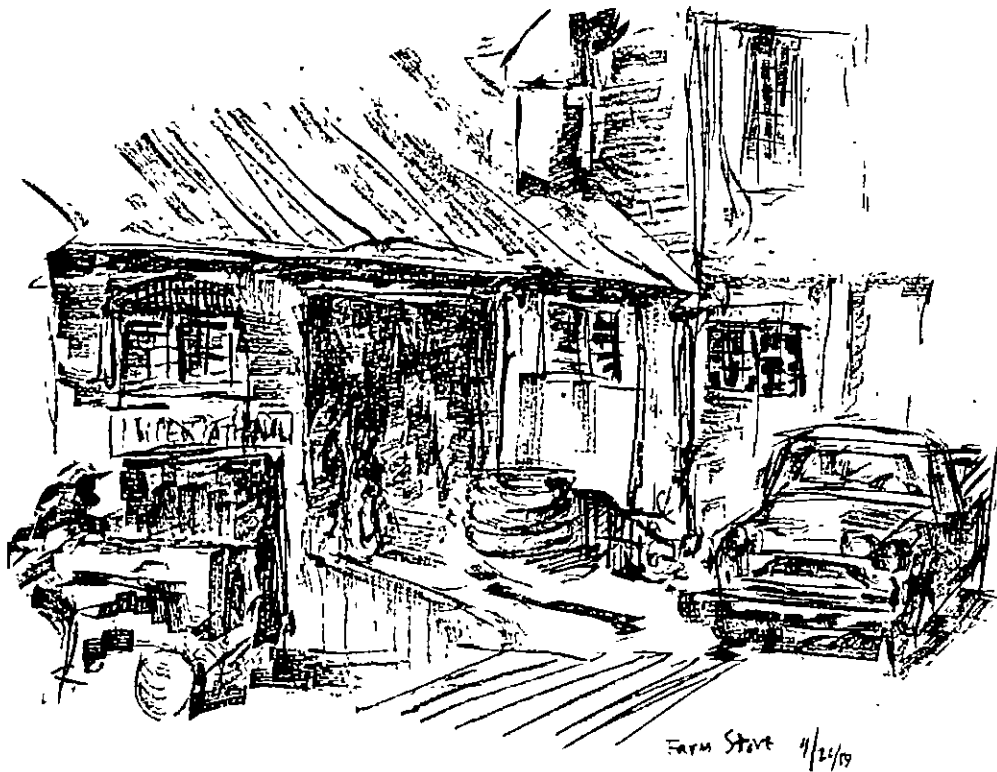
The Missouri research is consistent with these findings from the Iowa State study. In Ozark community, only 52 per cent of the non-influentials mentioned the county agent as an information source; while 71 per cent of the farmers with three or more mentions as influentials used this source. Similar differences appeared in Prairie, and the same order of difference held for such other agency sources as the university, vocational agriculture teachers, adult evening classes, and farm meetings.

Attitudes toward the agricultural research worker are also interesting. According to the Iowa study, about one-half the farmers perceive the scientist as a research worker developing new ideas, and the other one-half perceive him as performing services, such as soil testing. The farmers who see him developing new ideas tend to be the more rapid adopters. Innovators and early adopters have a more favorable attitude toward the scientist than do other farmers, and they believe the scientist has a favorable attitude toward the farmer. The majority of farmers view the scientist as a very distant figure, a distant reference person. Innovators are the only group of whom this is not true.

Conclusion

Agencies are an important source of information for the innovators and early adopters. They are important to a lesser degree for other adopter categories. Their most important function is at the awareness stage in the

adoption process of the innovators. They are both a credible source of information and an important reference group for farmers who are first to adopt a new practice.



Commercial Sources of Information and Influence

COMMERCIAL SOURCES include dealers, salesmen, and company representatives. In other words, they are defined here as the personal commercial sources, rather than mass media commercial sources, such as advertising.

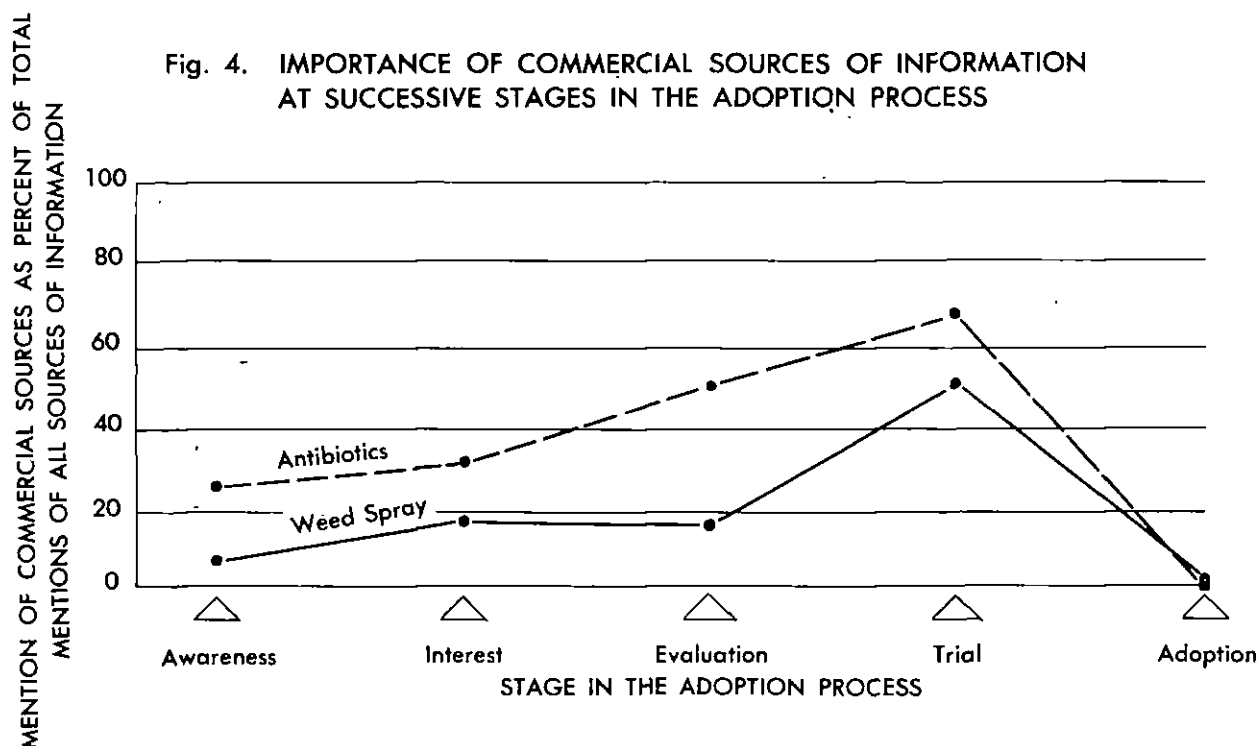
Commercial Sources of Information

Like the other sources of information, commercial sources are more important at some stages in the adoption process than they are at others. The findings for the two products studied at Iowa State are shown in Figure 4.

Commercial sources are most important at the trial stage in adoption, the stage when the farmer has actually purchased a small amount of the new product and is trying it out. At this point, he relies more heavily for information on commercial sources, dealers, etc., than on any other source. When the same data are broken according to adopter categories, a slightly different and more revealing pattern emerges for these two products.

It is quite likely that similar differences appear among other product types. Commercial sources may be more important for some products than for others. Generally, it appears that, at the trial stage, commercial sources dominate all the others for early adopters, early majority, and late majority. For innovators, commercial sources are

the single most important source at the trial stage for antibiotics, and tie in importance with agency sources for weed spray.



Another Iowa study, done on fertilizer, suggests something of the credibility of commercial sources of information (3). Farmers were asked what they would do if their fertilizer dealer told them about a new fertilizer. Only nine per cent said they would try it. Another nine per cent said they would discuss it with their dealer, and 55 per cent said they would either try to get more information or would agree to think about it. When asked what they would do if the state college recommended use of a certain amount of fertilizer per acre, 43 per cent said they would go along with it, and another 20 per cent said they probably would go along with it. Only 13 per cent said they would think about it, and six per cent said they would want more information. These results indicate that commercial sources are considerably less credible than non-commercial sources. However, commercial sources

can be important, and there is a good deal of evidence to suggest that dealers do not perform as effectively or aggressively as they might, or as they are expected to by their customers.

Table IV

Mentions of Commercial Sources as Percent
of Mentions of All Information Sources.

2-4D Weed Spray

<u>Adopter Category</u>	<u>Awareness</u>	<u>Interest</u>	<u>Evaluation</u>	<u>Trial</u>
Innovator	0%	0%	0%	40%
Early Adopter	7%	30%	35%	70%
Early Majority	7%	25%	18%	54%
Late Majority	4%	13%	14%	42%
Laggard	15%	20%	10%	20%

Antibiotics

<u>Adopter Category</u>	<u>Awareness</u>	<u>Interest</u>	<u>Evaluation</u>	<u>Trial</u>
Innovator	25%	50%	50%	50%
Early Adopter	36%	55%	54%	72%
Early Majority	29%	25%	50%	82%
Late Majority	23%	25%	49%	63%
Laggard	12%	47%	53%	30%

Commercial Sources of Influence

About one-fourth of the sources mentioned as most influential in final decisions to change farm practices were dealers, in both Prairie and

Ozark, in the Missouri research. In Prairie, a single farmer-dealer received 13 per cent of all the influence mentions and a similar farmer-dealer in Ozark received 15 per cent. The fact that these two farmer-dealers were involved as decisive forces in more decisions than any other single person, source or medium, with the possible exception of the county agent in Prairie, tends to emphasize the potential of dealers as important factors in such decisions.

Many companies use scientists in their advertising to lend credibility to their claims. Farmers in the Iowa study were asked which would be more reliable, commercial or non-commercial scientists. Early adopters tend to place greater credibility on college or government scientists; later adopters are likely to respond that it would make no difference. However, none of the farmers said the commercial scientists are more reliable. Commercial scientists are assumed to have ulterior motives. The amount of influence which commercial scientists have is open to some question, and the usefulness of presenting scientific personnel in advertising is likewise open to question.

Conclusion

Commercial sources of information and influence are most important at the final stages in the adoption process, and they are particularly important for the middle adopter categories. When farmers are about to try a product, the dealer becomes the most important source of information for some types of change. However, the dealer has probably not played as important a function as he could in making the farmer aware of a new product, or providing him with information, or influencing his decision. The farmer must, or does, rely on other sources to find out about new products and to help him evaluate the product's potential for him. In a sense the farmer persuades himself.



Mass Media Sources of Information and Influence

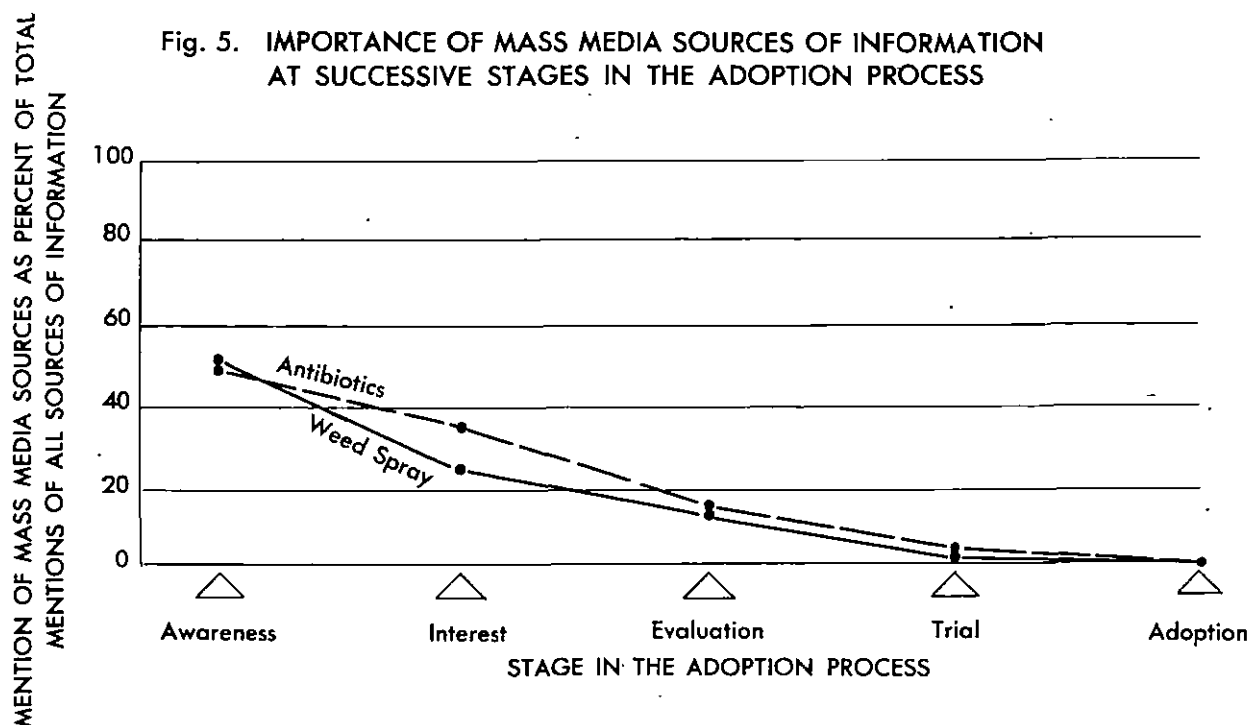
THE MASS MEDIA include radio, television, newspapers and magazines, farm journals, and specialized publications. College bulletins or other material issued by agency sources are not included here.

Sources of Information

Mass media are most important at the awareness stage in the adoption process (2). From a peak at this stage, the importance of the source declines steadily for both products studied (Figure 5).

Again there are major differences among the adopter categories (Table V). The mass media are far more important in the awareness stage for the middle categories than they are for either innovators or laggards. The innovators rely on the mass media more at the interest stage. They hear about the new products somewhere else first, but then use the mass media to secure additional information.

According to the research done both at Iowa State and at Missouri, innovators and influentials take more farm magazines and specialized publications, and are exposed to more other sources of mass media information, than are any other group. Adopter categories can be ranked according to the number of publications they receive, and the ranking is the same as the ranking by time of adoption. Innovators receive the most; laggards receive the least. Farm publications stand out as an important source of information about new farming practices, as might be expected.



Mass Media Sources of Influence

In the Missouri research, radio turned up as an important source of influence at both early and late stages in the adoption process. Its importance in "clinching decisions," as shown in this research, is contrary to most findings of other research. This importance in these two communities is probably due to the facts that radio is an information source that is well institutionalized in both communities and that the persons who do the broadcasting are trusted for their judgment and integrity.

Farmers did not mention television as influential in their decision to try new products. However, in a second study undertaken to explore this further, 45 per cent of the farmers owning sets in Prairie and 23 per cent of those in Ozark were activated in some way by television. They had either purchased something, tried an idea, gone to the county agent, or talked with other farmers about it. A comparison of the television-activated and non-activated farmers presents some interesting differences. Activated farmers had more schooling and higher farm practice adoption

Table V

Mentions of Mass Media Sources as Percent
of Mentions of All Information Sources.

2-4D Weed Spray

<u>Adopter Category</u>	<u>Awareness</u>	<u>Interest</u>	<u>Evaluation</u>	<u>Trial</u>
Innovator	20%	40%	20%	0%
Early Adopter	45%	35%	30%	0%
Early Majority	64%	32%	14%	0%
Late Majority	53%	23%	11%	4%
Laggard	35%	10%	10%	0%

Antibiotics

Innovator	25%	25%	25%	25%
Early Adopter	46%	27%	18%	9%
Early Majority	36%	36%	14%	0%
Late Majority	61%	45%	21%	2%
Laggard	47%	12%	0%	0%

scores, and they had decidedly higher gross incomes. Such people are more often mentioned as innovators and decision-influencers than are farmers who are not activated. On the basis of this, it may be assumed that television does perform an important communication role for the people who are most likely to adopt first. How it compares with other sources, such as farm magazines, is not known. Research done elsewhere suggests that television is usually a more effective source of influence than can be assumed on the basis of this study (18, 25, 27).

In another Missouri study where television was better institutionalized as a source of farm information, 92 per cent of the household heads and 88 per cent of the wives living in the open country recalled at least one of the program subjects telecast during six months of a farm and home show (20).

Furthermore, a sizeable number did something about what they saw. Their responses appear in Table VI.

Table VI

Actions Based on Viewing Television Show.

<u>Action</u>	<u>Household Head</u>	<u>Wife</u>
Talked to others	26%	17%
Wrote for a bulletin	8%	11%
Went to county extension agent	10%	6%
Did at least one of above	36%	37%

An NBC before-and-after television study showed that television advertising sharpened awareness of brand names, riveted brand names to the product, drove home the product trademark, sold the product slogan, enhanced the brand reputation, shifted brand preferences, and most of all, increased by substantial margins the sales of products advertised on television.

Conclusion

The mass media are important sources of information at the awareness stage of the adoption process, particularly for the middle adopter categories. Innovators find out about new products elsewhere and use mass media as a source of additional information. The innovators, early adopters, and early majority are the ones who are most exposed to the mass media. They take the most publications and are activated by what they learn. Farm magazines appear to be the most important source of information on new farm products and practices. Daily newspapers are also important. The importance of both radio and television as sources of information probably depends upon the extent

to which they are institutionalized in the community. People who are motivated by television seem to be more influential than those who are not. What these people learn they probably pass on to others in the community who are less likely to be activated by television.





Summary

THE material which has been presented in this report is tentative, but hopefully it will throw light on some of the complexities of the adoption process. It should also be pointed out that this research has been done on products which were successful, products which have become widely adopted. A diagnosis of failures would be a useful way to supplement research such as this, and it might well reveal a good deal more about this process.

It is clear that the adoption of new products and practices is not a single decision, that people go through several decisions, and that different sources of information and influence are important at each stage for different kinds of people. Rapidity of adoption depends in part on the complexity of change, and on the risk, cost, and visibility of possible returns.

Innovators, the first people to adopt new products, have more risk capital and larger farms than other farmers. Agency sources are their most important source of information, with mass media and commercial personal sources following second. They are oriented outside their immediate community, frequently having friends at a considerable distance. Their reference groups and persons probably include other innovators and agricultural scientists. Innovators do not always influence farming practices directly in their communities, but they give new products and practices visibility.

Early adopters, the second group to adopt the new product, have smaller operations and less risk capital than innovators. They can

afford to take fewer risks. Apparently these people hold a disproportionate number of the leadership positions in the formal organizations of the community, a fact which makes their experience available and impressive to other farmers. Early adopters watch the innovators and, when the success of a product is reasonably assured, they try it. They rely on commercial, mass media, and agency sources of information more than other sources. At the awareness stage they rely somewhat on informal sources such as neighbors and friends, but this is relatively less important than their reliance on other sources. Early adopters take more magazines and farm journals than people who adopt later, but they do not take as many as the innovators.

Influentials or informal leaders are inclined to be early adopters in communities where status is accorded for alertness to new developments and early use of those things which work. In more conservative communities they adopt later. But in any case, they are known for their sound judgment and good advice.

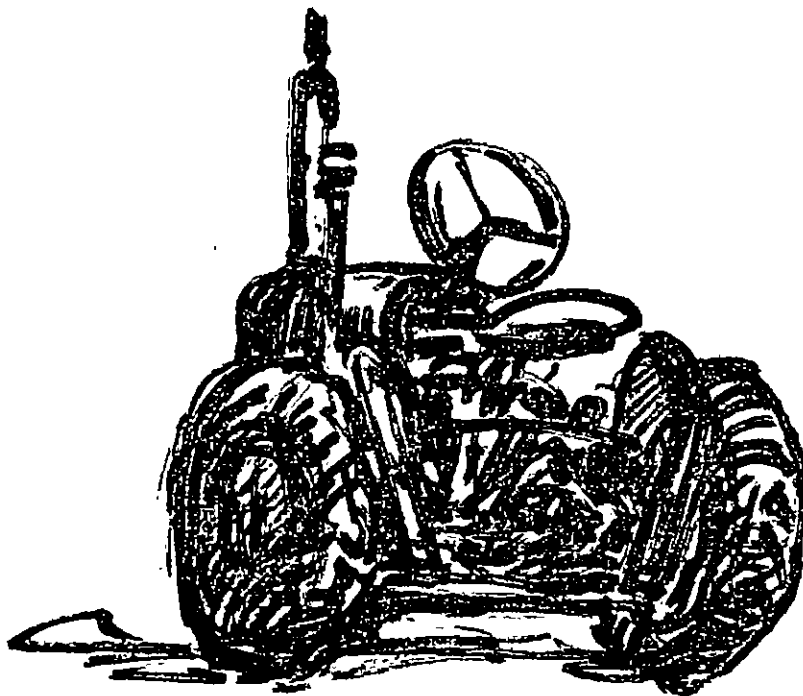
The early majority are defined as the 34 per cent who adopt a new product just before the average farmer does. These people belong to formal organizations where they have access to the experience of the early adopters. They take fewer magazines and journals than the early adopters but more than the late adopters. They rely on informal sources of information more than the early adopters do. When these people begin to adopt, a great many other people can be expected to follow their example.

The late majority are defined as the 34 per cent who adopt a new product after 50 per cent already have. These people do not belong to as many formal organizations and have fewer lines of communication outside of their immediate neighborhoods. They use their neighbors as a comparative reference group; they tend to feel competitive with their neighbors; and they are concerned with what other people think of them. They take fewer magazines and rely heavily on informal sources of information and influence. The early majority and early adopters probably make up the bulk of these informal sources.

The laggards are the last to adopt. These people tend to be older, and they have less education than earlier adopters. They take fewer

magazines. The family is an important reference group for these people, and they seem to be very closely oriented to their immediate neighborhood. Their dependence on informal sources of information is greater than that of any other category.

These are the highlights of the research. Much more research needs to be done to confirm these tentative findings. Furthermore, research should be extended to other kinds of products and other types of enterprise. However, these findings may be of help in pointing directions for new research and may suggest some factors which will be useful for marketing, whether it is new products, new methods, or new ideas that are being marketed.





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Note: A more complete and annotated bibliography is being prepared by Professor Herbert F. Lionberger at the University of Missouri, Columbia, Missouri. A separate bibliography on diffusion has just been published by the North Central Regional Rural Sociology Committee, Iowa State College, Ames, Iowa.



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