

TESTING A CULTURALLY-BOUND MODEL FOR ACCEPTANCE
OF AGRICULTURAL PRACTICES

by

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INTRODUCTION AND STATEMENT OF THE PROBLEM

Agriculture is the basis of life in India. Seventy percent of the population depends on it for a livelihood. Yet the problem of very low yield remains; despite recent efforts, the country has not yet been able to achieve self-sufficiency in foodstuffs. At the same time, the population is increasing at the rate of five million every year.

The five-year plans of India include major programs for the development of agriculture, irrigation, and power. These programs aim at solving some of the basic problems of rural India, like the shortage of foodstuffs and industrial raw materials, and the peasants' utter dependence on rainfall.

To increase the output of food and other agricultural produce, it is necessary that farmers should adopt improved farm practices. They are given free technical advice, and arrangements are being made to provide them with adequate financial credit by the National Extension Service.

The rapid technological development of United States farming is largely a result of the diffusion and acceptance of new ideas and practices. The invention and development of new ideas by scientists are of little use unless this technology is communicated to the farmers and made use in practice by them. There is evidence that a considerable time lag exists between the development and the actual adoption of a new idea; for example, Tenmarq wheat was introduced in Kansas in 1932 and required 12 years to

reach 37 per cent adoption.¹

The efficiency of American farming has increased tremendously. One farmer raised enough agricultural products to support four other persons in 1930. By 1941, one farmer supported ten other persons, and in 1959 this figure was 24. Production efficiency has doubled in the past 15 years. It has been estimated that if all farmers in 1959 had employed the latest recommended farming practices, each would have supported 45 rather than 24 persons.²

The same is true about India. The present increasing trend in agricultural production should be attributed to the adoption of improved farm practices by the farmers. In his address to the joint session of the two Houses of Parliament on February 17, 1961, the president of India said:

Agricultural production has shown definite improvement in 1960-61. The production of Kharif cereals in 1960-61 is now estimated to be more than two million tons higher than that in 1959-60, and it is expected to be higher than even in 1958-59 when our production figure was the highest on record.³

There was a 15 percent increase in food grains in 1960-61 over the 1955-56 production, and the percentage increase for cotton was 31 for this period. During this period, the population increased 1.25 percent per annum.³

¹ L. Brandner and M. A. Straus, "Congruence versus profitability in the diffusion of hybrid sorghum," Rural Sociology 24 (Dec. 1959):381-383.

² E. M. Rogers, Social Change in Rural Society. New York: Appleton-Century-Crofts, Inc., 1960, p. 5.

³ The Hindu Weekly Review, Feb. 20, 1961.

There is a great scope for further increase in agricultural production if all the farmers employ improved farm practices. Intensive efforts have been made to motivate the farmers to increase production by adopting improved farm practices since the inception of the "Grow More Food" campaign during World War II. Despite these efforts and the theoretical and practical justifications for improved farm practices, it has been observed by the Extension workers that these practices are not used by all farmers.

It is for the rural sociologists to explore the reasons for the adoption of new farm practices by some farmers and non-adoption by others.

Students of cultural change have repeatedly shown the influence of social and cultural factors upon the acceptance of innovations.⁴ Agricultural innovation is a change which involves not only a change in materials but also a complex of changes with regard to their use. As agriculture becomes more complex, and problems of adjustment more acute, it becomes increasingly important to know more about the educational processes which lead people to accept new ideas and adapt them to their individual enterprises.

Process of Acceptance

Innovations arise out of the on-going activities of man. Agricultural innovations occur as the result of consciously

⁴ H. G. Barnett, Innovation. New York: McGraw-Hill, 1953.

directed effort. They are mostly the product of the research efforts of the agricultural experiment stations or of other public or private research institutions. The purpose of these research efforts is usually to develop techniques that allow the farmer and his family to do their work more efficiently or with less effort. Efficiency is thus the main criteria for the development of these innovations.

The act of adopting a new practice is the decision of an individual farmer or householder and his family, and is preceded by a series of events or activities bearing upon the decision. The findings of 35 research studies conducted during the past 20 years in various parts of the United States presented the over-all generalization that the process by which people come to accept new ideas is not a unit act, but rather a series of complex unit acts--a mental process. The research seems to indicate that this mental process consists of at least five stages. Evidence supports the belief that individuals can distinguish one stage from another and can designate points in time when they went through each stage.

The process of acceptance thus may be broken down into five stages as follows:⁵

1. Awareness. At this stage the individual learns the existence of the idea or practice but has little knowledge about it.

⁵ G. M. Beal and J. M. Bohlen, The Diffusion Process, Agr. Ext. Serv., Iowa State College, Ames, Special Rpt. 18, 1957.

2. Interest. At this stage the individual develops interest in the idea. He seeks more information about it and considers its general merits.
3. Evaluation. At this stage the individual makes a mental application of the idea and weighs its merits for his own situation. He obtains more information about the idea and decides whether or not to try it.
4. Trial. At this stage the individual actually applies the idea or practice--usually on a small scale. He is interested in how to apply the practice; in amounts, time, and conditions for application.
5. Adoption. This is the stage of acceptance leading to continued use.

An integral part of the acceptance process is the communication of information at these various stages.

Diffusion Process

All farm people do not adopt a new practice at the same time. Farmers may be classified as follows, into five adopter categories according to the relative time at which they adopt a new practice.⁶

1. Innovators. Innovators are the first farmers to adopt a new idea; they like to try out new things. They are characterized by higher education, larger farms, higher incomes, higher social status, and wider travel than the average farmer.

⁶ Rogers, op. cit., pp. 409-410.

2. Early Adopters. When compared to the average farmer, the early adopters have slightly higher education, they are a little younger, and they participate more in formal organizations. Their social status is fairly high and they have many informal contacts within the community.
3. Early Majority. Early majority farmers adopt a little earlier than the average farmer. In most respects they are typical of average farmers; their education, farming experience, readership of farm magazines, and contacts with the county agents are only slightly higher than for the average farmer.
4. Late Majority. The late majority farmers adopt new ideas just after the average farmer, and have about the same characteristics as the early majority, but to a slightly lesser degree. They have slightly less education, social status, and extension contact than the average farmer.
5. Laggards. Laggards are the last to adopt new ideas; they are the oldest farmers and they have the least education; they have very few social contacts and participate least in formal organizations. They read very few farm magazines; they secure most of their information about farm ideas from their neighbors and friends.

Rogers has shown that the adoption of farm practices scores over time are bell-shaped and approach normality.⁷

⁷ E. M. Rogers, "Categorizing the Adopters of Agricultural Practices," Rural Sociology 23 (Dec. 1958):345-354.

Objectives of the Study

Although much has been achieved in the area of innovation in the United States, this is the first study of its kind conducted in India. It makes a beginning, but since no research study can cover all pertinent aspects of a problem, this study is limited in its scope. Accordingly, this study has attempted to explore only the following aspects of the life situations of a sample of Indian farmers.

1. The extent of adoption of farm practices by the farmers.
2. The relationship of selected personal, economic, and social characteristics of farmers to the adoption of recommended farm practices.
3. The relationship of certain attitudes of farmers to adoption.
4. The sources of farm information utilized by farmers.
5. The factors associated with different sources of farm information.

This research work is particularly fortunate in having sufficient research findings available in the literature to outline roughly the range of factors possibly involved and to suggest certain tentative generalizations as well as hypotheses.

The following hypotheses are proposed to be tested statistically.

1. Younger farmers are likely to adopt more approved farm practices than older farmers.
2. The more education the farmer has, the greater is the likelihood that he will adopt approved practices.

3. The farmers who operate relatively large acreages will make greater use of recommended farm practices than those operating relatively small acreages.
4. The higher the economic status of the individual, the more likely he is to adopt recommended practices.
5. Operators with larger families will adopt fewer recommended practices than operators with smaller families.
6. Those working part of the time off the farm will adopt fewer recommended practices than those who do not.
7. The higher the social status of the individual, the more likely he is to adopt approved practices.
8. The higher the social prestige of the individual, the more likely he is to adopt approved practices.
9. The family-heads who participate in community work are likely to adopt more approved practices than those who do not.
10. The farmers with strongly favorable attitudes toward the Community Development Program will adopt more approved practices than will those with less favorable attitudes.
11. Farmers who have a relatively greater number of information contacts will adopt more recommended farm practices than those with fewer contacts.
12. The higher the socio-economic status of an individual, the more likely he will depend on institutionalized sources of farm information.

13. Those with higher levels of education will make greater use of printed sources of farm information than those with lower levels of education.

REVIEW OF LITERATURE

Approaches to the Study of Adoption and Diffusion of New Farm Practices

The study of adoption of new farm practices by the farmers, and diffusion as related to new farm practices has held the attention of rural sociologists for more than a decade; the results of a number of studies are now available on this social process. The studies of this nature have been made mostly in the United States.

Several approaches have been employed by researchers to study the adoption of new farm practices. The usefulness of any approach lies in the purpose for which it is intended.

The subcommittee on the Diffusion and Adoption of Farm Practices⁸ agreed upon four major areas of study in the diffusion and adoption of farm practices: (1) the differential acceptance of farm practices as a function of status, role, and motivation; (2) the differential acceptance of farm practices as a function of the socio-cultural system; (3) diffusion as a study of cultural change; and (4) diffusion as a problem of communication of information.

⁸ Subcommittee on the Diffusion and Adoption of Farm Practices, the Rural Sociological Society, Sociological Research on the Diffusion and Adoption of New Farm Practices, Kentucky Agr. Exp. Sta. Rpt. RS-2, June 1952, Mimeo.

The first type of study, as outlined by the committee, approached the study of diffusion as a function of the decisions of individuals who have different statuses, roles, and motivations. These differences include age, education, tenure, social contacts, leadership, levels of aspiration, and personality characteristics. The focus here is upon the individual and the qualities which make him more or less favorable toward the acceptance of innovations in farm and home practices.

Reasons for Adoption Approach. This approach has been used rather exclusively by administrators of action agencies who have been confronted with the need for devising more effective educational techniques. Notable in this connection has been the work of M. C. Wilson and associates.⁹ Farm operators and wives were generally asked what practices they had adopted during a specified period of time, and to state the primary reasons for the adoptions made. In most of these studies an attempt was also made to determine the attitudes of farm operators and their wives toward the Extension Service, as well as the relationship of direct extension participation to farm and home practice adoption. Lionberger¹⁰, however, expressed doubts in the use of this approach since the farmers, generally, do not have sufficient insight to designate accurately the main factors responsible for the adoption of specific practices.

⁹ M. C. Wilson and C. B. Smith, Agricultural Extension System. New York: John Wiley and Sons, Inc., 1930.

¹⁰ H. F. Lionberger, "The Diffusion of Farm and Home Information as an Area of Sociological Research," Rural Sociology 17 (June 1952):132-140.

Educational Effectiveness of Communication Media. In this approach the attention is specifically directed to the teaching effectiveness of particular communication media. The changes in farm practices attributed to different communication media like bulletins, circular letters, news services, radio and farm journals, and acknowledgment information from them were taken as the measure of usefulness. These studies¹¹ have contributed materially to the knowledge concerning the use which farm operators and their wives make of communication media in obtaining farm and home information. Careful sampling procedure was neglected in these studies. Hence, their results must be accepted with a degree of caution.

Diffusion Process. This approach is used by Ryan and Gross as a problem of technological change, with emphasis upon the time sequence of acceptance. This was the first attempt to test hypotheses derived from theories of cultural change. It placed emphasis upon the process rather than upon the influence of specific educational methods. Ryan and Gross¹² initially interviewed

¹¹ M. C. Wilson and G. Gallup, Extension Teaching Methods, Fed. Ext. Serv., U.S.D.A. Ext. Serv. Circ. 495, 1955; M. C. Wilson, Distribution of Bulletins and Their Use by Farmers, U.S.D.A. Agr. Ext. Serv. Circ. 78, 1928; H. J. Baker and M. C. Wilson, Relative Costs of Extension Methods Which Influence Changes in Farm and Home Practices, U.S.D.A. Tech. Bul. 125, 1929; A. L. Bertrand, Radio Habits in Rural Louisiana, Louisiana State Univ., 1949; and "Report of a Survey by the Statistical Laboratory of Iowa State College," InFARmation Please, Ames, Iowa, Wallace's Farmer and Iowa Homestead, 1948.

¹² B. Ryan and N. Gross, "The Diffusion of Hybrid Seed Corn in Two Iowa Communities," Rural Sociology 8(1943):15-24; B. Ryan "A Study of Technological Diffusion," Rural Sociology 13(1948): 273-285.

a limited number of farmers in two Iowa communities to determine where they first learned about hybrid seed corn, the time elapsing before the first trial, the nature and degree of acceptance, and the operation of factors which contributed to final adoption.

Bohlen and Beal and their students¹³ have carried on the early work of Ryan and Gross in Iowa on the diffusion process. The Pennsylvania study made by Copp et al.¹⁴ supports and adds to the findings of these researchers at Iowa.

There are limitations, however, to this type of study in understanding the process of change. The model for this, as well as for most other practice adoption studies, focuses upon the dependent variable of adoption. The hypotheses are tested with practices that are considered generally applicable and have been widely accepted. What about the many practices of limited applicability and those that are dropped by most farmers after a few years of trial? Also, there is the implication that adoption is the same as acceptance. Practices may be "accepted" without being "adopted" and vice versa.

Socio-psychological Approach. This approach emphasizes the decision-making aspect of adoption. This approach has been

¹³ G. M. Beal, E. M. Rogers, and J. M. Bohlen, "Validity of the Concept of Stages in the Adoption Process," Rural Sociology 22(1957):166-168.

¹⁴ J. Copp, M. L. Sill, and E. J. Brown, "The Function of Information Sources in the Farm Practice Adoption Process," Rural Sociology 23(1958):146-157; G. M. Beal and E. M. Rogers, The Adoption of Two Farm Practices in a Central Iowa Community, Iowa State Univ. Spec. Rpt. 26, 1960.

credited to Wilkening¹⁵, who has taken the position that changes in agricultural practice can be studied in terms of meaningful social and psychological variables and that acceptance-use is a function of meaningful social relations and ideological systems. For the first time in studies of this kind, open-end interviews were systematically used to define pertinent attitudes and values implicit and explicit in farmer responses.

Learning Theory Approach. The acceptance of innovations in farming is, in part, a problem of adult education. From this point of view, the interests of the farmers, their level of intelligence, and teaching techniques would have been the focus of attention. Hoffer's study¹⁶ of the acceptance of celery growing practices is an illustration of this approach. He found that the use of approved celery production practices increased proportionately as contacts favorable to adoption offset the retarding influence of existing culture patterns. Further, Hoffer and Gibson¹⁷ made a most valuable and exhaustive study relating to social and cultural factors which limit or condition farm practice

¹⁵ E. A. Wilkening, "A Socio-psychological Approach to the Study of the Acceptance of Innovations in Farming," Rural Sociology 15(Dec. 1950):352-364.

¹⁶ C. R. Hoffer, Acceptance of Approved Farming Practices Among Farmers of Dutch Descent, Michigan Agr. Exp. Sta. Spec. Bul. 316, 1942.

¹⁷ C. R. Hoffer and D. L. Gibson, The Community Situation as it Affects Agricultural Extension Work, Michigan Agr. Exp. Sta. Spec. Bul. 312, 1941.

adoption. Recently, Hoffer and Stangland¹⁸ concluded that the attitudes and values of the farmer are most often the determinants in the adoption or failure to adopt approved farming practices.

A similar approach was used by Lindstrom¹⁹ in his study of the acceptance of farming and home-making practices in a Japanese rural community. He found that the practices adopted most often were those requiring changes in techniques or operations and did not require changing the enterprise. Such adaptations were accompanied by favorable attitudes toward the practice. Rahudkar²⁰ (1958) also used this approach in his study of the use of fertilizer by Indian farmers.

Configurational Approach. This approach is mostly credited to Lionberger.²¹ This approach is concerned with the study of conditions and processes of acceptance-use in extended group situations where acceptance-use factors have their greatest meaning, by the use of available pertinent techniques and methods from whatever the source may be. He has made contributions in a

¹⁸ C. R. Hoffer and D. Stangland, Farmers' Reactions to New Practices, Michigan Agr. Exp. Sta. Tech. Bul. 264, 1958.

¹⁹ D. E. Lindstrom, "Diffusion of Agricultural and Home Economics Practices in a Japanese Rural Community," Rural Sociology 23(June 1958):171-183.

²⁰ W. B. Rahudkar, "Impact of Fertilizer Extension Program on the Minds of the Farmers and Their Reactions to Different Extension Methods," Indian J. Agronomy 3(Dec. 1958):119-136.

²¹ H. F. Lionberger, "Some Characteristics of Farm Operators Sought for Sources of Farm Information in a Missouri Community," Rural Sociology 18(1953):327-338; "The Relation of Informal Social Groups to the Diffusion of Farm Information in a Northeast Missouri Farm Community," Rural Sociology 19(1954):233-244; and Social Structure and Diffusion of Farm Information, Missouri Agr. Exp. Sta. Res. Bul. 631, April 1957.

difficult area of study--the influence of informal groups and leaders upon practice adoption and information exchange among farmers. He found that those persons who are "community-wide leaders" are likely to be among the first to adopt technological changes in farming.

Lionberger has continued to explore the problems of practice adoption and the use of informational sources in intensive community studies. Lionberger and associates²² reported that interpersonal patterns of communication regarding farming operations were found to be structured by such socio-economic status factors as income, years of schooling, and community prestige, but no serious barriers were imposed by them in a Missouri community.

Clientele Approach. The assumption in this approach is that the acceptance of ideas involves value orientations. This approach is mostly credited to Rohrer.²³ The clienteles, towards whom are efforts for adoption directed, are classified in three groups. The first clientele lacks an orientation toward contemporary programs in agricultural education. The second clientele is oriented toward accepting new ideas but their conception of a new idea probably differs from the extension worker's conception. The third clientele is oriented toward accepting

²² J. S. Holik, H. F. Lionberger, and C. E. Lively, "Social and Cultural Factors Affecting the Dissemination and Use of Scientific Farm Information by Missouri Farmers," Annual Rpt. Missouri Agr. Exp. Sta. Bul. 728, June 1959, p. 88, and H. F. Lionberger, "Community Prestige and the Choice of Sources of Farm Information," Public Opinion Quarterly 23(1959):110-118.

²³ W. C. Rohrer, "On Clienteles of the Agricultural Extension Service," Rural Sociology 20(Sept.-Dec. 1955):299-303.

new ideas and their conception of a new idea is consistent with the extension worker's conception. The unit of observation is the change agent. To implement improved practices among farmers, change agents would require some additional training.

Field Theory Approach. This approach is used by Copp.²⁴ The adoption of recommended farm practices was conceptualized as a product of the farm operator's life situation. It is theoretically conceivable that a high level of farm practice adoption will alter the farm operator's economic status, social position, and perceptual framework.

However, the results of his study, embodying something of a field theory approach, make only a limited contribution to a strong empirical theory of the adoption of recommended farm practices couched in terms of "if a, then b" propositions. Granted many of the relationships are of a reversible nature, for example, a certain scale of operations, as reflected by gross farm income, is necessary to justify the adoption of many practices; but, on the other hand, many practices are recommended because they do increase farm income.

Copp has isolated the variables or areas which may be involved in the "if a, then b" propositions. The results suggest that straight-forward, rational exhortation to adopt recommended farm practices is of limited success because it fails to take into account the limitations imposed by economic status and by the farm

²⁴ J. H. Copp, "Toward Generalization in Farm Practice Research," Rural Sociology 23(June 1958):103-111.

operator's personality orientations.

Conceptual Variable Analysis. Blumer²⁵ has referred to variable analysis as the scheme of sociological analysis which seeks to reduce human group life to variables and their relations. At least three rural sociologists²⁶ have recently attempted variable analyses of adoption of farm practices scores. The effort in these researches was directed toward accounting for as large a portion as possible of the variation in adoption of farm practices scores. The essential steps in a conceptual variable analysis may be described briefly as follows: The first step is to express all concepts as variables. A concept is defined as an entity or dimension stated in its basic or simplest terms. A conceptual variable is a concept expressed as a variable, a technological change. Technological change is defined as the degree to which individuals accept new technological practices. The next step in variable analysis is to develop operational scales or indexes to measure each conceptual variable. The eventual goal is the development of a body of general sociological theory composed of the interrelationships among a number of concepts.

²⁵ H. Blumer, "Sociological Analysis and the Variable," American Sociological Review 21(1956):683-690.

²⁶ F. C. Fliegel, "A Multiple Correlation Analysis of Factors Associated with Adoption of Farm Practices," Rural Sociology 21 (1956):284-292; J. H. Copp, Personal and Social Factors Associated with the Adoption of Recommended Farm Practices Among Cattlemen, Kansas Agr. Exp. Sta. Tech. Bul. 83, Manhattan, 1956; and E. M. Rogers, "A Conceptual Variable Analysis of Technological Change," Rural Sociology 23(1958):136-145.

Multivariate Analysis of Practice Adoption. Starting with the proposition that the adoption of practices is a consequence of communication. Emery and Oeser²⁷ developed the most extensive multivariate analysis of practice adoption thus far available. Their approach differs from that of researchers who have previously studied adoption as a function of communication primarily in the elevation of this proposition to a position of central importance in a systematic empirical theory and in the skillful use of recent developments in survey methodology. In this approach, attitudes and abilities of the farmer, together with salient aspects of the economic and social situation within which the farmer operates, are viewed as independent dynamic elements in a system of communication. The relevant independent elements and their functional relationships to the paramount causal connection between sources and adopter are determined by an analysis of empirical data.

THE DIFFERENTIAL ACCEPTANCE OF FARM PRACTICES AS A
FUNCTION OF STATUS, ROLE, AND MOTIVATION

Personal Characteristics of Farm Operators

Age. The association of age with adoption is not definitely established. The study by Wilkening²⁸ showed that the age of the

²⁷ F. E. Emery and O. A. Oeser, Information, Decision and Action. New York: Cambridge University Press, 1958.

²⁸ E. A. Wilkening, Acceptance of Improved Farm Practices in Three Coastal Plain Counties, North Carolina Agr. Exp. Sta. Tech. Bul. 98, May 1952.

operator is negatively associated with adoption of improved farm practices when other socio-economic factors are held constant. Several other studies report that age is negatively associated with the acceptance of certain practices only,²⁹ while no significant association of age with acceptance occurs for other practices. For example, in the area covered by Marsh and Coleman,³⁰ age of the operator was related to the adoption of 7 of the 16 practices studied. Several other researchers reported that the acceptors tend to be younger,³¹ and others did not consider age as an important factor.³²

Copp³³ found that the adoption is associated with age in curvilinear fashion instead of a strong linear association. The curvilinear relationship suggests that the young man just starting

²⁹ Copp, op. cit. (1958).

³⁰ C. P. Marsh and A. L. Coleman, "The Relation of Farmer Characteristics to the Adoption of Recommended Farm Practice," Rural Sociology 20(Sept.-Dec. 1955):289-296.

³¹ N. Gross and M. J. Taves, "Characteristics Associated with Acceptance of Recommended Farm Practices," Rural Sociology 17(Dec. 1952):321-327; M. A. Anderson, L. E. Cains, E. O. Heady, and E. L. Baum, An Appraisal of Factors Affecting the Acceptance and Use of Fertilizer in Iowa, 1953, Iowa State College Agr. Exp. Sta. Spec. Rpt. 16, 1956; H. F. Kaufman and E. M. Bryant, Characteristics of Farmers Following Recommended Practices, Mississippi Agr. Exp. Sta. Inf. Sheet 608, State College, 1958; and Rahudkar, op. cit.

³² C. V. Hess and L. F. Miller, Some Personal, Economic, and Sociological Factors Influencing Dairymen's Actions and Success, Pennsylvania Agr. Exp. Sta. Bul. 577, State College, 1954; Hoffer and Stangland, op. cit.; and Wilson and Gallup, op. cit.

³³ Copp, op. cit. (1956).

to farm is generally in a weak position to adopt better farming methods.

In the study of adoption by the time sequence, Beal and Rogers³⁴ found that the innovators and the earlier adopters tended to be of older age than the later adopters.

On the contrary, Gross³⁵ found that the non-acceptors of the McLean system of sanitation were, on the average, 6.4 years younger than the acceptors.

Education. Education is an important factor for the adoption of recommended practices. Several studies³⁶ indicated that formal education is definitely associated with the adoption behavior of the farmer. The more education the farmer has, the more likely he is to adopt new farm practices.

Copp³⁷ has found a substantial linear association between the adoption index and the amount of formal education. However, Coughenour³⁸ considers years of school completed by the farmer

³⁴ G. M. Beal and E. M. Rogers, The Adoption of Two Farm Practices in a Central Iowa Community, Iowa State Univ. Agr. Exp. Sta. Spec. Rpt. 26, Ames, 1960.

³⁵ Gross (1949), op. cit.

³⁶ Hoffer and Stangland, op. cit.; Kaufman and Bryant, op. cit.; Wilson and Gallup, op. cit.; Anderson et al., op. cit.; E. M. Rogers and R. L. Pitzer, The Adoption of Irrigation by Ohio Farmers, Ohio Agr. Exp. Sta. Res. Bul. 851, Wooster, 1960; Wilken-
ing, op. cit.; N. Gross, "The Differential Characteristics of Acceptors and Non-acceptors of an Approved Agricultural Techno-
logical Practice," Rural Sociology 14(June 1949):148-158; March
and Coleman, op. cit.; Copp (1958) op. cit., and Rahudkar, op. cit.,
Wilkening, op. cit.

³⁷ Copp (1956), op. cit.

³⁸ C. M. Coughenour, Agricultural Agencies as Information Sources for Farmers in a Kentucky County, 1950-1955, Kentucky Agr. Exp. Sta. Progress Rpt. 82, Lexington, 1959.

relatively unimportant as the factor which differentiates favorable and unfavorable conditions for the association between practice adoption scores.

Economic Characteristics

Income of the Farm Operator. It is impossible to determine how much of the relationship is a result of income and how much a result of adoption. Cause and effect are intermingled; where income is high, one is likely to find high adoption; where adoption is high, income very likely will also be high.

Several researchers have found that the income of the farm operators is positively related to the adoption of farm practices.³⁹ Fliegel⁴⁰ observed that there was a highly significant tendency for those operators who ranked high in the adoption of farm practices to report relatively high net farm incomes.

Off-Farm Income. Some farm operators are engaged in other jobs besides farming, and they receive income outside of agriculture. Kaufman and Bryant⁴¹ reported that such farmers are likely to adopt more practices. But in a Michigan study,⁴² working part of the time off the farm had no significant effect on the adoption of approved practices.

³⁹ Gross, op. cit.; Kaufman and Bryant, op. cit.; Coughenour, op. cit.; Gross and Taves, op. cit.; H. C. Lionberger, Sources and Use of Farm and Home Information by Low Income Farmers in Missouri, Missouri Agr. Exp. Sta. Res. Bul. 472, Columbia, 1951.

⁴⁰ F. C. Fliegel, "Farm Income and the Adoption of Farm Practices," Rural Sociology 22(June 1957):159-162.

⁴¹ Kaufman and Bryant, op. cit.

⁴² Hoffer and Stangland, op. cit.

Farm Size. A significant finding reported several studies in the importance of the size of the operating unit for adoption. In whatever way size of unit was measured, whether by total acres operated, acres of cropland, number of cattle, gross farm income, or amount of higher labor, a strong positive association was found between that indicator and adoption.⁴³ The percentage of farmers adopting new practices and the rate of adoption of such practices tended to increase with the size of the farm.⁴⁴

However, Kaufman and Bryant⁴⁵ reported that the size of farms was slightly related to the level of adoption in their study in Mississippi. Similarly, the Michigan study also suggests that the operator of a small as well as a large acreage may and does adopt approved practices.⁴⁶ Fliegel⁴⁷ also reported that the size of operation is not significantly related to adoption.

Beal and Rogers stated that the average size of farm tended to be smaller for laggards than for other adoption categories.⁴⁸

Ownership of Land. Wilson and Gallup⁴⁹ reported a slightly higher percentage of owner families using recommended agricultural

⁴³ Copp (1956), op. cit.; Gross, op. cit.; Gross and Taves, op. cit.; Wilkening, op. cit.; March and Coleman, op. cit.; Lindstrom, op. cit.; Rogers and Pitzer, op. cit.

⁴⁴ Wilson and Gallup, op. cit.; Anderson, et al., op. cit.

⁴⁵ Kaufman and Bryant, op. cit.

⁴⁶ Hoffer and Stangland, op. cit.

⁴⁷ Fliegel, op. cit.

⁴⁸ Beal and Rogers, op. cit.

⁴⁹ Wilson and Gallup, op. cit.

practices than renters. Rogers and Pitzer⁵⁰ also found that the farmers adopting irrigation were less likely to rent their farm land and were more often owners. Similarly, Wilkening⁵¹ observed that the owner operators had adopted significantly more improved practices than tenant operators although tenant operators were as favorable toward the adoption of those practices as owner operators.

In contrast to these studies, the Kentucky and Iowa data indicate no significant relationship between farm ownership and the adoption of practices.⁵²

Level of Living. Wilkening reported that the possession of family living items and conveniences was significantly associated with the adoption of improved practices and with attitudes toward those practices to a somewhat lesser degree.⁵¹ Similar observations are reported by Kaufman and Bryant, Fliegel, and Copp.⁵³

Social Characteristics

Socio-economic Status. Several studies⁵⁴ indicated the higher a person's socio-economic level is, the more likely he or she is to adopt improved practices. In most of the studies, the

⁵⁰ Rogers and Pitzer, op. cit.

⁵¹ Wilkening, op. cit.

⁵² Marsh and Coleman, op. cit., and Anderson, et al., op. cit.

⁵³ Kaufman and Bryant, op. cit.; Fliegel (1958), op. cit.; Copp (1956-1958), op. cit.

⁵⁴ Wilson and Gallup, op. cit.; Wilkening, op. cit.; Marsh and Coleman, op. cit.; Coughenour, op. cit.

socio-economic status is measured on Sewell scale, while Wilkening has developed his own socio-economic status index.

Participation in Social Organizations. Membership in farm organizations was found to be highly associated with the adoption of improved practices and with favorable attitudes toward those practices.⁵⁵ This is to be expected since membership in an organization such as the Farm Bureau tends to bring about contacts which favor the adoption of approved practices.

Kaufman and Bryant⁵⁶ observed that the high level adopters were much more likely to belong to a church than were the low level adopters.

Participation in adult extension programs is also positively related to adoption of practices.⁵⁷ Similarly, a farm operator's activity in community affairs is positively associated with his adoption behavior.⁵⁸

Social Class. Viewed from the stratification frame of reference, the evidence in Copp's study⁵⁹ in Kansas supports the argument that there is a high positive correlation between social-class position and the general predisposition to adopt

⁵⁵ Wilkening, op. cit.; Hoffer and Stangland, op. cit.; Coughenour, op. cit.; Gross, op. cit.; Gross and Taves, op. cit.; Marsh and Coleman, op. cit.; Copp (1956), op. cit.

⁵⁶ Kaufman and Bryant, op. cit.

⁵⁷ Subcommittee for the Study of Diffusion of Farm Practices, op. cit.

⁵⁸ Copp (1958), op. cit.

⁵⁹ Copp (1956), op. cit.

recommended farm practices.

Psychological Factors

Knowledge. One factor affecting a farmer's adoption of a recommended practice is his degree of knowledge of the practice involved. Since a recommended practice is usually a complex of interrelated steps and procedures in which degree of preciseness is a factor, there are obvious difficulties inherent in determining the extent to which all of the procedure recommendations are followed. To the extent that adoption is only partial, a farm operator may achieve results below his expectations. This may cause him to reject the practice entirely, with the consequent development of negative attitudes.

Sizer and Porter⁶⁰ obtained a highly significant relationship between knowledge and adoption of farm practices.

Attitudes and Values. The acceptance of improved farm practices is affected by the ideas, attitudes, and values held by the farmers with respect to the practices themselves, with respect to the agencies which promote these practices and with respect to his own goals and aspirations.

The reasons for not approving the adoption of specific improved practices, as reported by Wilkening,⁶¹ were of four general types: (1) failure to recognize the advantages or the

⁶⁰ L. M. Sizer and W. F. Porter, The Relation of Knowledge to Adoption of Recommended Practices, West Virginia Agr. Exp. Sta. Bul. 446, Morgantown, 1960.

⁶¹ Wilkening (1952), op. cit.

effectiveness of the improved practices; (2) lack of means for implementing the practices including land, labor, or capital or rental arrangements; (3) dissatisfaction with particular aspects of the practice including inconveniences and changes in operations; and (4) conflicts with other operations or activities.

Wilkening further concluded that the motivation for the adoption of improved farm practices is limited by the extent to which the farmer sees these practices as contributing to his economic and other goals as compared with established practices.

In the Wisconsin study, Wilkening⁶² observed that family goals or family values had a greater bearing upon the adoption of changes in farming than did the nature of family relationships. Those operators placing a high value upon education for their children had adopted most improved practices. This included favorable attitudes toward vocational agriculture for boys going into farming. Placing higher value upon security than upon education for children or upon other family goals was associated with adoption of fewer improved practices. Similarly, in a Michigan study, Hoffer and Stangland⁶³ noted that the farmers identifying themselves with models suggesting security and conservatism tended not to adopt approved practices, or delayed in doing so. On the other hand, if the farmer was efficient, had initiative, and was progressive, he was likely to adopt approved

⁶² E. A. Wilkening, Adoption of Improved Farm Practices as Related to Family Factors, "Wisconsin Agr. Exp. Sta. Res. Bul. 183, Madison, 1953.

⁶³ Hoffer and Stangland, op. cit.

practices.⁶⁴

Ramsey et al.⁶⁵ found significant negative linear relationships between the behavioral adoption scale and two of the value orientations: security and traditionalism. They found significant linear relationships between cognitive adoption and five value orientations: positive relationships with achievement, science, and material comfort and negative relationships with security and traditionalism.

In a Kansas study, Copp⁶⁶ found that the degree of acceptance of professional and scientific values in farming and the flexibility of the farmer's mental approach to problems of farm operation were positively related to adoption of recommended practices.

High values upon individual achievements and satisfactions are positively associated with adoption of new practices. These achievements and satisfactions include formal education for family members, modern living conveniences, and family recreation. Attitudes pertaining to the participation of family members in decision making and in the operation of the farm are associated with acceptance of changes in farming.⁶⁷

⁶⁴ C. R. Hoffer and D. Stangland, "Farmers' Attitudes and Values in Relation to Adoption of Approved Practices in Corn Growing," Rural Sociology 23(June 1958):112-120.

⁶⁵ C. E. Ramsey, R. A. Polson, and G. E. Spencer, "Values and the Adoption of Practices," Rural Sociology 24(March 1959): 35-47.

⁶⁶ Copp, op. cit. (1956).

⁶⁷ Subcommittee for the Study of Diffusion of Farm Practices, op. cit.

Fliegel⁶⁸ assessed farm operators' attitudes toward farm practices by means of seven questions on the respondent's reaction to the use of particular practices on his own farm. He found that this attitude is related to adoption.

In the Iowa study, Beal and Rogers⁶⁹ found that early adopters had higher income and prestige than the average farmers.

Group Differences and Acceptance of Farm Practices

Little attention has been given to group influences on decisions of farm operators relative to farming matters. Wilkening⁷⁰ found in North Carolina that the greater the dependence of a farmer upon neighborhood and kinship ties, the less likely he was to adopt new practices. He suggested that even the "relatively independent" operators are sensitive to their neighbors' attitudes toward new practices. Also, Marsh and Coleman⁷¹ have shown that the higher the practice adoption rate of a farm operator, the higher the adoption rates of most of his close associates in kin, visiting, and work-exchange groups. Later, in the re-study of the same area, Young and Coleman⁷² found that the farmers in the high-adoption neighborhood had a more

⁶⁸ Fliegel, op. cit. (1956).

⁶⁹ Beal and Rogers, op. cit.

⁷⁰ Wilkening, op. cit. (1956)

⁷¹ C. P. Marsh and A. L. Coleman, "The Relation of Kinship, Exchanging Work and Visiting to the Adoption of Recommended Farm Practices," Rural Sociology 19(1954):291-293.

⁷² J. N. Young and A. L. Coleman, "Neighborhood Norms and the Adoption of Farm Practices," Rural Sociology 24(1959):372-383.

scientific orientation in farming matters and made more use of different information media, including other farmers, than those in the low-adoption neighborhoods. Lionberger⁷³ reported that there are influences within informal groups that facilitate the interpersonal exchange of farm information. Regional differences in the adoption of improved farm practices have been reported by Rahudkar⁷⁴ in his study of three community development blocks in India. On the other hand, in the Netherlands, van den Ban⁷⁵ was unable to find significant differences in the adoption of new farm practices between agricultural areas.

Cultural and Community Differences in the Acceptance of Farm Practices

Studies by Hoffer, Kollmorgen, Pederson, and van den Ban have demonstrated differences in the acceptance of farming practices among different cultural groups. Germans have been found to be quick to accept soil-building practices. The Danish in a Wisconsin area had adopted more recommended practices than had the Polish in the same area at the time of study. The Dutch of Michigan had adopted fewer approved celery-growing practices than

⁷³ H. F. Lionberger, "The Relation of Informal Social Groups to the Diffusion of Farm Information in a Northwest Missouri Farm Community," Rural Sociology 19(1954):387-388.

⁷⁴ W. B. Rahudkar, "Local Leaders and the Adoption of Farm Practices," Nagpur Agr. College Magazine 34(1960):1-13.

⁷⁵ A. W. van den Ban, "Locality Group Differences in the Adoption of New Farm Practices," Rural Sociology 25(Sept. 1960): 308-320.

had other farmers in the area.⁷⁶ Similarly, in the Wisconsin study, farmers in the low adoption township were of Calvinistic Dutch origin and those in the high-adoption township mainly of Norwegian and German Lutheran origin. The differences in the adoption of the two townships seemed to be due primarily to the greater social isolation and stronger social control characteristic of the Dutch township.

SOURCES OF FARM INFORMATION

New farm information is communicated through various channels which may be generally classified as follows:

1. Mass Media. This would include farm magazines, newspapers, radio, farm shows, and circular letters.

2. Informal Sources. These are a farmer's neighbors and friends.

3. Commercial Sources. The major commercial sources are salesmen, dealers, demonstrations, and commercial bulletins.

4. Government Agency Sources. Included are bulletins, meetings, and personal contacts with Vocational Agricultural teachers and Extension personnel.

In the diffusion of hybrid seed corn, Ryan and Gross⁷⁷ observed that commercial channels, especially salesmen, were most important as original sources of knowledge, while neighbors were

⁷⁶ C. R. Hoffer, Acceptance of Approved Farming Practices Among Farmers of Dutch Descent, Michigan Agr. Exp. Sta. Spec. Bul. 316, East Lansing, 1942; W. M. Hollmorgan, The German-Swiss in Franklin County, Tennessee, Bureau of Agr. Econ., U.S.D.A., Washington, 1941; H. A. Pederson, "Cultural Differences in the Acceptance of Recommended Practices," Rural Sociology 16(1951): 37-49; and van den Ban, op. cit.

⁷⁷ B. Ryan and N. C. Gross, "The Diffusion of Hybrid Seed Corn in Two Iowa Communities," Rural Sociology 8(March 1943):15-24.

most important as influences leading to acceptance. In the North Carolina study, Wilkening⁷⁸ found important differences in the sources reported by farmers of different socio-economic levels and in the sources reported for different types of practices. Farmers of upper socio-economic levels gave agricultural agencies most frequently while those of the lower socio-economic levels gave other farmers and dealers most frequently as their main source of information. When Ohio farmers were asked to name their most important source of new farm information, it was found that they most often responded in terms of farm magazines. Mass media are generally most important in creating awareness of a new idea, but personal influence from neighbors and friends is most effective in convincing farmers to actually try out the new farm idea.⁷⁹

In a Pennsylvania study, Copp et al.⁸⁰ found that institutionalized sources tend to perform a function separate from that of non-institutionalized sources. In addition, the combination of sources used by most farmers tends to follow patterns which are comparable yet somewhat different for different types of practices. This study further shows that the mass media, the

⁷⁸ E. A. Wilkening, "Sources of Information for Improved Farm Practices," Rural Sociology 15(March 1950):19-30.

⁷⁹ E. M. Rogers, Social Change in Rural Society. New York: Appleton-Century-Crofts, Inc., 1960, p. 406.

⁸⁰ J. H. Copp, M. L. Sill, and E. J. Brown, "The Function of Information Sources in the Farm Practice Adoption Process," Rural Sociology 23(June 1958):146-157.

educational agencies, and the personal contacts of the farmer have somewhat specialized roles in the communication of information about new farm practices. These findings support and add to the findings of previous studies, including those of Beal and Rogers at Iowa.⁸¹

Rohrer⁸² observed that the agent has values which influence him as the instigator of action and if he is unaware of this value system, he may remove himself from influencing some persons and limit his influence to a specific clientele.

Mass Media

Mass media cover a wide range of types of communication channels. For the most part, the mass media appeal to individuals rather than to groups. The effectiveness of mass media appears to be closely related to the extent to which confidence is built up in them because of the person or the institution with which they are associated, and because of the personalized content of their communications. The mass media provide information at all stages in the process of acceptance of new ideas. However, they appear to be most effective in making people aware of new ideas and techniques.⁸³

The use of mass media is highly influenced by educational level. The better educated tend to make more use of the written

⁸¹ Beal and Rogers, op. cit.

⁸² Rohrer, op. cit.

⁸³ Copp et al., op. cit.

word, and the less educated depend more upon the spoken word. This association between education and mass media use is most striking in those areas where educational levels are low, with most not having attended high school. Also, the older farmers tend to depend more upon the mass media than the middle aged or younger farmers, suggesting that they are utilized more by those less active physically and socially.⁸⁴

The radio is considered important in disseminating information on changes in rural society in a Louisiana study.⁸⁵

Informal Group Contacts

Information about new ideas is more likely to be communicated among the members of informal groups when the interests of the group are similar. Lionberger and Coughenour have shown that farm information is more likely to be transmitted among clique members than among neighbors or among farmers who are not members of an identifiable informal group.⁸⁶

The norms of the informal group are likely to influence the communication of information about new ideas and practices.

⁸⁴ E. A. Wilkening, "Communication of Information on Innovations in Agriculture" in On Communications edited by W. Schramm, 1959.

⁸⁵ A. L. Bertrand and H. L. Hill, Radio Habits in Rural Louisiana, Louisiana Agr. Exp. Sta. Bul. 440, 1949.

⁸⁶ H. F. Lionberger and C. M. Coughenour, Social Structure and the Diffusion of Farm Information, Missouri Agr. Exp. Sta. Res. Bul. 631, 1957.

Wilkening⁸⁷ and Marsh and Coleman⁸⁸ have found that functional leaders in some neighborhoods were not any more advanced than their neighbors in the adoption of new farm practices while in other neighborhoods they were. van den Ban⁸⁹ also found in the Netherlands that communication among farmers about new practices is more effective in a community near an urban center than in an isolated community. These findings suggest that communication about new farm practices occurs when such communication is sanctioned by the group in keeping with the relationships among its members. Information about new practices which are closely associated with existing practices are most likely to be transmitted through informal channels.⁹⁰

Several studies have shown that personal influence is predominant at certain stages in the adoption process.⁹¹ For these things, such as a change in crop variety or a change in cultivation practices, personal contact is important in making people aware of them.⁹² However, it is in the decision-making stage

⁸⁷ E. A. Wilkening, "Informal Leaders and Innovators in Farm Practices," Rural Sociology 17(Sept. 1952):372-375.

⁸⁸ C. P. Marsh and A. L. Coleman, "Farmers' Practice-adoption Rates in Relation to Adoption Rates of 'Leaders'", Rural Sociology 19(June 1954):180-183.

⁸⁹ van den Ban, op. cit.

⁹⁰ Wilkening, op. cit.

⁹¹ Ryan and Gross, op. cit.; E. A. Wilkening, "Roles of Communicating Agents in Technological Changes in Agriculture," Social Forces 34(May 1956):361-367.

⁹² Wilkening, op. cit. (1952-1953).

that personal influence appears to be greatest. The innovators depend little upon personal contact with other farmers while the followers depend most upon such contact for some practices. The majority depend largely upon personal contact.⁹³

Commercial Sources

The role of the commercial dealer in the process of acceptance of change varies greatly with the type of practice or change. Commercial firms and their representatives have been found to be highly influential in the adoption of such innovations as new crop varieties, fertilizers, new equipment, new feeds, insecticides, and fungicides.⁹⁴

Government Agencies

The influence of the communicating agents varies with certain personal and social characteristics of the farmer. Those of middle and upper social and economic levels are most likely to be influenced by the educational and service agencies and by written materials. On the contrary, those of lower social and economic status depend more upon personal contact with other farmers for their information about new ideas. The influence of contacts within these groups is positively associated with the extent of contacts of the members outside the group.⁹⁵

⁹³ Beal and Bohlen, op. cit.

⁹⁴ Lionberger, op. cit. (1953) and Wilkening, op. cit.

⁹⁵ Wilkening, op. cit.

Most studies have shown that innovators have close contact with one or more of the educational agencies.⁹⁶

For a majority of farmers, agricultural agencies tend to be most important in providing information about new practices after they have become aware of them through other sources, and in the trial stage when they seek specific information about how and when to put the practices into operation.⁹⁷ However, Beal and Rogers found that agencies were most important in the awareness stage of adoption of 2,4-D weed spray than in later stages.⁹⁸

METHOD OF STUDY

This study was made in a Community Development Block in the western region of India which forms Maharashtra State. This unit of operation comprises 100 villages, with a population of 66,000 and forms a homogeneous tract. This block was purposely selected because it was one of the earliest incepted blocks of this region, so that evaluation of the impact of the Community Development Programme would be possible. Moreover, this block is representative of the region, and is homogeneous in population.

⁹⁶ A. L. Coleman and C. P. Marsh, "Differential Communication Among Farmers in a Kentucky County," Rural Sociology 20 (1955):93-101; Copp, op. cit. (1956); Lionberger, op. cit. (1955); and Wilkening, op. cit. (1952).

⁹⁷ Wilkening, op. cit. (1956).

⁹⁸ Beal and Rogers, op. cit.

Physical and Economic Characteristics of the Block

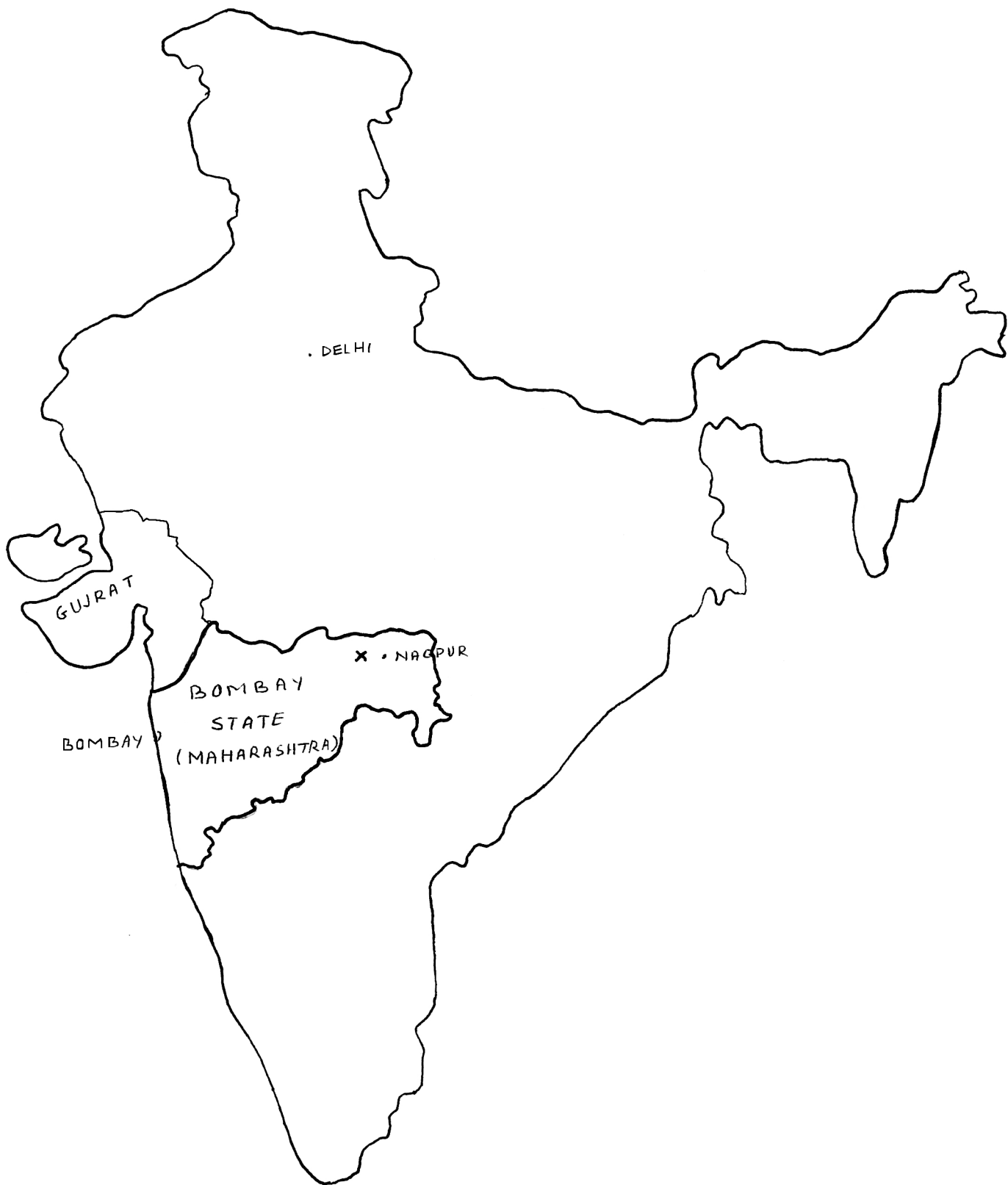
The acceptance of new farm practices is affected by the advantages which they have under a particular set of conditions. These conditions include the physical factors: soil, topography, and climate; and the economic factors: size and type of farming.

This block is fairly level. The type of soil is "Black Cotton Soil" which is suitable for growing cotton. The climate, with an annual rainfall of 35 inches, is also favorable for the cotton crop, particularly long, staple American types. Cotton is the main cash crop of this region. Besides this, sorghum, wheat, bananas, citrus, and vegetables are also grown. Raising of livestock is very common.

The type of farming is generally individual proprietorship, although a few tenants are found in every village. All the farmers live in a village and operate the land surrounding the village. The farmer's attitude is relatively progressive. The size of unit operated by each farmer varies from 2 acres to 200 acres.

Selection of Sample

This study is confined to the Community Development Block in the central region of India, and is comprised of 10 circles (sections). One village level worker is stationed in each circle. Of 10 circles, half were selected for investigation. The lists of farmers were acquired from the Village Level Workers. The listing of names was done according to the location



The Map of India showing the Location of the Study Block

of their fields. A 10 per cent random sample was selected by the equal intervals method.

The interview schedule was prepared at the College of Agriculture at Nagpur and was pre-tested. A majority of the farmers were interviewed personally at their homes by 10 trained college students. A few farmers were interviewed at their fields and at the office of the Village Level Worker. All the sample farmers were interviewed during a six-week period the summer of 1958, when there was slack in agricultural operations.

The interview schedules for 339 farmers were completed from several villages. The interviewers lived with the Village Level Workers in the respective circles for six weeks so that they became acquainted with the villagers within a short period. To become more familiar with the villagers, the interviewers took part in village recreational programs, ceremonies, and festivities at night. Their work was supervised and the completed interview schedules were checked by the author, who also lived in this block for six weeks.

Administrative Set-up of the Community Development Block

The Block Development Officer is the chief officer appointed by the State Government in charge of the administration of the Community Development Block, which comprises, on an average, 100 villages and a population of 66,000. About eight Extension officers (specialists in different areas), one of which is Agricultural Extension Officer, work under the supervision of

the Block Development Officer at the block level. There are 10 Village Level Workers in each block, and each Village Level Worker is in charge of 10 villages. This is the Extension organization of rural India.

Analytical Framework

Previous research work conducted in the United States suggested several working hypotheses to investigate the relationship of certain personal, social, economic, and psychological characteristics of the farmers to the adoption and diffusion of approved farm practices.

The criteria for selecting a new farm practice were that the practice should be recommended by the National Extension Service personnel and applicable to all farms. The exception to this rule was green manuring, the adoption of which had some limitations for all farms. The nine practices selected were: (1) improved implements, (2) improved seed, (3) use of fertilizer, (4) preparation of compost by a new method, (5) green manuring, (6) use of insecticides and fungicides, (7) inoculation of cattle, (8) bunding of fields (soil conservation), and (9) adoption of new cattle breeding practices.

The farm practices were grouped into three categories for convenience of cross-tabulation as follows: (1) 0-3, (2) 4-6, and (3) 7-9 practices.

Index of Information Contacts

The index of information contact for each source of farm information was computed as the total number of information contacts of a given type, divided by the number of farmers in a given classification.

As the percentage total for all information contacts under each classification group does not add up to 100, the indexes of information contacts are given in tables to show the relationship between farmer characteristics and sources of farm information.

Statistical Technique

Most of the analysis is based on simple cross-tabulations of each factor against the number of practices adopted. Chi-square was used in testing the hypotheses implicit in the comparisons. Chi-squares were calculated on frequency distributions. A relationship was considered to exist only if chi-square was significant at the .05 level.

The direction of association was determined by inspection of the data, and refers to the general pattern of association. The author does not intend to imply that the variables are necessarily associated in a linear fashion.

Definition of Terms

Many of the terms referred to in this study may not be familiar to the reader, or may have another or an ambiguous

common usage. They are, therefore, defined as employed in this study.

New Farm Practices. This refers to a set of practices variously called innovations, new farm practices, improved farm practices, and recommended farm practices. In this thesis, a new farm practice is regarded as synonymous with a new idea. The new practices are new techniques or methods of agricultural technology.

Adoption. This term refers to the continued usage of a practice.

The Diffusion Process. This is defined as the process by which a new idea or practice is communicated from its source of invention or development to its ultimate users or adopters. In the case of most farm practices, the point of origin is usually with agricultural scientists at agricultural colleges or commercial concerns. The users are farmers.

Communication Agencies. These are individuals, organizations, and media which transmit the information about new practices to the farmers.

Change Agents. Change agents are the representatives of organizations and agencies such as the Agricultural Extension Officer, the Block Development Officer, and the Village Level Worker. Their job is to communicate information about the new practices to potential users and to secure change in these people through their adoption of new practices.

The Level of Formal Education. In this study the farmers were classified according to level of formal education as follows:

1. Illiterate: cannot read or write.
2. Primary: one to four years (or grades) of formal schooling.
3. Middle School: five to eight years of formal schooling.
4. Undergraduate (college): four years or less of college and no degree.
5. College Graduates: four years or more of college and a degree.

Farm Size. This refers to the total acreage--owned and rented--operated by the farmer.

Off-farm Work or Sub-occupation. Sub-occupations refer to occupations in addition to farming, e.g. trading, shop-keeping, tailoring, dairying, carpentry, blacksmithy, money-lending, teaching, etc. The income from farming is supplemented by that received from subsidiary occupations; interest is not fully devoted to farming.

Social Status. Social status is here defined as the position of an individual relative to others in a society--hereditary, elected, appointed, or voluntary. The status investigated includes:

Village Headman (Patil). A hereditary village official who collects land revenue; approved or appointed by the government.

Teacher. One appointed by the government, local boards, or private agencies in private schools.

The Informal Leader. A person occupying an informal position in the group; the informal leader is one to whom two or more other

farmers go for advice on or discussion of their problems.

President of Village Council (Grampanchayat Sarpanch).

The Village Council is the elected body in most of the villages having populations of over 1000; the main functions of this council are maintenance of sanitation, roads, local works and buildings, school, etc.; the president is selected from among the members of the Village Council by themselves.

Member of Village Council (Grampanchayat Sabhasad). A villager elected by the people from the same village; each village council has more than five members, depending on the population of the village.

Member of Judiciary Council (Nyaya-panchayat Sabhasad).

A legal council for a group of villages (usually 3 to 5); members are selected from the Village Councils of these villages.

Member of Temple Committee. The committee to maintain village temples; a member by the consent of the villagers although an election in the common sense is not held.

Member of Cooperative Society. In a few villages of this study, cooperative societies were established recently; membership is voluntary.

Member of Village Development Council (Vikas Mandal).

A council for planning and executing development works in the village; members of this council are nominated by the Extension Service personnel.

Community Work. Community work refers to participation in development work such as construction of an approach village

road or a school building; it is voluntary.

Caste. Eighty-five per cent of the Indian population is Hindu. It is well known that the Hindu social system is based on castes. In this study the various castes are categorized in three groups as follows:

Higher Castes. Brahmin (Priest) has the highest caste status, followed by Kshatriyas (Warriors). Marathas belong to the later group of castes. During peace time, Marathas were engaged in farming. Marathas were the rulers until 1818, when they lost their power to the British. At present, Marathas are mainly dependent on farming and therefore, they are often called Kunbi (farmers).

Trader Castes. Marwari, Wani, and Teli are trader castes. Individuals belonging to these castes profess to be traders; but actually they may or may not be in such a business. The artisan castes (village craftsmen) like carpenters, blacksmiths, goldsmiths, weavers, etc. were also included in this category as they are similar to trader castes in social status.

Lower Castes. Individuals of scheduled castes and scheduled tribes were included in this category. The scheduled caste individuals were previously untouchables. Mahar, Mang, and Chambhar (leather worker) were included in this group. Gond and Gawari were the aboriginals and were included in the scheduled tribes. Under the government regulations, the individuals of these low castes are, at present, scheduled to receive certain privileges for education, social welfare benefits, and civil services.

Development of a Model

In the past decade, much research on the adoption of farm practices has been completed in the United States. These studies make it possible to develop a model on a deductive basis.

In a highly simplified form, the principal linkage in the adoption model may be depicted as $B \rightarrow C$, in which B is contact with or exposure to an information source and C is the adoption or use of a practice. This expression may be used to represent a statement of relationship between variables such as: the greater the exposure to media, the greater the adoption of practices. The validity of this particular statement is tested statistically and by daily experience.

The additional "A" variables (education, socio-economic status, attitudes, and the like) which affect the relation between contact with an information source and adoption, can be conceptually introduced in two ways as follows:

Type I: $A \rightarrow B \rightarrow C$ in which an element or factor A leads to contact with a source B and subsequently to the adoption of practice C.

Type II: $B_1 \rightarrow C$
 B_2

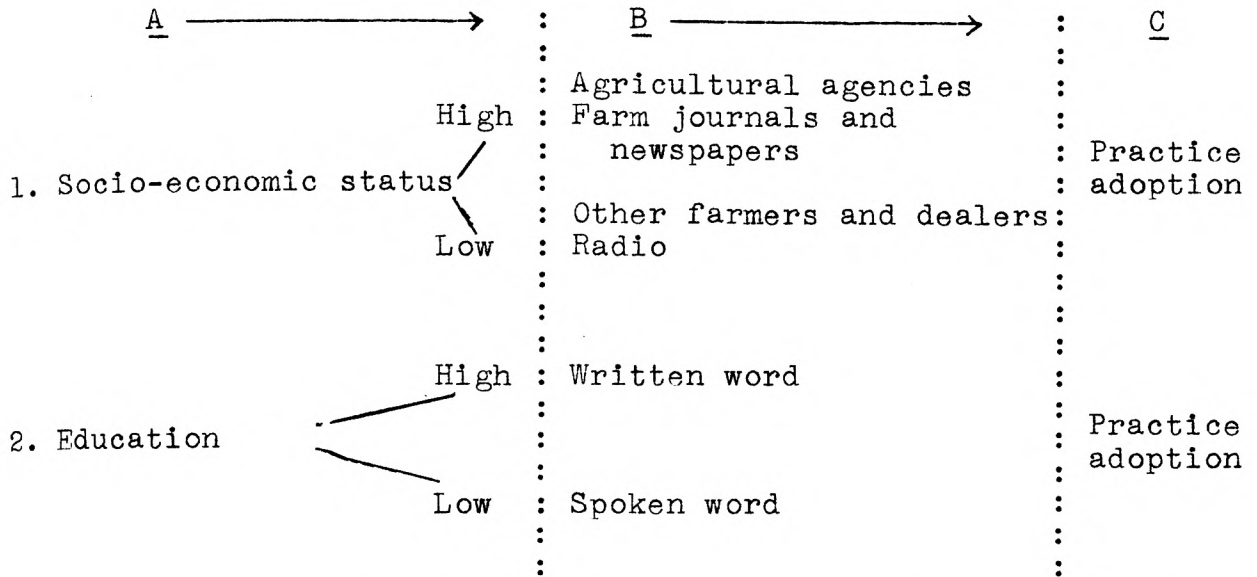
in which an element B_2 serves as a mediating variable or condition affecting the translation of information received from B_1 into actual use on the form C. While ordinarily the relationship $B_1 \rightarrow C$ is assumed to be direct, the relations between the several B's and the foregoing relationship may be either direct

(\longrightarrow) or inverse (\dashrightarrow).⁹⁹

If, from the Type I model ($A \longrightarrow B \longrightarrow C$), we exclude B, and consider $A \longrightarrow C$ only, we find that some personal, social, economic, and psychological factors are directly associated with the adoption of practices, while others are not consistently associated or not associated at all. Research data point to the close association between practice adoption and education, income, level of living, socio-economic status, social participation, social class, knowledge about the practice, and favorable attitudes and values.

Let us consider this Type I model $A \longrightarrow B \longrightarrow C$ in full perspective. The farmer will not adopt a practice (C) unless he obtains knowledge about that practice. He gets knowledge about a practice (C) through his contact with or exposure to an information source (B). His contact with or exposure to an information source varies according to his characteristic (A). This is further simplified in the following diagram, keeping C constant.

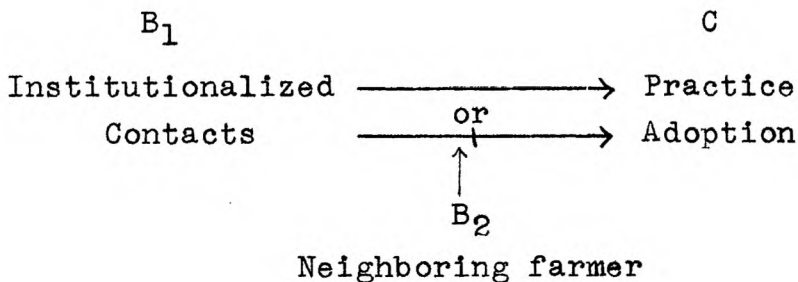
⁹⁹ C. M. Coughenour, "The Function of Farmers' Characteristics in Relation to Contact with Media and Practice Adoption," Rural Sociology 25(1960):283-247.



(Based on the findings of E. A. Wilkening, 1950 and 1959)

When C varies, the dependent variable B also varies, keeping A more or less constant. In other words, other farmers or dealers (B_1) were given more frequently as the main source for these practices associated with established farm practices, such as corn growing (C_1); while the agricultural agencies and the mass media (B_1) were more important sources for practices such as permanent pastures and contouring, which represent more recent innovations in farming (C_2).

expectation for the local farmer. Under these conditions, a neighboring farmer may color his transmission of information with his personal evaluations. A local farmer may also have tried the innovation and failed to obtain satisfactory results. Thus, farmers who cite friends and neighbors as sources of information are more likely to have received negative reactions to a practice than farmers who got their information from the mass media or technical agriculturists.¹⁰⁰ This can be diagrammatically represented as follows:



FINDINGS

Sources of Farm Information

Each sample farmer was asked for his main sources of information for improved farm practices, whether or not the practices had been adopted. An analysis of the main sources of information reported by the sample farmers for nine improved farm practices is given in Table 1 to show the relative importance of different sources of information about farm matters.

¹⁰⁰ J. H. Copp, M. L. Sill, and E. J. Brown, "The Function of Information Sources in the Farm Practice Adoption Process," Rural Sociology 23 (June 1958):146-157.

Table 1. Distribution of farmers by main sources of farm information.

Sources of information	No. of farmers	Per cent
A. Institutionalized		
Block Development Officer	73	21.5
Agricultural Extension Officer	71	20.9
Village Headman (Patil)	89	26.2
Village Level Worker	308	90.2
Field demonstration	159	46.9
B. Mass Media		
Radio	119	35.10
Books	120	35.39
Magazines	106	31.26
Newspapers	112	33.03
Exhibition	184	54.24
C. Individual		
Other farmers	220	64.89
Other farmers' fields	230	67.84
Total No. of farmers	339	

Institutionalized Contacts. Although the Block Development Officer is a generalist and not a specialist on farm matters, his advice was sought at an equal level with the Agricultural Extension Officer. Both of them work at the block level.

At village level, the advice of the Headman was sought by a few farmers, but most of the farmers reported the Village Level Worker (Extension) as their major source of farm information.

The field demonstrations conducted by the VLW in farmers' fields were observed by two-fifths of the farmers.

Mass Media. Battery-operated radios are in operation in many villages. The farmers gather to listen to the villagers' program in the evening. Radio, magazines, books, and newspapers giving farm information reach one-third of the farmers.

Personal Sources. The average farmer is in more frequent contact with neighbors and friends. Nearly two-thirds reported that they sought information on new farm practices from their neighbors and friends, as well as they first observed the effect of new practices on other farmers' fields before adopting these practices themselves.

Farmer Characteristics Associated with Sources of Farm Information

Age. Age is significantly related to the sources of farm information. The younger farmers reported significantly more contact with the institutionalized sources of farm information at the block level and less at the village level than the middle aged or older farmers. More young farmers also reported mass media as main sources of information on farm matters than did the middle-aged or older farmers.

Older farmers were comparatively low in utilization of mass media and institutionalized sources. They seemed to favor only the individual contacts more than the other farmers. As compared to younger farmers, older ones tended to have less formal education, and increasing chronological age inevitably brings with it a decrease in activity levels, in expectations of economic growth

and/or levels of living, willingness to assume risks, and the like.

Table 2. Indexes of information contacts by personal and social characteristics of farmers.

Characteristics	No. of farmers	Block level	Village level	Mass media	Individual
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A. Personal characteristics

1. Age

Below 29	73	.79	1.20	1.53	.73
30-59	239	.29	1.63	1.28	.72
60 and above	27	.18	1.44	1.18	.81
$\chi^2 = 50.10$	df. = 6		$P < .001$		

2. Education

Illiterate	86	.06	1.56	1.00	.76
1-8 grades	222	.48	1.67	1.29	.73
9 and above	31	.96	1.54	1.83	.67
$\chi^2 = 45.40$	df. = 6		$P < .001$		

B. Economic characteristics

1. Economic status

Rich	61	.65	1.67	1.42	.83
Middle	213	.43	1.61	1.22	.70
Poor	65	.20	1.69	1.26	.73
$\chi^2 = 12.19$	df. = 6		$P < .001$		

2. Size of farm operated (acres)

Below 19	153	.17	1.64	1.24	.71
20-49	126	.38	1.57	1.04	.70
50 and above	60	1.11	1.71	1.80	.86
$\chi^2 = 60.33$	df. = 6		$P < .001$		

Table 2 (concl.)

Characteristics	No. of farmers	Block level	Village level	Mass media	Individual
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C. Social characteristics

1. Caste

Upper	177	.60	1.63	1.11	.68
Trader	90	.37	1.66	1.61	.81
Lower	72	.05	1.61	1.20	.76

$$x^2 = 44.34 \quad \text{df.} = 6 \quad P < .001$$

2. Family size

Less than 6	220	.39	1.60	1.27	.76
7 and more	119	.47	1.68	1.25	.68

$$x^2 = 1.75 \quad \text{df.} = 3 \quad P = \text{N.S.D.}$$

3. Participation in community work

Never	91	.15	1.50	.64	.63
Present	195	.63	1.66	1.37	.72
Past	53	.11	1.71	1.92	.94

$$x^2 = 63.36 \quad \text{df.} = 6 \quad P < .001$$

4. Attitude toward C. D. program

Strongly favorable	117	.53	1.76	1.47	.51
Favorable	191	.40	1.66	1.24	.74
Not favorable	31	.12	1.00	.64	.58

$$x^2 = 16.76 \quad \text{df.} = 6 \quad P < .001$$

Education. There is a substantial relationship between the formal education of the farmers and the sources of farm information.

Education. There is a substantial relationship between the formal education of the farmers and the sources of farm information.

The illiterate farmers had a significantly less contact with the institutionalized sources at block level than the literate farmers; they were dependent more on other farmers than the literate farmers. They also utilized the mass media less than their literate colleagues, mainly because of their inability to read the printed extension material. However, two illiterate farmers reported their source of information as the printed material. When questioned further, they said that their school-going sons or friends read for them.

Among the literate farmers, the less educated (below eighth grade) had an information contact index half that of higher educated farmers for the institutionalized contact at the block level, but they had more contact at village level than the latter group. The higher-educated farmers reported more use of mass media than the less-educated farmers who subsequently sought farm information from other farmers more than the higher-educated farmers. Almost all the higher-educated farmers made use of the services of the Village Level Worker.

Economic Status. The economic status of the farmer has some association with information contacts. The farmers with higher incomes reported more use of institutionalized sources at block level, mass media, and personal sources of information than those of the middle class or low-income farmers. The low-income farmers

favored more use of the institutionalized sources of information at the village level. It is expensive for them to call at the block headquarters to seek farm information. Therefore, only one in ten low-income farmers reported this source of information. The low-income farmers utilized the village radio more than the high-income farmers for the farm information, but they were the lowest in the use of printed matter. The low-income farmers were likely to be illiterate.

Size of Farm Operated. There was a substantial relationship between size of farm operated and the farmers' information contacts.

The farmers who operated more than 50 acres reported more use of all sources of farm information than those farmers who operated less than 50 acres of land. The information contact index of the small land holders (below 19 acres) was one tenth the index of the big land holders (more than 50 acres).

There was a little difference in information contact indexes of small land-holders and medium land-holders with respect to institutionalized contact at the village level, mass media, and personal sources of farm information.

Caste. There was a substantial association between the social position of an individual as indicated by his caste and his information contacts. The upper-caste farmers made more use of institutionalized sources at the block level than the trader-caste and lower-caste farmers, but the reverse was true for the use of institutionalized sources at the village level. The block

level institutionalized sources did not reach to the lower-caste farmers.

More use of mass media was made by trader caste, business-oriented farmers than other farmers. They, along with the lower castes, also made more use of personal sources of farm information.

Family Size. There was no significant difference between smaller and larger families in respect of sources of information on farm practices.

Participation in Community Work. The farmers who never participated in the community work organized by the NES officers used sources of information less than the farmers who took active part in community work. There was not much difference in the use of various sources of farm information by the farmers who participated in these activities in the past and at the time of interview.

Attitude Toward Community Development Program. The farmers who had an unfavorable attitude towards the C.D. program made less use of all sources of farm information, and more particularly of block level institutionalized contacts and mass media.

The farmers who were strongly favorable to the C.D. program made greater use of all institutionalized contacts (especially mass media) than the farmers who had less favorable attitudes.

Sources of Information and Adoption of Farm Practices.

To find out how far various sources of farm information were influential in causing farmers to adopt farm practices, the data were further analyzed as shown in Table 3.

Table 3. Percentage distribution of farmers by sources of information and adoption of farm practices.

Sources of information	: No. of : farmers:	: No. of practices adopted		
		: 0-3	: 4-6	: 7-9
		Per cent		
Agriculture Extension Officer	71	0	18	82
Block Development Officer	73	4	23	73
Village Level Worker	308	14	41	45
Village Headman	89	23	47	30
Field demonstrations	159	10	33	57
Exhibition	184	11	32	57
Radio	119	10	41	49
Printed page	127	3	29	68
Other farmers	250	13	39	48
$\chi^2 = 83.77$		df. = 16		P < .001

The farmers who called on the BDO and AEO adopted a maximum number of farm practices. Two thirds of the farmers who referred to the printed page also adopted a maximum number of practices. Next in order of influence were field demonstrations and exhibitions. Half of the farmers who listened to the radio discussed with other farmers and adopted maximum practices.

The village headman was not influential; a few farmers sought this source of information. The advice of the VLW was sought by many farmers, but less than half of them adopted the maximum number of practices.

Extent of Adoption of Farm Practices

Of the nine practices included in this study, preparation of farm yard manure, improved seed, and soil conservation practices received favorable consideration from the farmers, these practices being adopted by 85 per cent of the sample farmers.

These three practices were simple and did not require a substantial change in the method of farming.

Next in order of adoption were cattle vaccination, use of chemical fertilizers, and improved implements. Vaccination of cattle, as a preventive measure against rinderpest, was done by VLW and the Veterinary Extension Officer, free of charge to the farmers. A few farmers in the sample did not own cattle. This reduced the percentage of adopters of the practice. The other two practices represent substantial innovations on the part of farmers. They had to incur substantial expenditure and change in enterprise for the adoption of these practices. The rate of adoption of the fertilizer in this block was quite similar to that of Iowa State in the United States where 62 per cent of the farmers used fertilizer on only 21 per cent of the farm land.¹⁰¹

About half of the sample farmers made use of insecticides and fungicides¹⁰² and recommended breeding practices. Some of the farmers had no knowledge of the insecticides and fungicides, particularly how to use them against specific pests and diseases. Recommended breeding practices such as artificial insemination were against the cultural values of some of the farmers.

Green manuring was adopted by only one fifth of the sample farmers, as there were limitations in adoption of this practice by all of the farmers. This practice is suitable where the

¹⁰¹ Anderson *et al.*, *op. cit.*

¹⁰² The insecticides and fungicides were considered together as a majority of the farmers were not able to distinguish between these materials.

farmers grow wheat or garden crops which was possible only where irrigation was available.

Table 4. Distribution of farmers adopting recommended farm practices.

Practice	: No. of : farmers	: : Per cent
Improved seed	290	85.54
Soil conservation	290	85.54
Preparation of farm yard manure	287	84.66
Cattle vaccination	268	79.05
Improved implements	237	69.91
Fertilizers	216	63.71
Insecticides and fungicides	186	54.86
Cattle breeding practices	151	44.54
Green manuring	72	21.23
Number of farmers	339	

Considering the number of practices adopted by the farmers, it was found that only three farmers had not adopted any practice, 16 per cent adopted 1 to 3 practices, 41 per cent adopted 4 to 6 practices, and 42 per cent adopted 7 to 9 practices.

Table 5. Percentage distribution of farmers adopting group of farm practices.

Number of practices	:	Per cent
No adoption		0.88
1-3		15.91
4-6		40.69
7-9		42.52
Number of farmers	339	

Characteristics of Farmers Associated with the
Adoption of Farm Practices

Personal Characteristics. Age. Age and experience (which is highly correlated with age) are revered in Indian culture. There were slight but not significant differences in adoption by the sample farmers when they were categorized in three groups, viz., younger, middle aged, and older. There were no differences when the farmers were categorized in two groups, viz., younger (below 49 years) and older (over 50 years).

Considering the practices separately, it was observed that age did not discriminate concerning adoption of farm practices.

Table 6. Percentage distribution of farmers by their characteristics and number of practices adopted.

Characteristics	: No. of farmers :	: No. of practices adopted :			: Association :
		: 0-3 :	: 4-6 :	: 7-9 :	
		Per cent			

A. Personal

1. Age (years)

Less than 29	73	15	44	41	) $x^2 = 2.43$
30-59	239	18	41	41	) $df. = 4$
60 or more	27	15	30	55	) $P = N.S.D.$

2. Education

Illiterate	86	35	43	22	) $x^2 = 33.66$
1-8 grades	222	11	42	47	) $df. = 4$
9 and above grades	31	6	26	68	) $P < .001$

B. Economic

1. Economic status

Rich	61	7	23	70	) $x^2 = 55.04$
Middle	213	13	44	43	) $df. = 4$
Poor	65	40	45	15	) $P < .001$

Table 6 (concl.).

Characteristics	: No. of farmers :	: No. of practices adopted :			: Association :
		: 0-3 :	: 4-6 :	: 7-9 :	
		Per cent			
2. Size of farm operated (acres)					
Less than 19	153	27	46	27	) $x^2 = 47.40$
20-49	126	13	40	47	) df. = 2
50 and more	60	0	27	73	) P < .001
3. Farming only					
Farming + other occupation	254	20	41	39	) $x^2 = 11.54$
	85	8	39	53	) P < .01
C. Social					
1. Caste					
Higher	177	15	40	45	) $x^2 = 26.65$
Trader	90	12	32	56	) df. = 4
Lower	72	28	54	18	) P < .001
2. Family size					
Less than 6	220	16	46	38	) $x^2 = 6.25$
					) df. = 2
7 and more	119	18	32	50	) P < .05
3. Social status					
Farmers with one or more official position	121	7	32	61	) $x^2 = 29.26$
					) df. = 2
Farmers without any official position	218	22	46	32	) P < .001
4. Participation in community work					
Never	91	37	42	21	) $x^2 = 58.45$
Present	195	7	36	57	) df. = 4
Past	53	17	55	28	) P < .001
D. Psychological					
1. Attitude toward C.D. program					
Strongly favorable	117	7	37	56	) $x^2 = 59.07$
Favorable	191	16	45	39	) df. = 4
Not favorable	31	61	29	10	) P < .001

The data indicate that age is not related to the adoption of recommended farm practices and do not statistically confirm the hypothesis that the younger farmers are likely to adopt more practices than older farmers.

Education. There is evidence that education tends to make a difference. Of the 339 sample farmers, three fourths of the farmers were literate. The data support the hypothesis that the more education the farmer has, the greater is the likelihood that he will adopt approved practices.

The data indicate that the illiterate farmers tend to adopt a few practices while the farmers with higher education tend to adopt maximum farm practices. Only one fifth of the illiterates were high level adopters, while about half of the farmers with less than eight grades of education and two thirds of the farmers with high school and college education adopted seven or more practices. All those with some college education were in the high level adoption bracket.

Education of the farmer was also associated with the adoption of each of nine improved farm practices considered separately. Differences were greatest by education of the farmer for the adoption of insecticides and fungicides, green manuring, fertilizer, and cattle breeding practices.

Thus, education of the farmers is highly associated with the adoption of innovations in farming.

Economic Characteristics. Economic Status. Many of the farmers do not keep farm accounts; neither do they have to pay

the income tax. So it is difficult to assess the income of the farmers in India. In the absence of reliable information about farmers' income, the farmers were categorized in three groups on the basis of their self-appraisal as rich, middle, and poor.

The hypothesis that the higher the economic status of the individual, the more likely he is to adopt recommended farm practices, is confirmed at the 0.001 level of significance. While only 60 per cent of the lower economic status farmers were medium and high level adopters, 87 per cent of the middle class farmers and 93 per cent of the higher economic status group of farmers adopted more than four practices, and, while 70 per cent of the rich farmers were high-level adopters, only 15 per cent of the farmers having low economic status fell into this category.

The economic status of the farmer was also associated with the adoption of each of nine improved practices considered separately. Practices like improved implements, insecticides and fungicides, green manuring, and fertilizer had been adopted by few farmers having low economic status, while the farmers of high economic standing had adopted almost all practices equally.

Size of Farm Operated. The land holding operated by the farmer is an important factor in the adoption of farm practices. The data strongly support the hypothesis that the farmers who operate relatively large acreages will make greater use of recommended farm practices than those operating relatively small acreages.

The frequency distribution of the farmers operating less than 19 acres of land forms a normal curve; about half of these farmers adopted 4 to 6 practices and about one fourth of these farmers adopted 0 to 3 or 7 to 9 practices. Eighty-seven per cent of the farmers who operated 20 to 40 acres of land holdings adopted more than 4 farm practices included in this study, while all the farmers who operated more than 50 acres adopted more than 4 farm practices, and about three fourths of these farmers adopted 7 to 9 practices.

Considering all nine practices separately, it was found that almost all the farmers operating more than 50 acres of land adopted improved implements, improved seed, improved method of F.Y.M. preparation, cattle vaccination, soil conservation, and fertilizer application. The most favored practices by the small land holders are improved seed, improved method of F.Y.M. preparation, and soil conservation which does not involve much expenditure or material changes in their method of farming; and these were adopted by less than three fourths of the farmers.

Subsidiary Occupation. Although subsidiary occupation of the farmer contributes additional income to that received from his farm, he may not be able to devote full-time attention to farm work. Thus, it was assumed that the subsidiary occupation may have a deterring effect on the adoption of approved practices. The results were contrary to this assumption. The hypothesis that those farmers working part of the time off the farm will adopt fewer practices than those who do not have such occupation was not confirmed.

While over half of the farmers with subsidiary occupations and income were high-level adopters, less than 40 per cent of the farmers entirely dependent on farming were high adopters, and whereas fewer than one in ten of the farmers with subsidiary occupations were low-level adopters, one in five of those engaged in farming only was a low-level adopter. The differences are significant at the one per cent level.

Considering each practice separately, it was found that all farmers who were engaged in trading as a subsidiary occupation adopted improved method of F.Y.M. preparation, improved seed, and soil conservation, and their adoption rate also was higher than that of other farmers. All dairymen and shepherds had vaccinated their cattle, but only half of them adopted recommended breeding practices. The rate of adoption was comparatively low in cases of employees and village artisans.

Social Characteristics. Caste. In the Indian social system, the person's social status or class position is determined solely by birth, and nothing he can do will enable him to change his position from a specific caste.

Amongst the sample farmers, seven persons were Brahmins, the caste which ranks highest in the Hindu Social System. Of these seven farmers, six had adopted maximum (7 to 9) farm practices and one had adopted 4 to 6 practices. The largest caste group was Kunbi-Maratha. The persons of this caste are born-farmers. Of the 170 Kunbi farmers, 44 per cent had adopted 7 to 9 practices, 41 per cent adopted 4 to 6, and 15 per cent adopted less

than 3 farm practices. The farmers belonging to trader castes had increasingly adopted more farm practices; more than half of them adopted 7 to 9 farm practices. Perhaps this is because they are often economically better placed. In the whole sample there was a single farmer of Moslem religion and he had adopted more than 7 practices. Of the 15 farmers belonging to scheduled castes, not a single farmer adopted more than 6 practices; half of them adopted 4 to 6 practices, and half of them adopted less than 3. The scheduled tribe farmers were better adopters than those of scheduled castes because one fourth of the former had adopted 7 to 9 practices and half of them had adopted 4 to 6 practices. The farmers who were not grouped in the above main castes were grouped under other castes or lower castes. Of 32 such farmers, 62 per cent were medium practice adopters and 19 per cent were low and high adopters.

Considering each farm practice separately, three practices, viz., insecticides, green manure, and breeding practices were not much favored even by higher caste farmers. The majority of lower caste farmers favored the use of improved seed, preparation of F.Y.M., and soil conservation.

It is evident from the data that the person's class position is highly associated with his adoption of more farm practices. The hypothesis that the higher the social status of the individual the more likely he is to adopt approved practices, is confirmed.

Family Size. Although the traditional joint family system is disintegrating, one can still find such families in rural

India. In this sample, the modal number of family members in each family was six. It is interesting to note that half of the farmers having larger family size than the average, had adopted more than 7 farm practices, while only 38 per cent of the farmers having smaller families had adopted more than 7 farm practices. The results were contrary in case of the medium number of practices; 46 per cent of the farmers having small families, adopted 4 to 6 practices while 32 per cent of the farmers having large families adopted 4 to 6 practices. There was not much difference between large- and small-family farmers regarding adoption of less than 3 farm practices.

The hypothesis that the farmers with larger families will adopt fewer recommended practices than the farmers with smaller families has been rejected at the 5 per cent level. The joint families often operate larger farms. When joint families are split up into smaller families, the land owned is divided into smaller land holdings which are subsequently owned by the small (nuclear) families. Since the farm size is highly associated with the adoption of approved farm practices on the basis of deductive logic, size of family is also related to the adoption of approved farm practices.

Social Status. The social status, as indicated by the number of official positions an individual has, enhances one's prestige in the society in India. Several such positions are open to the Indian villager since the country's administrative set-up is based on democratic principles.

All farmers in the sample, occupying the official positions like President and Member of the Village Council, Member of the Judiciary Council, Member of the Temple Committee, and Member of Cooperatives adopted more than four recommended farm practices, and the majority (more than three fourths) of them adopted more than seven farm practices. All village headmen except one of 30 in the sample, adopted more than four farm practices. However, it is rather surprising to note that all the members of the Development Council in the sample had adopted less than six practices, and nearly one third of them adopted less than three practices.

Besides these official position farmers, there were 35 informal local leaders in the sample; two thirds of them were medium (4-6) practice adopters and nearly one fourth of them adopted more than seven farm practices. This confirms the findings of Ryan and Gross¹⁰³ that the local leaders must conform to the values and standards of the locality and consequently do not push too far ahead of the group.

Considering each farm practice separately, it was found that almost all the Village Headmen adopted improved implements, improved seed, preparation of compost, insecticides and fungicides, cattle vaccination, soil conservation, and fertilizers. The same was the case for the presidents and members of the village organizations about the adoption of improved seed, preparation of

¹⁰³ Ryan and Gross (1950), op. cit.

compost, insecticides and fungicides, cattle vaccination, soil conservation, and fertilizers. The informal local leaders favored mostly the adoption of improved seed, preparation of compost, and soil conservation--the same practices which were adopted by average farmers.

The farmers occupying the official positions are often economically well-placed. Therefore, slightly less than two thirds of these farmers adopted more than 7 practices and one third of them adopted 4 to 6 practices; while the farmers without any official position adopted fewer practices. Of the later farmers, 32 per cent adopted more than 7 practices, 46 per cent adopted 4 to 6, and 22 per cent adopted less than 3 farm practices.

Participation in Community Work. Community work in villages, like the construction of approach roads, drinking water wells, school buildings, and community halls is organized by the Village Level Worker and other Extension Service officials. Participation in these activities in the form of labor and money is not obligatory for the villagers. Participation of the farmer in community work is a good indication of his interest in the community development program.

The assumption was that the farmer who participated in community activities would be exposed to more contacts with other villagers, village officials, and Extension staff and therefore, he would be likely to adopt more farm practices. This hypothesis is substantially confirmed. The farmers who participated actively in the community work were higher-level adopters than those who

never participated in such work.

Attitude Toward Community Development Program. The favorable attitude of the farmers towards the Community Development Program and the National Extension Service seems to be closely related to the adoption of farm practices by these farmers.

The farmers with a favorable attitude adopted fewer practices than farmers who strongly favored the program while the farmers who had an unfavorable attitude towards the program adopted still fewer farm practices than either of the above groups of farmers.

Testing the Model

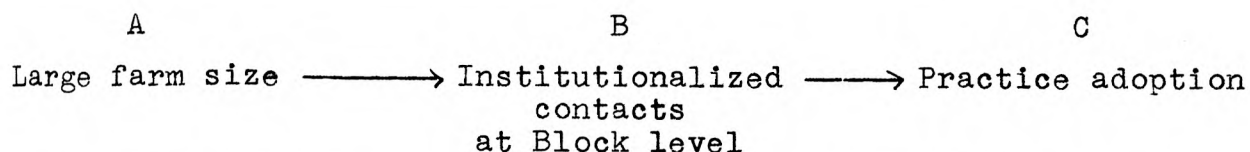
The model referred to in Method of Study was applied to the data of this study. The results are shown in Table 7. The association of certain characteristics of farmers with information contacts and with the adoption of farm practices is as predicted in the model except in case of age and family size. The evidence in Table 7 suggests that the increasing rate of practice adoption is effected by increasing the number of information contacts which are positively associated with farmers' characteristics like formal education, economic status, size of farm, caste, participation in community work, and favorable attitude towards Extension Service.

This supports the hypothesis derived from the Type I Model. This will be further illustrated by considering one of the several variables, say, size of the farm operated. The farmers

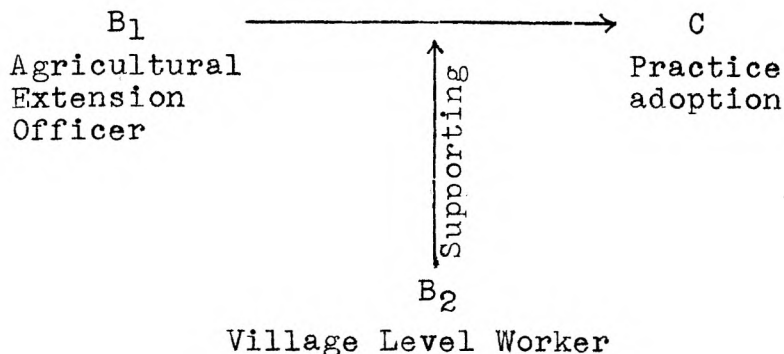
who operated larger farms increasingly made use of information media and subsequently adopted more farm practices.

Table 7. Association of farmer characteristics with information contacts and practice adoption.

Farmer characteristics	: Information contacts	: Level of sig.	: Practice adoption	: Level of sig.
Age	-	.001	0	n.s.
Education	+	.001	+	.001
Economic status	+	.05	+	.001
Size of farm	+	.001	+	.001
Caste	+	.001	+	.001
Size of family	0	n.s.	+	.05
Social participation	+	.001	+	.001
Attitude toward NES	+	.001	+	.01



The data also support the hypothesis suggested by the Type II model. The contact with the Agricultural Extension Officer was more convincing to the farmer for adoption of farm practices. More than four fifths of the farmers who reported this source of information were high adopters (Table 4). The Village Level Worker, who works under the guidance of the Agricultural Extension Officer, also has the supporting influence on the farmers towards the right direction, as illustrated in the following figure.



On the other hand, the farmers who consulted the Village Headmen were likely to have received negative reactions to certain farm practices. The data show that, compared with other sources of farm information, the contact resulted in the highest percentage of low adopters and the lowest percentage of high adopters (Table 3). This possibly indicates the dissatisfaction of the Village Headmen towards present changes in the administrative set-up; these changes he may perceive as a threat. During the interview period, a partial transfer of power from the hereditary position of the Village Headman to the Village Council occurred. Hence, the village leadership of the Village Headman was dwindling and was taken up slowly by the Village Level Worker. The Village Headman had, therefore, an unsympathetic attitude towards the Extension Service. This situation might have been effective in prejudicing the farmers who consulted Village Headmen against the new farm practices.

with adoption, is thus supported by Copp's finding.¹⁰⁴

Based on the data of this study, the farmers can be classified in two groups: (1) high adopters and (2) low adopters.

The farmers who adopted a maximum number of practices (high adopters) are comparatively rich, upper caste, had higher formal education, had a favorable attitude toward the Extension Service, participated in community activities, and operated larger farms. These farmers also made maximum use of institutionalized sources and mass media of farm information.

The farmers who own and operate larger farms are often high-income and well-educated farmers. They are often required to go to the town where the Block headquarter is located to sell their produce. They can very easily call on the Block Development Officer and Agricultural Extension Officer. Their information contacts are also wide. They are able to purchase agricultural books or to subscribe to agricultural magazines and newspapers. Some of them, at least, can own a radio to listen to the agricultural information broadcasts. These farmers are often elected to village official positions and subsequently they come in contact with other Government officers and progressive farmers. Thus, these farmers have a number of contacts which they may utilize for new farm information.

After getting necessary information from various sources (awareness, interest, and evaluation stages), the individual of the above group can actually apply the idea; he can afford to risk experimenting with the idea without unbalancing his annual income.

¹⁰⁴ Copp, op. cit. (1956).

The position of small farmers is quite the reverse. They are usually low-income farmers, illiterate or low educated, lower castes, and socially of low status. These farmers are not in a position to experiment, especially where financial risks are high; the more judicious course for them, therefore, may be to wait for others to demonstrate the merits of new practices before pressing for adoption. In case of failure, the chances of being ridiculed by other villagers are greater for these farmers being of low status. Their contacts are limited often amongst the residents of their own village and they have less leisure time to spend in search of new knowledge.

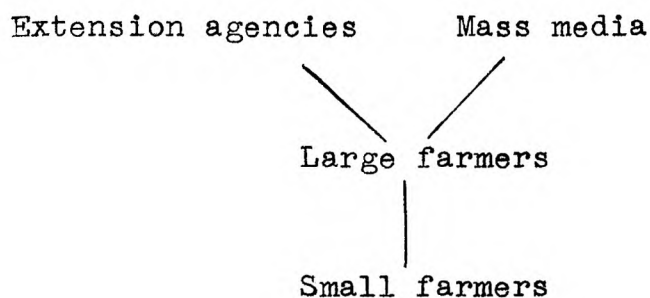
These lower-caste farmers are also socially dependent on higher-caste farmers. The former, being small land-holders, are also economically dependent on larger land-holders, as small land-holders often have to borrow seed, money, bullocks, and implements from the larger land-holders. The small farmers have no capital outlay to invest in costly farm practices. Therefore, the farm practices, like the adoption of improved seed, preparation of farm yard manure, and cattle vaccination, which do not require high expenditure, are favored by small farmers.

The small farmers do not seek information directly from the Block level institutionalized contacts or from the printed page. They depend on whatever sources are available at the village level.

When any new practice is introduced to the small farmer, his first reaction to the practice may be negative. He will say,

"This practice is not suitable to my land." Instead of directly accepting the practice, though its benefits are promised by the Agricultural Extension Officer, he wants to evaluate the merits of a new practice by actually observing the field demonstrations on neighbors' fields where the practice has been adopted, and by seeking advice of a respected farmer, whom he considers to be an expert on farm matters and by discussing a new practice with his friends. He will only adopt a new practice when his prejudices and doubts are clarified.

Thus, the whole diffusion process becomes "Y" pattern of communication in Indian conditions. The farm information from the Extension agencies and mass media first reaches the larger farmers who are the first adopters of the practice in a village. This information, ideally, is later transmitted to the smaller farmers, who are later adopters of a new practice.



Communication pattern of diffusion of farm information
in an Indian community.

When a farmer who owns a small piece of land is ready to adopt a new practice, he has to think a lot before committing to a new practice--say use of fertilizer to his cotton crop. He has

to have confidence as regards the cash he will receive after selling cotton in the market and has to utilize the cash for the maintenance of his family the whole year round. If a small farmer applies a fertilizer to his unirrigated cotton crop, and later on drought causes the failure of cotton harvest, he may be unable to provide for the maintenance of his family. Either he will have to borrow money from the money-lender at high interest or he will have to become a permanent (for a year at least) agricultural employee of the money-lender. The large farm holder does not take such a risk. The loss of crop on three acres of land could have more disastrous effects on the farmer who owns or operates only three acres than the farmer who owns or operates more than 50 acres of farm land.

The mass media are important in making the farmers aware of the new practice. In a recent study in India, it has been observed that levels of knowledge about new agricultural practices increased considerably in villages with a Radio Farm Forum; very little in control villages with radio but no forum; and not at all in control villages with no radio. This established immediately the usefulness of Radio Farm Forums. Since education is rapidly spreading amongst the villagers, the printed page will be an important source of farm information in the future. Exhibitions and result demonstrations also have positive effects in carrying the farmers in the right direction.

The background is prepared through the mass media so that the job of Extension agents becomes easier. Prior exposure

through these media enable him to be more convinced at the right stages of evaluation, trial, and adoption of a new farm practice.

SUMMARY AND CONCLUSIONS

This study involved the development of a model for acceptance of an agricultural practice. The two hypotheses in the model were stated as: (1) an element or factor leads to contact with the source of farm information and subsequently to the adoption of practice, and (2) an element serves as a mediating variable or condition affecting the translation of information received from the information agency into actual adoption of a practice. This model was tested in the Indian culture. The data were collected from 339 farmers of a community development area of the Maharashtra State, India by personal interview. Several other working hypotheses were formulated and were statistically tested by using chi-square tests.

The study has approached the problem of the adoption of nine improved farm practices by two ways: (a) the relationship of certain farmer characteristics to the sources of farm information, and (2) the relationship of these characteristics to the adoption of improved farm practices.

Contacts for Information about Farm Practices

1. Of the various sources of farm information available to the Indian farmers, most of these farmers (91 per cent) had contacted the Village Level Workers before acceptance of recommended

farm practices. Most of them (74 per cent) further sought the advice of other farmers. Nearly half of these farmers observed field demonstrations and exhibitions; one third of them relied on radio and printed page; and one fifth called on the Extension Service Officers.

2. The institutionalized contacts at the Block level were more preferred by the farmers who were younger, upper caste, comparatively rich, had higher formal education, had a favorable attitude toward Extension service, participated in community activities, and operated larger farms.

3. The farmers who were older, lower caste, and illiterate depended more on other farmers for information on farm matters than other contacts.

4. The mass media were preferred more by the farmers who had higher formal education, operated larger farms, belonged to trader castes, were comparatively rich, and younger.

5. The institutionalized contacts at the village level were sought by the majority of the farmers.

Adoption of Improved Practices

1. Of the nine improved farm practices, a majority (85 per cent) of the farmers adopted preparation of farm yard manure by a new method, improved seed and soil conservation by bunding fields; three fourths of the farmers got their cattle vaccinated against epidemics; less than two thirds used at least one improved implement and fertilizer; half of them adopted new cattle

breeding practices and insecticides--fungicides; and one fifth adopted green manuring.

2. The association of the age of the farmer with adoption was not definitely established.

3. Formal education of the farmer was highly associated with the adoption of improved farm practices. The literate farmers adopted more farm practices than the illiterate farmers. More than two thirds of those with at least one year of high school had adopted maximum farm practices.

4. The economic status of the farmer was significantly associated with the adoption of improved practices. Seventy per cent of the high economic status farmers were high adopters while only 15 per cent of the low-income farmers adopted seven or more recommended practices.

5. Acres of crop land operated was highly associated with the adoption of improved farm practices. Nearly three fourths of the farmers operating more than 50 acres adopted more than seven practices, while only one fourth of the farmers operating less than 20 acres could be included in this group.

6. Farmers having subsidiary occupation besides farming had adopted significantly more improved practices than the farmers wholly dependent on farming.

7. The caste status of the farmer was highly associated with the adoption of farm practices. Higher-caste farmers adopted more practices than low-caste farmers, and trader-caste farmers adopted more practices than both groups of farmers.

8. The size of the farmer's family was slightly associated with the adoption of farm practices, with larger than modal families adopting more practices than the smaller families.

9. Farmers with one or more official positions had adopted significantly more farm practices than farmers without any official position.

10. The farmers who actively participated in community work had adopted significantly more practices than farmers who never participated.

11. The attitude of the farmers towards Extension Service was highly associated with the adoption of farm practices. Nearly half of the farmers having a favorable attitude towards Extension Service were high-level adopters while only one tenth of the farmers having a negative attitude could be included in this category.

IMPLICATIONS

Although extensive research on the diffusion of farm information and adoption of farm practices has been conducted in the United States, barring a few papers published by this author, no research in this area has been conducted in India. The future of India, mainly an agricultural country, is largely dependent on the development of agriculture. Hence, more emphasis has been given to agriculture in the Community Development Program.

In the field of agriculture, major emphasis is at present given to increasing efficiency by adopting improved farm practices.

It is, therefore, necessary for the Extension workers to know type of farmers are early adopters and who are laggards, and what the process of diffusion of farm information is in an Indian community. Based on these findings, the Extension workers can plan ahead their activities for a quick and better spread of farm practices.

The philosophy of Extension is "not to force people to do anything against their will." The small farmers will not be convinced to adopt a new practice with the efforts of Extension officers unless they have confidence in the latter. The persons of small farmers' confidence are different than the Extension officers. Extension officers should approach these trusted and reliable agents in the community who are often oriented toward accepting new ideas and whose conception of a new idea is consistent with the Extension worker's parlance.¹⁰⁵ These farmers should be approached and convinced to adopt new practices. It is often suggested that the Extension officer should "adopt" one or two progressive farmers of the community who are called "adopted farmers" or "demonstrators." These are the ones who are already "acceptance prone." Enlighten these farmers, and like a candle, the light will spread in the community. The danger in this approach is that other farmers may be prejudiced against the Extension Service being beneficiary only to farmers of better socio-economic status. Such a prejudice can be mitigated by helping small farmers in securing credit, material, and equipment

¹⁰⁵ Rohrer, op. cit.

to adopt a new practice through the Extension Service. At the same time, the Extension officer can concentrate his efforts in convincing progressive farmers to adopt new practices.

After adoption of a new practice, the progressive farmers can better interpret the results in common farmers' language, perhaps in a more convincing way than the Extension officers. Thus, the other farmers involved will understand their importance, see them work out successfully in practice, and find in them distinct advantages over the old practices. This means that, although the conditioning influences can come through mass media, yet the influences leading to adoption must come from trusted and reliable agents in the community who can find and convince those of influence among the people to try out and use the new practice.

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LITERATURE CITED

Books

- Barnett, H. G. Innovation. New York: McGraw-Hill, 1953.
- Emery, F. E., and O. A. Oeser. Information, Decision and Action. New York: Cambridge University Press, 1958.
- Rogers, E. M. Social Change in Rural Society. New York: Appleton-Century-Crofts, Inc., 1960.
- Wilkening, E. A. "Communication of Information on Innovations in Agriculture" in On Communications, edited by W. Schramm, 1959.
- Wilson, M. C., and C. B. Smith. Agricultural Extension System. New York: John Wiley and Sons, Inc., 1930.

Periodicals

- Beal, G. M., E. M. Rogers, and J. M. Bohlen, "Validity of the Concept of Stages in the Adoption Process," Rural Sociology 22(1957):166-168.
- Blumer, H., "Sociological Analysis and the Variable," American Sociological Review 21(1956):683-690.
- Brandner, L., and M. A. Straus, "Congruence Versus Profitability in the Diffusion of Hybrid Sorghum," Rural Sociology 24 (Dec. 1959):381-383.
- Coleman, A. Lee, and C. P. Marsh, "Differential Communication Among Farmers in a Kentucky County," Rural Sociology 20 (June 1955):93-101.
- Copp, J. H., "Toward Generalization in Farm Practice Research," Rural Sociology 23(June 1958):103-111.
- Copp, J. H., M. L. Sill, and E. J. Brown, "The Function of Information Sources in the Farm Practice Adoption Process," Rural Sociology 23(June 1958):146-157.
- Coughenour, C. M., "The Function of Farmers' Characteristics in Relation to Contact with Media and Practice Adoption," Rural Sociology 25(1960):283-297.
- Fliegel, F. C., "A Multiple Correlation Analysis of Factors Associated with the Adoption of Farm Practices," Rural Sociology 21(1956):284-292.

- Fliegel, F. C., "Farm Income and the Adoption of Farm Practices," Rural Sociology 22(June 1957):159-162.
- Gross, N., "The Differential Characteristics of Acceptors and Non-acceptors of an Approved Technological Practice," Rural Sociology 14(June 1949):148-156.
- Gross, N., and M. J. Taves, "Characteristics Associated with Acceptance of Recommended Farm Practices," Rural Sociology 17(Dec. 1952):321-328.
- Hoffer, C. R., and D. Stangland, "Farmers' Attitudes and Values in Relation to Adoption of Approved Practices in Corn Growing," Rural Sociology 23(June 1958):112-120.
- Lindstrom, D. E., "Diffusion of Agricultural and Home Economics Practices in a Japanese Rural Community," Rural Sociology 23(June 1958):171-183.
- Lionberger, H. F., "The Relation of Informal Social Groups to the Diffusion of Farm Information in a Northeast Missouri Farm Community," Rural Sociology 19(Sept. 1954):233-244.
- _____. "The Diffusion of Farm and Home Information as an Area of Sociological Research," Rural Sociology 17(June 1952):132-144.
- _____. "Some Characteristics of Farm Operators Sought as Sources of Farm Information in a Missouri Community," Rural Sociology 18(Dec. 1953):327-338.
- _____. "Community Prestige and the Choice of Sources of Farm Information," Public Opinion Quarterly 23(1959):110-118.
- _____. "Neighborhoods as a Factor in the Diffusion of Farm Information in a Northeast Missouri Farming Community," Rural Sociology 19(Dec. 1954):377-384.
- Marsh, C. P., and A. L. Coleman, "The Relation of Neighborhood of Residence to Adoption of Recommended Farm Practices," Rural Sociology 19(Dec. 1954):355-389.
- Marsh, C. P., and A. L. Coleman, "Farmers' Practice-Adoption Roles in Relation to Adoption Rates of Leaders," Rural Sociology 19(June 1954):180-183.
- Marsh, C. P., and A. L. Coleman, "The Relation of Kinship Exchanging Work and Visiting to the Adoption of Recommended Farm Practices," Rural Sociology 24(1959):372-383.
- _____. "The Relation of Farmer Characteristics to the Adoption of Recommended Farm Practice," Rural Sociology 20 (Sept.-Dec. 1955):289-296.

- Pederson, H. A., "Cultural Differences in the Acceptance of Recommended Practices," Rural Sociology 16(March 1951):37-49.
- Rahudkar, W. B., "Impact of Fertilizer Extension Program on the Minds of the Farmers and Their Reactions to Different Extension Methods," Indian J. Agronomy 3(Dec. 1958):119-136.
- _____. "Local Leaders and the Adoption of Farm Practices," Nagpur Agr. College Magazine 34(1960):1-13.
- Ramsey, C. E., R. A. Polson, and G. E. Spencer, "Values and the Adoption of Practices," Rural Sociology 24(March 1959):35-47.
- Rogers, E. M., "A Conceptual Variable Analysis of Technological Change," Rural Sociology 23(June 1958):136-145.
- _____. "Categorizing the Adopters of Agricultural Practices," Rural Sociology 23(1958):345-354.
- Rogers, E. M., and G. M. Beal, "The Importance of Personal Influence in the Adoption of Technological Change," Social Forces 36(1958):324-335.
- Rohrer, W. C., "On Clientele of the Agricultural Extension Service," Rural Sociology (Sept,-Dec. 1955):299-303.
- Ryan, B., "A Study of Technological Diffusion," Rural Sociology 13(Sept. 1948):273-285.
- Ryan, B., and N. Gross, "The Diffusion of Hybrid Seed Corn in Two Iowa Communities," Rural Sociology 8(March 1943):15-24.
- van den Ban, A. W., "Locality Group Differences in the Adoption of New Farm Practices," Rural Sociology 25(Sept. 1960):308-320.
- Wilkening, E. A., "A Socio-psychological Approach to the Study of the Acceptance of Innovations in Farming," Rural Sociology 15(Dec. 1950):352-364.
- _____. "Sources of Information for Improved Farm Practices," Rural Sociology 15(March 1950):19-30.
- _____. "Informal Leaders and Innovators in Farm Practices," Rural Sociology 17(Sept. 1952):372-375.
- _____. "Role of Communicating Agents in Technological Change in Agriculture," Social Forces 34(May 1956):361-367.
- Young, J. N., and A. L. Coleman, "Neighborhood Norms and the Adoption of Farm Practices," Rural Sociology 24(Dec. 1959):372-380.

Bulletins

- Anderson, M. A., and others. An Appraisal of Factors Affecting the Acceptance and Use of Fertilizer in Iowa, 1953. Iowa State College Agr. Exp. Sta. Spec. Rpt. 16, Ames, 1956.
- Baker, H. J., and M. C. Wilson. Relative Costs of Extension Methods Which Influence Changes in Farm and Home Practices. U.S.D.A. Tech. Bul. 125, Washington, 1929.
- Beal, G. M., and J. M. Bohlen. The Diffusion Process. Iowa State College Agr. Ext. Serv. Spec. Rpt. 18, Ames, 1957.
- Beal, G. M., and E. M. Rogers. The Adoption of Two Farm Practices in a Central Iowa Community. Iowa State Univ. Agr. and Home Econ. Exp. Sta. Spec. Rpt. 26, Ames, 1960.
- Bertrand, A. L., and H. L. Hill. Radio Habits in Rural Louisiana. Louisiana State Univ. Agr. Exp. Sta. Bul. 440, Baton Rouge, 1949.
- Copp, J. H. Personal and Social Factors Associated with the Adoption of Recommended Farm Practices Among Cattlemen. Kansas Agr. Exp. Sta. Res. Bul., Manhattan, 1956.
- Coughenour, C. M. Agricultural Agencies as Information Sources for Farmers in a Kentucky County, 1950-1955. Kentucky Agr. Exp. Sta. Progress Rpt. 82, Lexington, 1959.
- Hess, C. V., and L. F. Miller. Some Personal, Economic and Sociological Factors Influencing Dairymen's Actions and Successes. Pennsylvania Agr. Exp. Sta. Bul. 577, State College, 1954.
- Hoffer, C. R. Acceptance of Approved Farming Practices Among Farmers of Dutch Descent. Michigan Agr. Exp. Sta. Spec. 316, East Lansing, 1942.
- Hoffer, C. R., and D. L. Gibson. The Community Situation as It Affects Agricultural Extension Work. Michigan Agr. Exp. Sta. Spec. Bul. 312, 1941.
- Hoffer, C. R., and D. Stangland. Farmers' Reactions to New Practices. Michigan Agr. Exp. Sta. Tech. Bul. 264, 1958.
- Holik, J. S., H. F. Lionberger, and C. E. Lively. "Social and Cultural Factors Affecting the Dissemination and Use of Scientific Farm Information by Missouri Farmers," Annual Report, Missouri Agr. Exp. Sta. Bul. 728, Columbia, 1959.
- Hollmorgan, W. M. The German-Swiss in Franklin County, Tennessee. Bureau of Agr. Econ., U.S.D.A., Washington, 1941.

- Iowa State College Statistical Laboratory. InFARmation Please!
Wallaces' Farmer and Iowa Homestead, Des Moines, 1948.
- Kaufman, H. F., and E. M. Bryant. Characteristics of Farmers'
Recommended Practices. Mississippi Agr. Exp. Sta.
Mississippi Agr. Exp. Sta. Inf. Sheet 608, State College,
1958.
- Lionberger, H. F. Information-Seeking Habits and Characteristics
of Farm Operators. Missouri Agr. Exp. Sta. Res. Bul. 581,
Columbia, 1955.
- _____. Sources and Use of Farm and Home Information by
Low-Income Farmers in Missouri. Missouri Agr. Exp. Sta. Res.
Bul. 472, Columbia, 1956.
- Lionberger, H. F., and C. M. Coughenour. Social Structure and
Diffusion of Farm Information. Missouri Agr. Exp. Sta. Res.
Bul. 631, Columbia, 1957.
- Rogers, E. M., and R. L. Pitzer. The Adoption of Irrigation in
Ohio. Ohio Agr. Exp. Sta. Res. Bul. 851, Wooster, 1960.
- Sizer, L. M., and W. F. Porter. The Relation of Knowledge to
Adoption of Recommended Practices. West Virginia Agr. Exp.
Sta. Bul. 446, Morgantown, 1960.
- Subcommittee on the Diffusion and Adoption of Farm Practices of
the Rural Sociological Society. Sociological Research on
the Diffusion and Adoption of New Farm Practices. Kentucky
Agr. Exp. Sta. Rpt. RS-2, June 1952 (mimeo.).
- _____. How Farm People Accept New Ideas. North Central
Regional Pub. 1. Iowa Agr. Ext. Serv. Spec. Rpt. 15, Ames,
1955.
- Wilkening, E. A. Acceptance of Improved Farm Practices in Three
Coastal Plain Counties. North Carolina Agr. Exp. Sta. Tech.
Bul. 98, Chapel Hill, 1952.
- _____. Adoption of Improved Farm Practices as Related to
Family Factors. Wisconsin Agr. Exp. Sta. Res. Bul. 183,
Madison, 1953.
- Wilson, M. C. Distribution of Bulletins and Their Use by Farmers.
U.S.D.A. Agr. Ext. Serv. Cir. 78, Washington, D.C., 1928.
- Wilson, M. C., and G. Gallup. Extension Teaching Methods.
U.S.D.A. Federal Ext. Serv. Cir. 495, Washington, 1955.

TESTING A CULTURALLY-BOUND MODEL FOR ACCEPTANCE
OF AGRICULTURAL PRACTICES

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Students of cultural change have repeatedly shown the influence of social and cultural factors upon the acceptance of innovations. Agricultural innovations, the products of agricultural experiment stations, are developed to increase productivity by employing available resources efficiently. Some of the farmers readily accept these improved practices, but others remain laggards in adoption of these practices or do not adopt at all. It becomes increasingly important to know about the farmers' characteristics associated with the diffusion and adoption of improved farm practices, particularly in an Indian community where increasing production of agriculture has been given high priority. Such research is essential for extension workers.

The data were collected by interviewing a random sample of 339 farmers of a Community Development Block in Maharashtra State, India. The data were statistically analyzed to test several hypotheses. A culturally-bound model was developed proposing two types of hypotheses: (1) an element or factor leads to contact with the source of farm information and subsequently to the adoption of practice, and (2) an element serves as a mediating variable or condition affecting the translation of information received from the information agency into actual adoption of a practice.

This study has approached the problem of the adoption of nine improved farm practices by two ways: (a) the relationship of certain farmer characteristics to the sources of farm information, and (b) the relationship of these characteristics to the adoption of improved farm practices.

Of the various sources of farm information sought by Indian farmers, the Village Extension Worker, other farmers, and field demonstrations ranked high. The institutionalized contacts at the Block level and mass media were preferred by farmers who had higher formal education, operated larger farms, belonged to higher castes, had high socio-economic status, and were younger. The farmers who were older, lower caste, and illiterate depended more on other farmers for information on farm matters than other contacts.

Of the nine improved farm practices, a majority of the farmers adopted new method farm yard manure preparation, improved seed, soil conservation by bunding fields, and vaccination of cattle against epidemics; about two thirds of them adopted at least one improved implement and fertilizer; and less than half of them adopted new cattle breeding practices, insecticides, fungicides, and green manuring.

Formal education, economic status, farm size, subsidiary occupation, caste status, community prestige, active participation in community work and favorable attitude towards Extension Service, were highly associated with the adoption of improved farm practices. Although age of the farmer associated with contact with diffusion media it did not significantly associate with adoption of practices.

The data supported the first hypothesis of the model that increasing the rate of practice adoption is affected by increasing the number of information contacts which are positively associated

with farmers' characteristics. The second hypothesis of the model also received support. Contact with the Agricultural Extension Officer was more convincing to the farmers' adoption of farm practices. The Village Extension Worker played a supporting role in the right direction; on the other hand, the Village Headman had a negative influence on practice adoption.