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Communication and Use of Scientific Farm Information by Farmers in Two Taiwan Agricultural Villages

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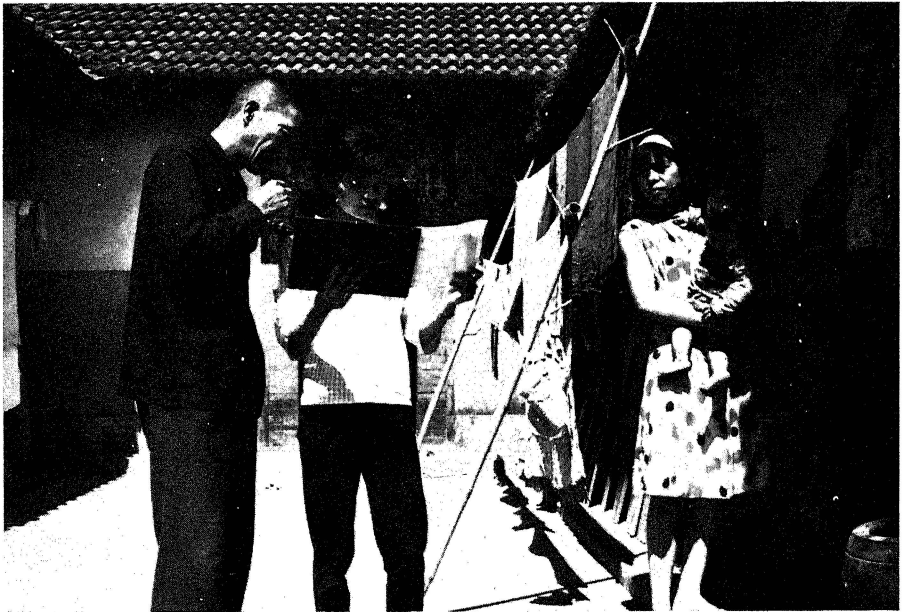
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Taiwan University students conducted the interviews with farmers of Shangfung and Liupao villages.

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INTRODUCTION

As the agricultural sector of an economy emerges from traditional to modern in a developing society, folk knowledge and practice is superseded by specialized systems for developing and disseminating scientific farm information and technology in agriculture. This was signaled in the United States by the passage of the Morrill Act in 1862 and the subsequent addition of the research and extension functions by the Hatch and Smith-Lever Acts, respectively.¹ Thus, the development and dissemination of scientific farm information is assigned to specialized but interrelated agencies (here referred to as social systems) in which professionals with specialized training and skills perform the respective functions.

Likewise, in Taiwan the development and dissemination of scientific farm information has become largely an institutionalized function of a variety of public and private agencies rather than an activity left to the devices of farmers.

Certainly, there is more than one way to organize to provide these services. Integration of resident teaching, research, and extension in a single institution, the land grant colleges, has been used very successfully in the United States. However, in Taiwan where farmers have an outstanding achievement in agricultural production among developing nations, another quite different system is being used successfully: a variety of public and private agencies coordinated by a single state level agency. The organization and operation of these systems will be considered in subsequent publications. A brief description of the organization and function of the more important parts of these systems is included in Appendix I.

This publication is concerned with the sources and channels of scientific farm information used by farmers in their decisions to adopt new farm practices in two agricultural villages in the better farming areas of Taiwan. A major emphasis was on interpersonal patterns of communication and influence. Information source

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¹(See page 75 for References designated by the superscript numbers.)

is referred to as the person, media, or agency from which a farmer said he got information. Thus no attempt was made to distinguish between ultimate source and channel in this part of the study.

More specific objectives were to determine:

- (1) What contacts the farmers in the two villages had with agencies and means through which scientific farm information could be communicated to them.
 - (a) Who usually initiated the contacts,
 - (b) the intensity with which each was used, and
 - (c) how use and initiation varied with selected characteristics of farmers.
- (2) The relative innovativeness of farmers as measured by own perception, the perception of others and the percent of selected applicable new farm practices that they had adopted.
- (3) The sources of information that they used to learn, to get additional information about, and regarded as being of most influence in their adoption decisions.
- (4) The role of special functionaries (innovators and legitimators) in farm practice adoption decisions.
- (5) The presence and operation of formal social groups as facilitating mechanisms in the communication of scientific farm information.

This research is paralleled by studies in two Missouri farm communities first made in 1956 and again in 1966.² Accordingly, this publication will be a counterpart to others related to the sources and channels of communication used by farmers in two Missouri communities, one economically advantaged and the other economically disadvantaged as in the Taiwan study. All of the communities studied are characterized by diversified crop and livestock enterprises prevailing in each of them.

Furthermore, this study puts the validity of some of the research findings from diffusion research in the United States to test in another culture.³ Although increasingly evident in developing countries, diffusion research has not identified and dealt with many relevant research problems; nor has the validity of many of the generalizations been tested cross-culturally. This is particularly true in Taiwan where very few diffusion studies have been conducted.⁴

Aside from advantages of cross-cultural diffusion research findings to change agents in the home country, such research has the advantage of providing a knowledge base for U.S. technicians in their roles as assistants in institution building and agricultural development in the developing countries where they have been assigned under various mutual assistance programs.

THE STUDY SITE

Why Taiwan

Taiwan is one of the few developing nations where both the recipient and the assisting nation have agreed that the situation in the country is such that sustained developmental effort can continue without intensive support from the outside as under the USAID programs. It is probably the only developing nation that has been able to produce enough food for a rapidly expanding population at home and some to sell abroad, thus providing needed foreign exchange for the purchase of other commodities and equipment abroad. The annual rate of increase in food production was almost twice the estimated 4.17 percent population growth per year for the years 1945-60.⁵

Another reason for selecting Taiwan is that this high level productivity has been achieved by the use of systems (agencies) for developing and disseminating scientific farm information very different from those used in the United States. The question was not to determine which system is best but how and how well the Taiwan system works. This success of a different system is a fact that U.S. technicians generally dedicated to the land grant college system sometimes find difficult to recognize.

Why Shangfung and Liupao

Since an important objective of this study was to examine interpersonal channels of communication and influence used by farmers in arriving at their adoption decisions, relatively self-contained sociological units were needed for analysis. Villages in which all farm operators were interviewed appeared to be most appropriate for this purpose. A probability sample of farmers from a larger area would have permitted broader generalization but less depth in considering interpersonal channels of communication and influence.

Further requirements were that the study site be in the better farming areas of the Province, that the villages selected be reasonably typical of such areas, that the extension programs in operation be generally typical of those prevailing over much of the Province. Another requirement was that some of the farmers live in an economically advantaged and some in an economically disadvantaged area, by local farming standards. Also, we wanted villages that were reasonably close to one of the seven district agricultural improvement stations in the Province and that hsien and township officials be sufficiently committed to the study to lend moral support to it and assistance in making it favorably known to local farmers.

In the absence of statistical data needed for most objective selection of townships and villages and with time pressures also a consideration, reliance was placed on the knowledge of hsien extension supervisors and, subsequently, on the judgment of township government and Farmers Association extension personnel in applying the stated criteria. An original intent to pick economically advantaged and disadvantaged villages in each of two or more townships was abandoned early in the planning stage because villages prevailing in the area were found to

be above average in size. Since all farm household heads were to be interviewed, care had to be exercised in not selecting villages that contained more farmers than could be interviewed between mid-September and November when the interviewers had to return to classes.

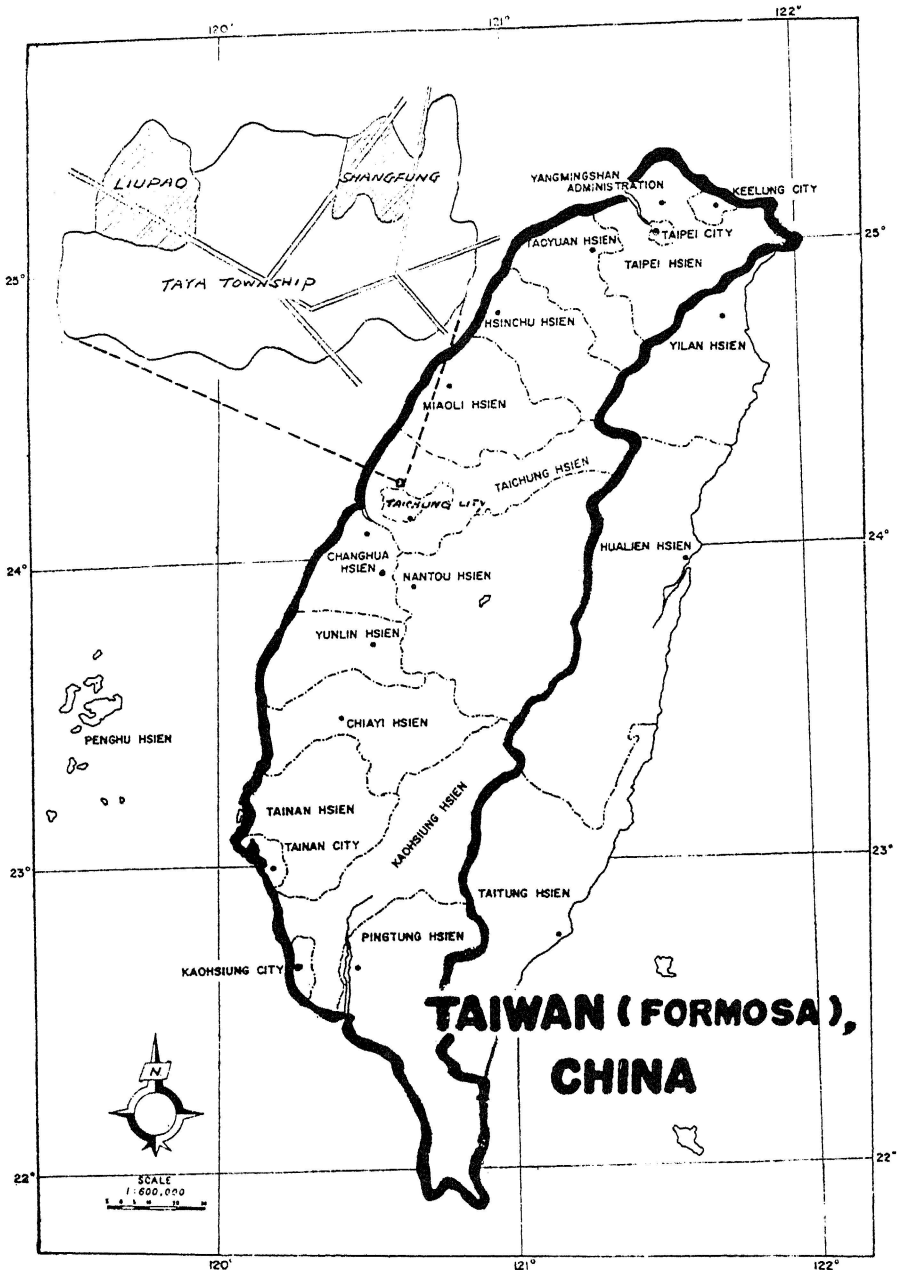
It was also thought necessary to interview farmers in a relatively slack work season, which in this case was between rice weeding and rice harvest.

The general procedure in selecting areas in which to work was to apply the criteria to the larger geographic areas first and then to the township and village units to be included. Thus, the Taichung Hsien was selected mainly because it was representative of the type of farming that prevailed in the central part of the island (see Figure 1), and also because of its accessibility to the Provincial College of Agriculture and to a district agricultural improvement station and because of its location in the heart of one of the better farming areas in the Province. Taya township, which is an average agricultural township, was selected. In this township, Shangfung village was selected as an economically advantaged village. Liupao, locally referred to as being at the "end of the water," was chosen as the representative economically disadvantaged village. Taya was originally rated as having a good extension program, a rating subsequently verified. Both villages were in areas essentially devoted to rice and wheat production.

METHODOLOGICAL CONSIDERATIONS

Since the investigators were less sure of many matters relating to the research design and methods for carrying out research under different cultural situations to which they were accustomed, much care was exercised in:

- (1) Obtaining support from and establishing good working relationships with government agencies and Farmers Association personnel from the national to the township level.
- (2) Establishing working arrangements with the Joint Commission of Rural Reconstruction and the Extension Department of the National Taiwan University as a means of establishing the legitimacy of the research and for providing needed facilities and professional assistance.
- (3) Conducting exploratory work to determine the adequacy of potentially questionable elements in the research design, e.g., the applicability of the individual adoption model used in the United States⁶ and the semantic differential as a measure of the reactions of farmers to information sources;⁷ also obtaining farmers' reactions to intended methods of obtaining the information.
- (4) Developing and pretesting interview schedules.
- (5) Selecting, training, and drilling interviewers in interviewing techniques and use of "farmer" language.
- (6) Making initial contacts and obtaining support of local leaders for the study in the two villages selected.



Study area for information development and dissemination systems enclosed in heavy black line. Liupao and Shangfung Villages, involved in this phase of the study are indicated in the enlarged area.

Fig. 1--Location of Liupao and Shangfung Villages in Taiwan.

- (7) Soliciting assistance from local leaders in helping interpret the research to fellow farmers and helping with arrangements in the village to facilitate interviewing.
- (8) Coding and processing the data in the field prior to transporting it to the United States for further analysis.

All of these very important considerations and others are described in detail in Appendix II for those who may be interested in the research methodology used or who may have reservations about the care exercised in these matters.

The general objective was to interview all farm operators most responsible for farm management decisions in their respective households. Examination of the township Public Office records produced a list of 331 farmers in Shangfung and 226 in Liupao who appeared to be eligible for interviews. However, it was subsequently found that 15.1 percent of the listings in Shangfung and 15.4 in Liupao involved members who were a part of a joint family operated farm under the direction of a family member other than the one listed in the public records. Another 8.4 percent in Shangfung and 8.8 percent in Liupao had moved away or changed to non-farm work, and a remaining 5.4 and 4.9 percent, respectively, were unavailable because of illness, temporary inaccessibility, or other reasons. Only three refusals to be interviewed were encountered in each village with the net result that 237 farmers were interviewed in Shangfung and 159 in Liupao.

Although the two villages cannot be regarded ideally as an adequate sample of the general farming region of which they are a part, it will be seen from Appendix II that they are very similar in regard to principal crops grown, soil type, gross income per unit of land, and rice yields per hectare; sufficiently so to provide some confidence in generalization of findings to the larger three-hsien area of Taichung, Changhwa, and Yunlin.

THE FARM FAMILIES AND THEIR HOUSEHOLDS

The Farm Operator

The farmers most responsible for farm management decisions in the household were interviewed since a central focus of this part of the study was on factors and conditions related to decisions to adopt new farm practices. They are referred to as farm operators in this report. Determination of who they were posed no difficulty since the identity of this person was well understood and respected by other members of the family. However, as a farmer grows old, he may sometimes relinquish much of his authority for farm management decisions to a son or other member of the family. Presumably, this is done quite exclusively at the discretion of the elderly male head of the family.

Choice of the appropriate person posed a difficulty in only one case where this transfer was still in process. Strong emotional feelings aroused by a son posing as the appropriate person to interview was finally resolved by interviewing

both, each of whom contended that he was the major decision maker in matters related to farming.

Eighty percent of the respondents in Shangfung and 84.3 in Liupao were household heads. Others were mainly sons or wives of the household heads. Some involved cases where household heads were working at off-farm jobs while other members of the family assumed the major responsibility for the farm. Even so, all but about 10 percent of the farm operators in Shangfung and about 13 percent in Liupao were males typically married and of middle age, median ages being 44.4 and 43.0 in the two villages, respectively (See Table 1). Nearly all were resi-

TABLE 1--PERCENT OF FARM OPERATORS CLASSIFIED BY VILLAGE RESIDENCE AND AGE

Age in Years	Total % (N=396)	Village	
		Shangfung % (N=237)	Liupao % (N=159)
Total	100.0	100.0	100.0
Under 20	0.8	0.8	0.6
20-29	10.1	10.5	9.4
30-39	28.5	25.7	32.7
40-49	27.3	29.5	23.9
50-59	25.5	25.3	25.8
60-69	6.3	6.3	6.3
70-79	1.5	1.7	1.3
Median Age	43.9	44.4	43.0

dents of long standing in the village with 85 percent having lived there for 20 or more years. This well antedates the Communist takeover on the mainland of China (see Table 2).

A majority of the farmers in both villages had some schooling, with by far the largest proportion being primary school graduates (see Table 3). Wives generally had less schooling, with percentage reporting none being 54.0 in Shangfung and 56.6 in Liupao. Almost all of those who had completed any schooling reported five to six years; six years marks the termination of the primary school level.

Household Composition

Although many of the farm operators were approaching the age of retirement from farming as is quite typical in the United States, succession of the younger generation into farming does not pose the same problem as in this country. In the jointly operated farms, virtually all had children and grandchildren who would continue farming operations on the family farm. Taken in the aggregate, all but one-fifth of the farmers in Shangfung and all but a third in Liupao had three or more workers 16 years of age or over. One or more of the sons in

TABLE 2--PERCENT OF FARM OPERATORS CLASSIFIED BY VILLAGE OF RESIDENCE AND NUMBER OF YEARS RESIDENCE IN HOME VILLAGE

Years Residence in Village	Total % (N=396)	Village	
		Shangfung % (N=237)	Liupao % (N=159)
Total	100.0	100.0	100.0
Less than 5	1.3	1.7	0.6
5-9.9	3.3	4.2	1.9
10.0-14.9	3.3	3.4	3.1
15.0-19.9	2.8	3.4	1.9
20.0-29.9	15.1	17.3	11.9
30.0-39.9	10.6	10.5	10.7
40.0-49.9	11.1	11.4	10.7
50.0 or over	51.0	46.8	57.3
Unknown	1.5	1.3	1.9
Median	50.5	48.3	51.6

TABLE 3--PERCENT OF FARM OPERATORS CLASSIFIED BY VILLAGE OF RESIDENCE AND YEARS OF SCHOOLING COMPLETED

Years of Schooling Completed	Total % (N=396)	Village	
		Shangfung % (N=237)	Liupao % (N=159)
Total	100.0	100.0	100.0
None	36.3	31.2	44.0
1-2	1.0	1.3	0.6
3-4	3.5	4.6	1.9
5-6	52.0	54.9	47.9
7-8	0.8	0.0	1.9
9-10	3.8	4.2	3.1
11-12	2.3	3.4	0.6
13 and over	.3	0.4	0.0
Median number	5.2	5.2	4.1

each family could be expected to stray on the farm and succeed the elder household head as the chief decision-maker in the farming operation.

Households were typically large, the medium size being 7.6 persons in Shangfung and 7.5 in Liupao (see Table 4) and were generally composed of from two to three generations. The families of the farm operators themselves were large, with almost 58 percent in both villages having 5 or more children. The family with two or three children, common in the United States, was rare among the farmers in this study. The median size of nuclear family was 5.5 for Shangfung and 5.7 for Liupao.

TABLE 4--PERCENT OF FARM OPERATORS CLASSIFIED BY VILLAGE RESIDENCE AND NUMBER OF PERSONS IN HOUSEHOLD

Number of Persons in Household	Total % (N=396)	Village	
		Shangfung % (N=237)	Liupao % (N=159)
Total	100.0	100.0	100.0
1-2	3.5	2.1	5.7
3-4	6.8	5.9	8.2
5-6	23.5	23.6	23.3
7-8	29.5	30.5	28.3
9-10	19.2	19.8	18.2
11-12	6.6	6.3	6.9
13-14	4.3	5.5	2.5
15 and over	6.6	6.3	6.9
Median number	7.6	7.6	7.5

More than one-fifth of the households in Shangfung and about 17 percent in Liupao reported one or more children in the household who had schooling in excess of 6 years, thus indicating the tendency for children to get more schooling than their parents. About 36 percent of operators in Shangfung and 31.4 percent in Liupao spoke Mandarin.

Farm and Home Facilities

An inventory was taken of a selected list of household and farm facilities owner or available to the farm households. These are listed in Table 5. Of those selected, the pattern was one of generally high ownership of some items and a low proportion owning others.

Variations favored one village about as much as the other. Thus, most households in both villages had electricity, radios, clocks, and sewing machines and either running water or private wells. The proportion for the last was much higher in Shangfung than Liupao. On the other hand, few homes had methane gas heaters, telephones, or television sets.

Most houses in both villages had tile roofs rather than the less desirable thatched ones. The former are capable of withstanding typhoons, which frequently occur. The desirable brick walls for home construction were much more prevalent in Shangfung than Liupao. A slight tendency to the converse was noted for paved floors in the house, with this more frequently reported in Liupao than Shangfung.

Nearly all households owned bicycles; more than two-thirds in both villages owned two or more. Less than 10 percent owned a motorcycle or motorbike and an even smaller percentage owned three-wheeled trucks or autos, either motor or pedal driven.

TABLE 5--PERCENT OF FARM OPERATORS OWNING DESIGNATED
HOUSEHOLD AND FARM FACILITIES CLASSIFIED BY VILLAGE
RESIDENCE AND WITH ITEM WEIGHT ASSIGNED IN
LEVEL OF LIVING SCALE

Facility	Total % (N=396)	Village		Weight Assigned to Item for Level of Living Index
		Shangfung % (N=237)	Liupao % (N=159)	
Household				
Electricity	93.4	93.7	93.1	3
Running water in home or private well	69.4	81.4	51.6	3
Methane gas heater	0.8	0.8	0.6	3
Telephone	1.3	0.8	1.9	3
Radio	78.3	76.4	81.1	2
Television	1.8	2.1	1.3	3
Clock	93.7	92.0	96.2	1
Sewing machine	85.4	83.1	88.7	2
Subscribes to newspaper or farm magazine	49.2	52.3	44.7	1 for each
Household Construction				
Paved floor	27.5	24.5	32.1	2
Brick walls (at least part)	16.2	22.4	6.9	3
Plastered walls	43.2	37.1	52.2	2
Earth walls (no brick)	40.7	40.5	40.9	1
Thatched roof (no brick or plastered)	19.9	20.3	19.5	1
Tile roof	79.3	78.9	79.9	2
Farm and Household				
Power tiller	4.0	3.8	4.4	3
Sprayer or duster	85.1	86.5	83.0	2
Motorcycle or motorbike	9.6	9.7	9.4	3
Three wheeled truck or auto - motorized	1.8	2.5	0.6	3
Three wheeled truck pedaled	2.5	3.8	0.6	2
One or more bicycles	96.5	96.6	96.3	1 for each

A composite level of living score lacking in refinement in comparison to the more recent developments in this area⁸ was provided by assigning weights of one through three to various items in rough proportion to their current purchase price, adding these scores, and averaging them to get composite scores for individual farmers. Rough as the measure was, a very good distribution of the scores occurred with most cases falling in the 20-24 range. Although the composite score was introduced primarily as a variable for other kinds of analyses, the average was higher, but only slightly so, for Shangfung which excelled in items of the more

permanent nature like brick walls for homes and private wells or running water in the home while Liupao excelled in many of those things of a less permanent nature like radios, sewing machines, clocks, and paved floors which could be put into existing structures. Thus, it would appear the "extra" money may have been more often spent for amenities in Liupao than in Shangfung (see Table 5).

Farm Operational Unit and Enterprises

Crops. Shangfung and Liupao are in a predominantly rice producing area.⁹ Under normal circumstances, two rice crops are grown in a year with one or two intermediary crops between rice crops. A study by Peterson (1960) revealed that on the average the land in the rice region was cropped two and one-half times per year compared to about one and a half times for farms in the upland regions.¹⁰

Table 6 shows the diversity of crops grown in both villages, with rice topping the list. Being "at the tail of the irrigation water," more farmers in Liupao grew such upland crops as wheat, peanuts, sweet potatoes, citrus fruit, and soybeans; fewer grew vegetables and rape seeds than in Shangfung.

TABLE 6--PERCENT OF FARM OPERATORS CLASSIFIED BY VILLAGE RESIDENCE, CROPS GROWN, AND DESIGNATION OF FIRST AND SECOND MOST IMPORTANT CASH CROPS

Crops	Total Growing Crop % (N=396)	Village					
		Shangfung				Liupao	
		Crops Grown % (N=237)	Importance Designation		Crops Grown % (N=237)	Importance Designation	
			First % (N=237)	Second % (N=237)		First % (N=237)	Second % (N=237)
Rice	93.4	93.2	82.8	7.2	93.7	74.2	12.6
Sugar cane	2.5	0.0	0.0	0.0	6.3	0.6	2.5
Soybean	7.3	4.6	0.0	0.0	11.3	0.0	0.6
Tobacco	4.0	3.8	0.8	2.1	4.4	2.5	0.0
Rape seed	18.2	22.8	0.0	0.8	11.3	0.0	0.0
Wheat	83.8	79.3	0.8	52.7	90.6	3.8	53.5
Peanuts	23.7	4.6	0.0	0.0	52.2	1.3	3.8
Sweet potatoes	73.0	68.8	0.0	6.3	79.2	4.4	13.2
Mushroom	24.2	26.6	1.7	4.2	20.8	0.6	1.3
Vegetable	84.6	86.9	3.4	12.2	81.1	1.3	1.9
Asparagus	0.3	0.4	0.0	0.0	0.0	0.0	0.0
Sorghum	4.0	0.4	0.0	0.0	9.4	0.0	0.6
Banana	11.6	12.2	0.0	0.4	10.7	0.6	0.0
Pineapple	1.0	0.4	0.0	0.0	1.9	0.0	0.0
Citrus fruit	30.3	27.8	7.6	4.2	34.0	8.8	4.4
Leeche	27.5	26.2	2.5	5.1	29.6	1.3	1.9
Other	38.6	35.0	0.0	1.7	44.0	0.6	1.9
Unknown	0.0	0.0	0.4	3.0	0.0	0.0	1.9

Farm operators in both villages designated rice as the most important cash crop, 82.8 and 74.2 percent in Shangfung and Liupao, respectively (see Table 6). The relatively lower proportion of farmers in Liupao who made such designation can be accounted for by the higher proportion of them reporting such crops as wheat and sweet potatoes as the most important cash crops. As for the second most important cash crop, approximately 53 percent of both villages reported wheat. Rice and wheat, therefore, can be regarded as the dominant enterprises in both villages, with several other minor crops interplanted. *Vegetable* was sometimes designated as a second most important crop along with wheat in Shangfung, while sweet potatoes and rice were so reported in Liupao.

Size of Farm. By American standards farms were very small indeed and much more intensively operated. The average size in Shangfung was 1.3 hectares and in Liupao 1.5, which is about 3.25 and 3.75 acres (see Table 7). In fact, almost

TABLE 7--PERCENT OF FARM OPERATORS CLASSIFIED BY VILLAGE
RESIDENCE AND SIZE OF FARM

Size of Farm* (Hectares)	Total % (N=396)	Village	
		Shangfung % (N=237)	Liupao % (N=159)
Total	100.0	100.0	100.0
Under 0.5	27.2	24.1	32.1
0.5-0.9	34.0	34.2	34.0
1.0-1.4	22.0	24.8	17.6
1.5-1.9	8.1	10.1	5.0
2.0-2.4	3.8	3.0	5.0
2.5-2.9	1.8	1.7	1.9
3.0-3.9	1.0	1.3	0.6
4.0-4.9	1.3	0.4	2.5
5.0 and over	0.8	0.4	1.3
Median number	1.3	1.3	1.5

*One hectare equals about 2.5 acres.

one-fourth of the families in Shangfung and upward of one-third in Liupao operated farms of less than 0.5 hectare (about 1.25 acres). In both villages farms were heavily concentrated in the 0.5 to 1.4 hectare range. Very few were as large as 2.5 hectares. Almost all farmers owned their own farms in part or full (see Table 8). About 43 percent of the farmers in Shangfung and 62.3 in Liupao neither bought nor sold land under the "land to the tiller" program. About 42 percent and 25.2 percent, respectively, bought land, while some 12 percent in each village had been requested to sell under the program.

TABLE 8--PERCENT OF FARM OPERATORS CLASSIFIED BY VILLAGE
RESIDENCE AND TENURE STATUS

Tenancy- Ownership Status	Total % (N=396)	Village	
		Shangfung % (N=237)	Liupao % (N=159)
Total	100.0	100.0	100.0
Doesn't apply	0.3	0.4	0.0
Owner-tiller	86.6	85.2	88.7
Part-owner	7.8	8.4	6.9
Tenant	5.3	5.9	4.4

Mechanization. Typically, buffalo or yellow cows provided the power used on the farms, exclusive of that provided from human sources. Mechanization likewise was minimal with less than 4 percent of the farmers in Shangfung and only 4.5 percent in Liupao owning a tractor, which invariably was a two-wheeled model, usually a Japanese make. An even smaller proportion owned any kind of motor transport. This is exclusive of the 9 or 10 percent who owned motorcycles. Three-wheeled pedal vehicles were owned by less than 4 percent of the farmers in Shangfung and less than 1 percent in Liupao. Such products as were needed on the farm were transported by either hired transport to access points along the major roads where they could be carried by hand or by bicycle or transported all the way from farm to the exchange center by bicycle.

A very high proportion of farmers owned sprayers or dusters, typically hand powered, which were frequently used for plant protection. Other implements for which an inventory was not taken but which would be owned by many households were oxen drawn plow, foot pedaled thresher, hand hoe, wooden land leveler, a hand sickle, rice transplanting spacer, and sometimes a winnower.

Joint Operations. Virtually all farms were jointly operated by the family members, percentages being near 100 percent in Liupao and 83.5 in Shangfung. This was quite in contrast with public office listings which showed many more farm household heads listed as separate farm operators than were found in actual practice. With farm mechanization at a minimum, much hand labor was needed to grow such difficult crops as rice, sweet potatoes, mushrooms, and a variety of fruits and vegetables. Most of this labor was supplied by family members. Public records indicated that 40 percent of the households in Shangfung and 30.8 percent in Liupao had five or more persons 16 years of age and over who normally would be counted as a part of the farm labor force. The median number of such persons was 4.7 in Shangfung and 4.0 in Liupao.

Off-farm Employment. Although farmers seemed well aware of population pressures on the land, the proportion working off farm for wages seemed very low by United States standards, being less than 1 percent in Shangfung (the eco-

nomically advantaged village) and about 4.1 percent in Liupao. However, off-farm work was quite common for family members other than the chief decision maker. About 17 percent of the households in Shangfung and about 22.6 percent of those in Liupao had one or more family members engaged in non-farm work, the most frequent number being one person (see Table 9).

TABLE 9--PERCENT OF FARM OPERATORS CLASSIFIED BY VILLAGE
RESIDENCE AND OFF-FARM WORK OF HOUSEHOLD MEMBERS

Number of Household Members Engaged in Non-Farm Work	Total % (N=396)	Village	
		Shangfung % (N=237)	Liupao % (N=159)
Total	100.0	100.0	100.0
None	80.8	83.1	77.4
One	13.4	10.5	17.6
Two	4.3	5.1	3.1
Three	1.5	1.3	1.9

Agricultural Change Proneness and Outlook

Two general views or orientations of farm operators were considered: (1) the farm operator's generalized feeling of well-being for self and family now, in the past, and in the expected future and (2) the farm operator's orientation to modernism in farming. The first was included as a matter of general interest and as a means of detecting general life satisfactions associated with various life situations to be further considered elsewhere. The last was thought to offer possibilities in explaining the use of scientific farm information sources and the adoption of new farm practices.

Feelings of Family Well Being. The methodological problem here was to try to find out how farmers rated themselves and their families in terms of what they saw as the generalized "good" and "poor" life, how their present position compared to the past, and how hopeful they were for the future. In attempting to obtain this assessment, it was assumed that how a person felt about his relative situation was a consideration quite aside from what he perceived the "good life" to be.

A technique developed by Cantril¹¹ was used for assessing the farm operators' perception of their sense of well being. The procedure was to hand the respondent a picture of a ladder with ten rungs numbered consecutively from 0 to 10, inclusive. He was asked to think of the top rung (No. 10) as being the best life he could imagine for himself and his family and the lowest one the worst. The first question was, "Where do you think you are now?" This was followed by requests to indicate where he thought he and his family were five years ago and where he felt they would be five years from now.

Estimates of the present position ranged from the lowest position on the ladder to position 9. No one though he was on the top rung. Somewhat over four-fifths in both villages indicated rungs 2 through 6 inclusive, with a median of 4.3 in Shangfung and 4.0 in Liupao. As might be expected, farmers in the economically advantaged village saw themselves as enjoying a better life than those in Liupao. Average reactions of the farmers are depicted in Figure 2. Even though most of them thought they were better off now than five years ago (56.6 percent in Shangfung and 50.9 percent in Liupao), 22.4 percent in Shangfung and 31.2 in Liupao thought that life was worse now than five years ago; some said as much as four positions, but most said only one. An additional 19.8 and 17.0 percent in Shangfung and Liupao, respectively, thought their position had remained the same.

The future was viewed with optimism. Generally speaking, more progress was expected in the future than in the past. Only 6.4 percent of the farm operators in Shangfung and 3.8 in Liupao expected their life situation to become worse in five years, although 27.0 and 35.2 percent, respectively, thought their relative position would remain about the same. Although the question of why they thought they changed positions was not systematically pursued, volunteered explanations were recorded. Common reasons given for past or expected improvement were:

- (1) Children growing up, thus providing more family help on the farm.
- (2) Income increased due to an array of reasons such as good management, debt repaid, adoption of improved practices, land-to-the-tiller program, the increase of farm land, austerity, hard work, division of the large family, etc.

Common reasons given for worsening of conditions included:

- (1) Too many young children who spent but did not earn.
- (2) Bad weather.
- (3) Division of the large family.
- (4) Small land holding.

Modernism in Farming. The question of modernism as a dominant consideration in the acceptance of innovation in farming has been extensively pursued by Benvenuti in his treatment of cultural factors influencing the adoption of farm practices in the Netherlands.¹² He contended that modernism exists in people and cultures as a complex of related factors and that the adoption of new farm practices could be better understood and explained in this context. This implies that the adoption of such practices can be achieved perhaps best by developing conditions conducive to modernistic ways of thinking, assumed to be largely the product of many contacts with new ideas and people. He and Lerner¹³ measured this quality, more specifically alluded to by the latter, as empathy in terms of the formulation of opinions about events and conditions outside of the immediate locality.

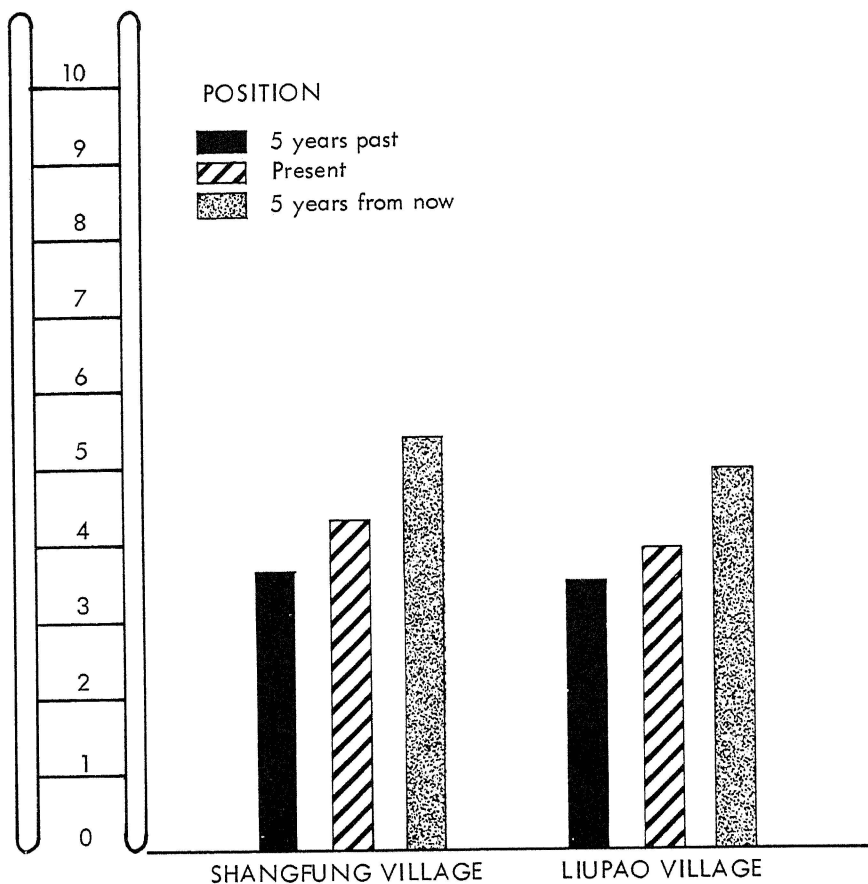


Fig. 2--Median of Farm Operators' Estimations of Where They Stood on a Diagrammed Ladder of Well Being With Rungs from 0 (worst) to 10 (best). They Were Asked to Designate Past, Present, and Anticipated Positions.

In this study an attempt was made to measure this quality more squarely in terms of modernism in views about farming, with the intention of using the measure in cross-cultural comparisons. First, it was assumed that the management concept would be central to the modernism point of view and that the most elemental manifestation of this quality would be recognition by a farmer that there are some things that he himself can do to enhance his success as a farmer; this in contrast to an entirely fatalistic point of view. Second, it was assumed that farm management in the modern context has additional requisites in any culture, including use of scientific farm information and ample supplies of production credit. These were included as items likely to depict higher levels of the modernism point of view. On the other hand, strong belief in such things as luck, God's

will, and watching the signs of the moon as success factors in farming were included as items likely to represent the traditional view.

Items thought to be of a more neutral nature between these extreme positions were added mainly on a face validity basis. It was accordingly assumed that the items chosen and listed in Table 10 would yield a measure of the traditional-modern quality in relation to farming. Since no suitable alternative could be found in Taiwan to "watching the signs of the moon," a practice listed in the U.S. study, this item was excluded.

Farmers in both countries were asked to indicate the importance of each of the items for success in farming. Response categories used in Taiwan were "no, some, and much importance" plus an additional request to indicate first and second most important considerations in this regard.

A factor analysis (centroid method) of farm operators' responses on these items from the Ozark, Missouri, community disclosed a rather clearcut alignment on what appeared to be traditionalistic and modern points of view.¹⁴ However, since the Guttman scale order of the items varied for Ozark (the south Missouri farm community) and for the Taiwan farmers,¹⁵ the items rather than the scale were used as the basis for assessing the general level of modernism to farming orientation in the two Taiwan villages. This was done because (1) the items may be regarded as indicators of modernism in farming in any society and (2) because of uncertainties about the scale adequacy of the items in Taiwan.

The scale rank order of the items in Ozark and Taiwan are indicated in Table 10. The nature and implications of these differences are discussed in Appendix II. For a general estimate of modernism here, attention is directed to the high proportion of farmers who placed a *much importance* rating on such modernism-oriented items as management, use of latest scientific farm information, and plenty of production credit. Hard work, family help in the fields, and own experience, while more neutral as indicators of modernism, constituted a part of the modernism view. This was in contrast to the percentage who rated such things as *luck* and *God's will* of much importance.

These differences strongly suggested the high modernism orientation to farming of farmers in Shangfung and Liupao. A slightly stronger inclination to modernism in Liupao than Shangfung (as indicated by the proportion placing a high importance rating on the component scale items) may have been the result of pressures to adjust to relatively more adverse economic conditions which existed in this village.

The concentration of 47.3 percent of the farmers in Shangfung and 50.9 percent in Liupao at the top score position leaves little room for doubt about the strong orientation of Taiwan farmers interviewed to modernism in farming. The slightly stronger inclination to the modernism point of view in Liupao than in Shangfung may have been the result of economic necessities of adjusting to conditions less favorable to farming in Liupao than in Shangfung, much as in the economically disadvantaged Missouri Ozark community.¹⁶ A more direct test of

TABLE 10--PERCENT OF FARM OPERATORS CLASSIFIED BY IMPORTANCE ATTACHED TO DESIGNATED SUCCESS FACTORS
IN FARMING AND GUTTMAN SCALE SCORE POSITION IN MODERNISM

Designated Success Considerations	Total	Importance (%)				Rank of Consideration according to Guttman Scale Score Positions on Modernism	
		No	Some	Much	Indefinite or Unknown	Taiwan Study	Ozark (USA)
God's will						x	x
Total	100.0	27.0	37.6	34.1	1.3		
Shangfung	100.0	25.3	37.1	36.8	0.8		
Liupao	100.0	29.6	38.4	30.2	1.8		
Luck						x	x
Total	100.0	12.9	30.6	56.0	0.5		
Shangfung	100.0	11.8	32.9	54.9	0.4		
Liupao	100.0	14.5	27.0	57.9	0.6		
Doing what other farmers do						x	x
Total	100.0	27.8	32.1	39.8	0.3		
Shangfung	100.0	29.6	32.9	37.1	0.4		
Liupao	100.0	25.2	30.8	44.0	0.0		
Hard Work						1	2
Total	100.0	0.8	5.6	93.6	0.0		
Shangfung	100.0	0.8	6.8	92.4	0.0		
Liupao	100.0	0.6	3.8	95.6	0.0		
Use latest scientific farm information						2	5
Total	100.0	2.3	15.2	82.0	0.5		
Shangfung	100.0	2.5	17.7	79.8	0.0		
Liupao	100.0	1.9	11.3	85.5	1.3		
Saving Money						x	x
Total	100.0	6.1	14.6	78.8	0.5		
Shangfung	100.0	4.6	16.9	78.1	0.4		
Liupao	100.0	8.2	11.3	79.9	0.6		

Table 10 Continued.

Designated Success Considerations	Total	Importance (%)				Rank of Consideration according to Guttman Scale Score Positions on Modernism	
		No	Some	Much	Indefinite or Unknown	Taiwan Study	Ozark (USA)
Management						3	1
Total	100.0	1.5	6.8	91.7	0.0		
Shangfung	100.0	1.3	8.4	90.3	0.0		
Liupao	100.0	1.9	4.4	93.7	0.0		
Family help in the fields						x	4
Total	100.0	2.3	7.1	90.6	0.0		
Shangfung	100.0	0.8	9.7	89.5	0.0		
Liupao	100.0	4.4	3.1	92.5	0.0		
Plenty of production credit						4	6
Total	100.0	9.3	24.5	66.2	0.0		
Shangfung	100.0	9.3	24.1	66.6	0.0		
Liupao	100.0	9.4	25.2	65.4	0.0		
Own experience						x	3
Total	100.0	1.3	12.1	86.3	0.3		
Shangfung	100.0	0.4	14.3	85.3	0.0		
Liupao	100.0	2.5	8.8	88.1	0.6		

innovativeness in farming was obtained by considering changes actually made in crops and crop production practices in the recent past. This is discussed below.

INNOVATIVE BEHAVIOR IN FARMING

The fact that a family of eight lives on about two and one-half acres of land, some of which is not agriculturally productive, poses a challenging subsistence problem for farmers in the two Taiwan villages. Most of those who had remained on the farm found themselves faced with about two tenable alternatives, (1) to find part-time off-farm work to supplement meager farm incomes or (2) to improve the productive efficiency of their farms. Although 22.6 percent of the families in the economically disadvantaged village had resorted to off-farm work, the alternative usually chosen was to improve farming operations. This generally found expression in the trial of new commercial crops and in the use of new improved farm practices. The pressure of people on land and resources plus the receptivity of farmers to innovations in farming surely provided change agents a favorable atmosphere in which to work.

Trial of New Crops

Many new crops have been introduced into Taiwan during the past 15 years, mostly through official channels as in the case of asparagus and onions, but sometimes also by farmers alert to possibilities for making money as in the case of growing mushrooms. Each of these crops were adopted so rapidly that they became important commercial crops in a short span of two or three years.

Thus, researchers and extension workers have sometimes found themselves outpaced by innovative farmers and have found it necessary to make quick adjustments to adequately service them. In interviewing agricultural researchers in another phase of the study, it was not unusual to hear them complain that they were bothered by the premature enthusiasm of farmers seeking new ventures in agriculture such as seeds and chemicals before adequate tests for establishing their utility and applicability had been made. The possibility of failure and its attendant economic loss did not seem to deter some of the more progressive farmers.

Those in both Shangfung and Liupao seem to have shared in this rapid acceptance of change. Thirty-one percent of the farmers in Shangfung and 42 percent in Liupao said they had tried one or more new crops during the past five years. The higher rate in the latter again could be regarded as another indication of the greater thirst for new alternatives to improve farming conditions among the farmers in the less advantaged village. A second indicator of innovativeness was the speed with which the farmers applied new farm practices to the crops which they were already growing.

Adoption of New Farm Practices

A crude scale for measuring rate of adoption was constructed by computing the percent of farm practices adopted by a particular farmer of those applicable

to his own farming operation. The number of practices selected for this purpose by crops were as follows:

<i>Crop</i>	<i>Number of New Practices</i>
Rice	8
Sweet potato	3
Wheat	6
Vegetable	2
Mushroom	5
Citrus fruit	5

The specific practices and the proportions of farmers who had adopted them are listed in Table 1, Appendix III. All were recommended by the local extension service and by the appropriate research agencies.

All farmers who were growing rice were asked the rice culture questions. All others were asked questions about their most important commercial crop (the one that brought in the most money). In addition, each farmer was asked about practices used for a second crop, usually the second most important one commercially. His adoption score, then, was simply the percentage of the practices he had adopted of those included in the two sets of questions. Time of adoption, an important element in innovativeness, was not considered in constructing the scales, but the scales appear to provide a fair approximation of adoption levels of farmers and thus to provide a useful instrument for rough assessment of varying levels of technological competence in farming. Although the kinds of practices included in the respective scales varied somewhat by village, the component items in each case represented a fair sampling of the practices relevant to the various crop enterprises in the respective areas. This provided the logic for comparing adoption levels in the two villages and even with those in the two Missouri farm communities.

From the results obtained it will be seen that the 71.2 percent median adoption level of economically disadvantaged Liupao compared very favorably with the Shangfung median of 78.4 (see Table 11). Furthermore, few farmers in either village were below the 50 percent adoption level. Assuming practices included were reasonably representative of the crop enterprises in the various villages and communities and that they were commensurate to the state of technological development in the respective areas, the median 31.9 percent adoption level in the economically disadvantaged Missouri community (Ozark) and the 52.2 median in the economically advantaged Missouri community were not as high as those in Taiwan.¹⁷ Also, the proportion having very low adoption scores was much higher in the two Missouri communities than in the Taiwan villages.

This may be partly because many farms in Ozark were maintained more as residential than as commercial farms; also, because many of the farms in both Missouri communities were operated mainly as retirement enterprises, the younger generation having migrated from the farm. In Taiwan, succession of family members in the family-operated farms tends to insure a continuing labor supply and

TABLE 11--PERCENT OF FARM OPERATORS CLASSIFIED BY VILLAGE
RESIDENCE AND PERCENTAGE OF APPLICABLE NEW FARM
PRACTICES ADOPTED

Percent of New Farm Practices Adopted	Total % (N=396)	Village	
		Shangfung % (N=237)	Liupao % (N=159)
Total	100.0	100.0	100.0
0-19	0.8	0.8	0.6
20-29	0.3	0.4	0.0
30-39	1.3	0.4	2.5
40-49	2.5	2.1	3.1
50-59	12.1	7.6	18.9
60-69	17.4	14.8	21.4
70-79	31.3	29.5	34.0
80-89	22.1	27.5	14.5
90 and over	12.1	16.9	5.0
Median	74.8	78.4	71.2

sustained agricultural production while the elderly retire from active work. Farmers in Taiwan probably continue the operation of their farms nearer their production potential through generational changes in personnel, thus indicating a possible weakness of personnel succession arrangements on farms in the United States.

INFORMATION SOURCES AND CHANNELS

This section is concerned with the general use made of sources of farm information, patterns of source use, if any, how the use of sources varied by stages in the individual adoption process,¹⁸ and inferences drawn about how farm information was disseminated from the originating source through the various disseminating systems and agents to the farmer. Although a distinction will be made in subsequent parts of this study between information sources and channels, such a division did not appear to be feasible for farmers and was accordingly not used. Thus, if the farmer said he obtained information by radio with no recognition that it came from a district agricultural improvement station, radio was regarded as a source. Whatever a farmer regarded as a source of farm information was labeled as such.

Social Systems Context of Agricultural Communication

Much of the scientific information used by farmers is developed by specialized agencies. The information eventually reaches them through a series of intermediaries (persons) located in one or more extension organizations and agencies which are referred to as social systems in this study. These systems are defined

as the interaction of a plurality of individual actors (persons) who are oriented to a situation and whose relations to their situations, including each other, are defined and mediated in terms of a system of culturally structured and shared symbols.¹⁹

An illustration of such a system is a local farmers' cooperative where people with special qualifications are hired to perform certain duties which they perform with due regard for the rights and obligations to others occupying positions in the same co-op, all in accord with the generally understood objectives of the organization.

When agriculture emerges from traditional to modern, new technologies and scientific farm information in excess of what can be developed and disseminated by the farmers themselves is needed. Special agencies (social systems) are ordinarily devised for this purpose. Whatever the method of organization chosen, two functions must be performed. (1) Scientific farm information must be developed and tested under local conditions, and (2) it must be communicated to farmers. Since the requirements for each service are different, differentiation of activity and skills along the two functional lines is needed and is ordinarily provided either within a single organization or agency (social system) or in relatively separate ones.

Some countries have chosen to combine research, extension, and resident teaching into a single agency as in the land grant colleges in the United States.²⁰ This kind of organization provides linkages (communication and information exchange) among personnel working in the research and extension activities and at the same time serves to coordinate these activities.

In other places, rather discrete organizations for each of these services are provided with separate research agencies for each group or kind of crop or livestock. In this case, special agricultural research agencies typically concentrate on developing and testing scientific farm information and another agency or set of agencies assume major responsibility for disseminating it to farmers. Under this method of organization, relationships must be established and maintained between the two service organizations in order to be effective. Organizational proliferation and the usual spatial dispersion of the agencies greatly intensifies the problem of maintaining communication and information exchange among them.

The need for new subject-matter specialties caused by a rapidly changing agriculture can be provided in the unified research-education-extension system by adding specialized professions as needed in existing agencies. In the more separate agencies, specialists can be added in the same manner or by creating separate research organizations like rice research institutes or special crop research institutes with the extension function either attached, separately provided, or completely disregarded.

Another alternative similar to the second kind of organization is to develop the research and extension activity completely on a commodity basis with separate research and extension organizations for each, such as for sugar-cane, rice, tobacco, and fruit crops. In this case, the research and extension activities are

mainly managed by, for, and in the interests of the commodity group and either financed by public funds or special assessments from those directly benefiting from the services provided. This is typified by the Sugar Research Institute in Hawaii and the Sugar Improvement Stations in Taiwan.

The organization of agricultural research and extension in Taiwan is very complex, using a mixture of all three kinds of organizations but mostly the last two. The system most developed and most extensively used is composed of a series of more or less crop-specialized, publicly-supported research organizations for developing scientific farm information. These systems, in turn, are connected in a variety of ways to a more or less dual extension system designed to carry new scientific knowledge about all crops and livestock of concern to farmers.

One local outlet was through the public offices of broad governmental scope. Publicly paid extension workers attached to these offices at the township level are generally more concerned with the administration of government agricultural programs than dissemination of information to farmers.

The second local extension outlet is provided by the Farmers Association extension advisory staff operating at the same location, paid for and maintained mainly by the local Farmers Association in cooperation with the Provincial Government. These advisers are primarily concerned with the dissemination of scientific farm information. Occasionally, public office workers are assigned to the Farmers Association office, in which case they are also primarily concerned with the dissemination of information to farmers.

In accord with this pattern, two Public Office extension workers and three hired by the local township Farmers Association were stationed in Taya Township to service adult farmers in eight villages containing an estimated 2,208 farm households. For a more complete description of farm information development and dissemination systems in Taiwan see Appendix I (also see Figure 3).

Perhaps the intricate ramifications of communicating scientific farm information to farmers can best be understood by following a new addition to knowledge from where it originates to the time when it actually reaches the farmer. Suppose, a researcher in an agricultural research institute or a district agricultural improvement station, acting upon a research lead or a number of leads from either within the organization or external to it, perhaps even from a specialist in another country, develops a highly promising new rice variety. This normally requires the use of rigid, appropriate research methods over an extended period of time. After the necessary testing, the researcher often writes a research report, mainly for, and in a language best understood by, his research colleagues. The language most certainly is not easily understood by farmers and almost certainly the report contains many facts that are irrelevant to their own informational needs. Something more usable to the farmer and extension worker is obviously needed. This requires communicative skills ordinarily not possessed by the researcher; thus the need for an extension staff specifically trained in the communications arts.

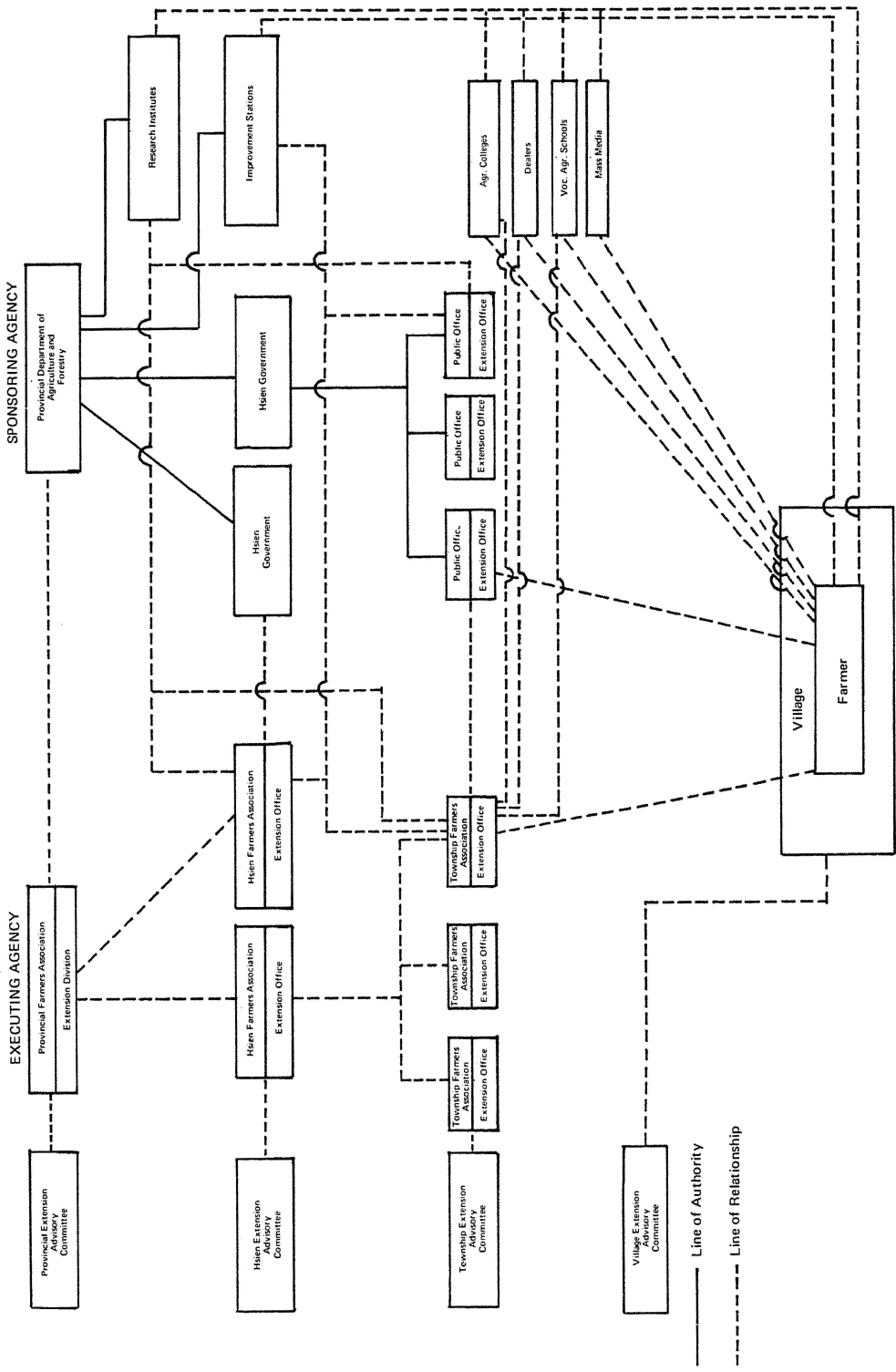


Fig. 3—Scientific Farm Information Development and Dissemination Systems of Taiwan

Assuming that extension education is primarily the province of separate specialized agencies, contacts between the agency that originates the information (research unit) and the one that disseminates it (extension unit) must be established. An extension information editor, who is likely to be different from the extension adviser who works directly with farmers, may revise the rice researcher's manuscript and make it more useful for the intended clientele. He may also prepare radio scripts, newspaper articles, feature stories, and other special informational releases about the new rice variety.

In Taiwan this is likely to be done by the staff of the Provincial Department of Agriculture and Forestry. Then, at an appropriate time and in an appropriate form the information is released through such channels as radio, newspapers, or even through personal contacts with farmers and extension workers individually or in groups. At the same time, the extension organization may take steps to insure that farmers are taught the necessary skills to successfully put the innovation into practice.

Thus, the farmer in a Taiwan village may get information about the new rice variety (1) through the researcher directly, (2) through an agricultural technician in the district agricultural improvement stations or research institutes, (3) through at least two kinds of extension workers, (4) through a commodity organization like the Sugar Corporation, (5) through bulletins, posters, radio, and newspapers, or (6) from other farmers who have heard about it before him.

Even with efforts to communicate the information through many channels, only a few farmers are likely to learn about the new variety initially and even fewer will do anything about it immediately. Indeed, it may take several years for the majority to decide to try the new variety or even to learn about it, as in the adoption of hybrid seed corn in an Iowa community where an average of five years elapsed between first knowledge about a new seed and first trial of it. The time for first learning about the new practice extended over a period of several years.²¹

A transfer of farm information from farmer to farmer deviates a great deal with the process of becoming informed often different from the process of becoming convinced.²² Thus, a person may get information from one source and be convinced by another, e.g., learn about the new rice variety by radio and eventually become convinced to try it by talking to another farmer who has already had a favorable experience with it.

Another consideration involves how well informed the sources of information are and how capable they are to give advice. Highly competent farmers may be quite universally sought by many other farmers or there may be a tendency for the well informed to talk only to their own kind and those who don't know much to talk among themselves.²³ This, of course, would constitute a barrier to the free communication of scientific farm information. Social distances may preclude personal contact as in the case of a small farmer failing to talk to a big one because he reasons that the information he would get would not be appropriate

for a little farmer like himself. Also, a farmer may deliberately avoid talking to a knowledgeable person for fear of demonstrating to himself and others how little he really knows.

Some farmers are sought more for information and advice than others. If these highly sought persons are disproportionately in closer communication with quality information sources from outside of the immediate locality than those who seek their advice, these much sought persons can provide important links to other farmers who may be reluctant to obtain the information directly or who may be inclined to discount its validity if it comes directly from the source.

In addition to collection of information through deliberate efforts of farmers, acquisition and exchange of information occurs as an incidental consequence of interpersonal association. In addition to the many types of association that farmers have with each other, is a marked inclination to develop and participate in special interest with like-minded farmers. Members of these groups are likely to be more progressive than those who do not participate in such groups. Thus, the informed tend to have this additional source of information exchange and the poorer informed tend to miss it. A farmer wishing to acquire information or to converse with a neighbor may wait until the next farm club meeting to do so. Nonmembers may go to a less reliable source.

It is with this complex of interpersonal communicative relationships, and contacts with more direct sources of farm information, that this bulletin is primarily concerned.

Communication Facilities

A district agricultural improvement station engaged in research and extension related to crops of the area and a college of agriculture with research and extension functions, were within a half-hour ride by bus for all farmers in the village. A township center in which five extension advisers (3 at the Farmers Association and 2 at the Public Office) were positioned was within 15 minutes time by bicycle. Contacts with the Food Bureau, the Taiwan Sugar Corporation, and the Taiwan Wine and Tobacco Monopoly Bureau could be had through representatives of these agencies or by contact with them in their offices.

At least one radio station carrying farm programs and several newspapers and magazines were easily accessible to the farmers. Periodically scheduled discussion groups and extension meetings were also held in the two villages. Most of the farmers were functionally literate and 36.3 percent in Shangfung and 31.4 percent in Liupao could speak Mandarin. The ability to speak Mandarin would presumably facilitate communication with researchers and vocational agriculture teachers whose native dialect is not Amoy; it would also facilitate listening to radio programs which were broadcast in Mandarin.

More than two-thirds of the farmers in Shangfung and 56 percent of those in Liupao had completed some schooling; most had attended up to the six-year level in most all cases. About 53 percent of the farmers in Shangfung and 55.3 in

Liupao had access to one or more newspapers or farm magazines even though less than 3 percent in either village had telephones or television.

Except for difficulty getting from their own farms to a blacktop road, all farmers had access to an all-weather road leading to the township in hsien centers. Almost all farmers had bicycles and almost 10 percent had either motorcycles or motorized bikes. Also, about 51 percent of the farmers in Shangfung and 34 percent of those in Liupao had received pamphlets, leaflets, or posters carrying agricultural information during the past year. Thus, it may be said that in terms of facilities through which farmers could get scientific farm information, those in the study area were well situated.

Use Patterns

Two approaches were used to determine the farm information sources used by the farmers. First, they were asked whether or not they had obtained farm information from a list of sources during the past year. They were also asked their opinion of these sources. Second, they were asked to indicate sources from which they first learned about specific practices that they had recently adopted, where they got more detailed information about the practices, and finally, what source was most influential in helping them to decide to use the practices.

The general procedure was to ask questions about one complex practice, i.e., one requiring changes in equipment and past behavior patterns with respect to farming, and a second, relatively simple practice, usually a change in crop variety requiring no changes either in basic technology or past practice.

Answers to a general question about who around here is usually first to try new farm practices provided the operational base for defining innovators; the question about most influential source in decisions to try a new practice served as the basis for defining legitimators or influentials. With the high inclination of farmers in the two villages to adopt new farm practices and a distinct orientation to modernism in farming, more frequent use of the direct agency sources was expected by both innovators and legitimators than by others.

In assessing the role which the parallel public office and Farmers Association extension offices play at the local level in the dissemination of information, it is necessary to clearly distinguish the roles which they are generally expected to perform. The local Public Office extension office is generally assigned agricultural administrative, regulatory, and census taking responsibilities related to agriculture, with information disseminating functions mainly associated with major crops and/or livestock. The local Farmers Association extension office is generally expected to disseminate farm information on a wide variety of subjects. Although this varies with local conditions and requirements and the extent to which such government agencies as the Food Bureau and research organizations elect to carry on their farm programs, major responsibility for disseminating farm information to farmers in Taya township rested with the local Farmers Association extension office. This major vestment of responsibility was further indicated

by the assignment of a Public Office extension worker to the local Farmers Association office. This, as found in Taya Township, may be interpreted as indicating a good working relationship between the two offices, a condition by no means universal. Dissensions which operate as serious barriers to the efficient operation of local extension programs may occur.

General. A first salient observation from responses to the general source use question was that farmers characteristically used a large number of sources to get farm information, the median number being 6.2 in Shangfung and 5.2 in Liupao. Like farmers in many other studies, they mentioned *other farmers* most by a wide margin as information sources (see Tables 12 and 13) with an average of over three being named in both villages.

TABLE 12--PERCENT OF FARM OPERATORS IN SHANGFUNG USING DESIGNATED SOURCES OF FARM INFORMATION DURING PAST YEAR AND CONDITIONS OF USE

Source of Farm Information	Using	Using	Using	Regarding It
	% (N=237)	Regularly % (N=237)	Most Frequently % (N=237)	As Most Useful in Deciding % (N=237)
AGRICULTURAL AGENCIES				
Farmers Association Extension Adviser	79.7	xx	39.2	49.8
Public Office Extension Adviser	61.2	xx	4.6	4.6
District Agricultural Improvement Station Technician	37.6	xx	1.3	5.1
Research Institute	20.7	xx	0.8	0.4
Vocational Agriculture School	10.1	xx	0.4	0.0
Chungshing University	7.6	xx	0.0	0.0
Extension Pamphlets, Leaflets and Posters	49.4	24.9	0.0	0.0
MASS MEDIA				
Newspaper	34.6	11.0	0.0	0.0
Farm Magazines	39.2	21.9	2.5	3.8
Radio	74.3	43.9	9.3	4.6
Television	0.4	xx	0.0	0.0
PERSONAL (NON AGENCY)				
Dealers	57.4	xx	5.1	3.8
Other Farmers	94.1	xx	33.3	25.3

TABLE 13--PERCENT OF FARM OPERATORS IN LIUPAO USING DESIGNATED SOURCES OF FARM INFORMATION DURING PAST YEAR AND CONDITIONS OF USE

Source of Farm Information	Using % (N=159)	Using Regularly % (N=159)	Using Most Frequently % (N=159)	Regarding It As Most Useful in Deciding % (N=159)
AGRICULTURAL AGENCIES				
Farmers Association Extension Adviser	61.0	xx	23.3	36.5
Public Office Extension Adviser	50.3	xx	1.3	2.5
District Agriculture Improvement Station Technician	15.1	xx	0.0	0.6
Research Institute	11.3	xx	0.0	0.6
Vocational Agriculture School	4.4	xx	0.0	0.6
Chungshing University	2.5	xx	0.0	0.6
Extension Pamphlets, Leaflets and Posters	29.6	13.8	0.6	0.6
MASS MEDIA				
Newspaper	30.8	12.6	0.6	0.6
Farm Magazines	29.6	13.2	1.8	1.8
Radio	76.7	49.1	23.3	15.7
Television	0.0	xx	0.0	0.0
PERSONAL (NON AGENCY)				
Dealers	73.0	xx	8.8	6.3
Other Farmers	92.5	xx	38.4	30.8

A very high proportion also got farm information from the advisory agencies (Farmers Association and Public Office extension advisers). The Farmers Association was mentioned more than the Public Office extension advisers. The very high 79.7 percent figure in Shangfung can be partly attributed to the fact that the extension chief lived in this village and had farming interests and operations of his own. Thus, he had the high status of good farmer, good neighbor, and extension chief as assets. An additional 49.4 percent of farmers in Shangfung and 29.6 in Liupao got information from extension publications.

All of this emphasizes the high reliance farmers placed on extension sources and channels for obtaining farm information. A sizable proportion of the farmers

went directly to the district agricultural improvement station or research institute to obtain such information. Farmers in the economically advantaged village were considerably more inclined to go directly to the research sources than those in Liupao. Perhaps it is easier for relatively prosperous farmers to make such contacts and use the information than it is for those with more limited resources; also, they are in a position to take risks that less advantaged farmers can't afford to take.

The mass media, which are ordinarily introduced in developing countries after personal advisers were well institutionalized (established and accepted) in the two villages as sources of farm information, particularly radio. About three-fourths of the farmers in both villages indicated that they had obtained farm information from this source. Farm magazines were named by another 39.2 percent in Shangfung and 29.6 percent in Liupao. Similar percentages of farmers in both villages also said they obtained farm information from newspapers.

Commercial firms, including dealers and business men, are another information source, one not always trusted by those who must deal with them. Thus, it is highly significant that 73 percent of the farmers in Liupao and 57.4 percent in Shangfung claimed to have obtained farm information from commercial sources. Why more farmers in the economically disadvantaged village obtained farm information from dealers than the more advantaged one is difficult to explain. This occurred in Missouri as well as Taiwan. Certainly, dealers are highly accessible persons who come to occupy increasingly strategic positions as communicators of farm information as farming becomes more commercialized. When dealers also achieve positions of confidence and trust in their own communities, they may be very much sought as sources of farm information.

Mere use of an information source to obtain farm information is one thing. Other important questions involve frequency of use and the reliance placed in sources. An estimate of the frequency of use was attempted by asking farmers which source of farm information they used most and second most frequently. Estimate of the reliance they placed on the sources was checked by asking them to indicate the ones they found most useful in their own farm practice adoption decisions. The first is an intensity indicator and the second an indicator of influence.

Here again the importance of extension channels was clearly demonstrated. Some significant village differences also occurred. Of all the many sources mentioned originally only two remained in Shangfung and three in Liupao as contenders for either evaluation rating. These were the *township Farmers Association extension advisers* and *other farmers* in Shangfung and the same with radio added in Liupao.

Under the frequency of use category, *other farmers* ranked first in Liupao and the *Farmers Association extension adviser* and *radio* tied for second. In Shangfung, the *township Farmers Association extension adviser* ranked first and *farmers* second to monopolize the listings used most frequently. These village differences in the

use of extension personnel may be a partial function of relative physical availability of such personnel. *Other farmers* are close, receptive, and handy in all areas. The extension head, however, lived in Shangfung. Also, more farmers in Shangfung than Liupao were active participants in extension sponsored discussion groups. Radio is a readily available means of obtaining information to anyone who has a radio in both regions. The fact that the farmers in Liupao used radio as a source much more frequently than those in Shangfung also might indicate greater receptivity to and demand for new ideas, since radio had been used by the government and research organizations as a means of informing farm people about new developments in farming.

Responses concerning information sources most helpful in arriving at adoption decisions put *Farmers Association extension advisers* in a top position in both villages and by a very large margin in Shangfung. This suggests institutionalization of this source at a very high level, namely as a convincing agent in decisional matters. In both villages *other farmers* rated second as a source most useful in arriving at decisions.

A second very significant finding was the proportion (15.7 percent) in Liupao who said radio was most useful in helping arrive at adoption decisions. This level of influence is generally contrary to findings in the United States where radio and other mass media seemed to be highly useful as notifying and informing agents but not as a means of helping farmers arrive at adoption decisions. Institutionalization of mass media at this level could greatly enhance adoption rates but would place grave responsibility on the communicating agents not to betray the confidence placed in them or to be wrong in the kind of information disseminated.

Source Use for Specific Purposes in the Individual Adoption Process. Studies in the United States and elsewhere have shown that information requirements are different for first learning about new practices, for getting more detailed information about them, for evaluating the utility of the practice generally and for own operations, and for putting the practice to use. The studies show that different sources are ordinarily used for these purposes, representing stages in the individual adoption process described as awareness, interest or additional information, evaluation, trial, and adoption.²⁴ Only three of the stages were used in the Taiwan areas studied: (1) the stage of becoming aware of a new idea or practice, defined as source of first learning; (2) interest stage, defined as sources from which additional information was obtained; and (3) evaluation stage, defined as sources most useful in helping the farmer to decide on whether to adopt the new practice or not.

A sequence of questions designed to obtain information on sources used at these stages was preceded by extended informal interviews with farmers about sequences of events, influences, and information sources operating in the farm practice adoption decisions they had made. Objective of this preliminary interviewing was to determine the applicability of the questioning sequence to farm-

ers in Taiwan. The preliminary observations indicated that the questions were practicable and meaningful.

The procedure was to ask farmers about the farm information sources used for the various purposes in the adoption of each of two new farm practices. This yielded a series of information and influence responses to 473 practices from 237 farmers in Shangfung and 316 from 159 farmers in Liupao. Even though a single response was requested for source of first learning and one for most influence, farmers were inclined to name more than one and, understandably, several for additional sources of farm information.

The total number of source mentions for additional information was 952, adding up to 200.6 percent in Shangfung (when percentages were figured on the number of practices on which the questions were asked) and 585 mentions in Liupao, adding to 184.1 percent. Thus, on the average, farmers in Shangfung named two sources for additional information and those in Liupao, 1.8, for each of the two practices about which they were questioned (see Table 14).

Multiple mentions in response to these questions were understandable since a farmer may not have distinguished which was first of two early sources of information or which of two very influential ones was actually most influential in his own adoption decision. The procedure in these two cases was to accept whatever response a farmer gave if, with additional probing, he was unable to limit his response to only one source. Since use of many sources for additional information in arriving at adoption decision would seem to be normal, no attempt was made to limit response to this question. Surely, Iowa farmers who waited an average of five years after first learning about hybrid seed corn before first trying any of it must have obtained information about this seed in the interim period from many sources.²⁵

The procedure used in our Taiwan study was to first observe the frequency with which sources were named for the three purposes (or stages) in the 473 practice adoptions considered in Shangfung and the 316 in Liupao.

As a second consideration, attention was directed to relative source use of four most-used sources. These four sources were the *Farmers Association extension adviser*, *other farmers*, *dealers*, and *mass media* (radio, farm magazines, and newspapers).

Percentages for the first analysis were based on the number of practice adoptions considered. With few exceptions this included two for each farmer. This tells the relationship between practice adoptions and the source of information used for the specific purpose in the adoption decisions. In the second analysis, percentages were based on the total number of mentions of sources for each of the three purposes. Differences in percentages of mentions are taken as indicators of the relative importance of each of the sources for the various purposes, kinds of people, and conditions considered.

The rationale for this part of the study which involves source use by stages in the individual adoption process is based on many research studies in the United

TABLE 14--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED FOR DESIGNATED PURPOSES
IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY
VILLAGE RESIDENCE OF FARM OPERATORS

Kind of Information Source	Shangfung Village			Liupao Village		
	Purpose of Source			Purpose of Source		
	First In- formation % (N=473)*	Add. In- formation % (N=473)*	Most In- fluence % (N=473)*	First In- formation % (N=316)*	Add. In- formation % (N=316)*	Most In- fluence % (N=316)*
AGRICULTURAL AGENCIES						
Farmers Association Ex- tension Adviser	44.4	48.2	32.6	31.0	35.8	23.1
Public Office Extension Adviser	2.5	16.3	3.0	.9	10.1	1.3
Agri cultural Improvement Station Technician	3.6	5.9	1.5	.6	2.2	.3
Chungshing University Extension Pamphlets, Leaflets and Posters	.0	.4	.2	.0	.0	1.2
	.6	8.2	.4	.9	5.7	.0
MASS MEDIA						
Farm Magazines	3.6	11.0	2.9	3.2	7.6	1.8
Newspapers	.6	1.9	.4	.0	1.5	.0
Radio	1.7	14.4	1.3	2.8	14.2	1.6
PERSONAL (Non Agency)						
Dealers	14.4	12.5	8.2	20.3	24.7	13.6
Meetings	3.4	9.1	.8	4.1	7.0	2.5
Other Farmers	44.6	70.2	50.9	44.3	70.9	49.1
ALL OTHER	3.4	2.7	7.0	1.6	4.4	8.2

*N= number of practice series or adoptions examined

States which have shown that there is a differentiation in sources used for first, additional, and most-influence purposes.²⁶ Although sources that farmers can use are limited to those available, this did not seem to pose any great difficulty for comparisons between Taiwan and the United States. Many similarities existed in communication facilities. In any case, some differentiation in sources used for each of the three purposes would be expected, particularly among the more progressive farmers.

At least 60 percent of the farmers in the Taiwan sample had some schooling and presumably were functionally literate. At least 75 percent of them possessed radio sets, and 55 percent or more had access to farm journals or newspapers from which information could be obtained, at least occasionally. Thus an inclination to obtain first information from such sources much as in the United States might be expected. Also, since a marked inclination has been found in the U.S. for even the more progressive farmers to rely on other farmers for decision-legitimizing purposes in their deliberations to adopt new farm practices, and since this inclination is even more pronounced among the tradition-oriented and the economically disadvantaged farmers, it was predicted that such an inclination would also prevail among the Taiwan farmers. Accompanying this might be expected a relative exclusion of mass media and the more direct extension channels as sources likely to be labeled as most influential (legitimizing).

Other questions considered were: (1) differentiated source use for farmers with different characteristics, such as, the young versus the old; (2) the innovative versus the traditional; (3) those who served as innovator and legitimator referents for other farmers and those who did not; (4) those most and least competent as farmers, as indicated by their farm practice adoption levels; (5) the way in which source use varied for traditionally grown crops and the newer ones; and (6) the simple versus the complex.

To be sure, all studies done in the United States do not show the same relative frequency of use of farm information sources for first, additional, and most-influence purposes in the farm practice adoption decisions of farmers. But certain observable tendencies are apparent and may be noted. One general assessment of the relative rank in frequency of mention is presented in Figure 4. The *awareness stage* is what is here referred to as "first information;" second, *interest* or *additional information*; and third, *evaluation*, the stage at which "most influence" sources are defined.

It is necessary to keep this parallel in terminology in mind when observing the Taiwan diffusion research findings and making comparisons with the general United States model. No attempt was made in the Taiwan study to determine information sources used at the *trial* and *adoption* stages indicated in Figure 4.

By comparing Taiwan research findings reported in Table 14 with the Figure 4 summary, it can be seen that differences in the sources used most frequently at the *awareness*, *interest*, and *evaluation* stages did not coincide with the U.S. re-

STAGES IN THE ADOPTION PROCESS				
A AWARENESS Learns about a new idea or practice	INTEREST Gets more informa- tion about it	EVALUATION Tries it out mentally	TRIAL Uses or tries a little	ADOPTION Accepts it for full-scale continued use
1. Mass media—radio, TV, newspapers, magazines	1. Mass media	1. Friends and neighbors	1. Friends and neighbors	Personal experience is the most important factor in continued use of an idea
2. Friends and neighbors - mostly other farmers	2. Friends and neighbors	2. Agricultural agencies	2. Agricultural agencies	
3. Agricultural agencies, vo- ag., etc.	3. Agricultural agencies	3. Dealers and salesmen	3. Dealers and salesmen	2. Agricultural agencies
4. Dealers and salesmen	4. Dealers and salesmen	4. Mass media	4. Mass media	3. Mass media 4. Dealers and salesmen

Source: Lionberger, Adoption of Ideas and Practices

Fig. 4--Estimated Rank Order of Information Sources by Stages in the Adoption Process, U.S. Studies, 1961

search findings in several important respects. Two things in particular were apparent: (1) the relative lack of use of the mass media as first sources of information about new practices in the villages and (2) the much higher frequency of use of extension sources for most influence (evaluation stage).

Although agricultural agencies were listed second in order of frequency in Shangfung and Liupao, just as in the generalized U.S. data in Figure 4, the most important difference was in the frequencies with which each source type was mentioned for most influence. This can be demonstrated by reverting to our Ozark (economically disadvantaged) and Prairie (economically advantaged) community studies in Missouri where farmers were asked to indicate the sources of information of most influence in the farm practices they had adopted. The proportions of mentions assigned to each are listed in Table 15. (Although parallel

TABLE 15--PERCENT OF TIMES INFORMATION SOURCES WERE MENTIONED AS MOST INFLUENTIAL IN DECISIONS OF FARM OPERATORS TO ADOPT NEW FARM PRACTICES IN TWO RURAL COMMUNITIES IN MISSOURI, USA, 1956

Sources Mentioned	Ozark (Economically disadvantaged)	Prairie (Economically advantaged)
	% (N=566)*	% (N=511)*
TOTAL	100.0	100.0
AGRICULTURAL AGENCIES		
County Extension Agent	6.5	4.7
Voc. Agriculture Teacher	3.3	10.5
Government Offices	1.4	1.0
Agricultural Bulletins	1.8	0.2
MASS MEDIA		
Newspapers	1.9	4.3
Magazines	7.4	8.6
Radio	8.3	5.3
Television	0.5	0.2
FRIENDS AND NEIGHBORS (Other farmers)	33.0	31.8
One Dealer-Farmer	7.2	13.3
LOCAL DEALERS	20.0	9.3
ALL OTHER	8.7	10.8

*This table was adapted from Herbert F. Lionberger, Legitimation of Decisions to Adopt Farm Practices and Purchase Farm Supplies in Two Missouri Farm Communities: Ozark and Prairie, Columbia: Missouri Agricultural Experiment Station, Research Bulletin 826, April 1963, p. 7.

**Number of practice series about which farmers were questioned.

studies of these communities were made in 1966-67, results were not available when this bulletin was written.) Although *agricultural agencies*, collectively, were mentioned second most frequently in Prairie, and third most (in deference to local dealers) in Ozark, the percentages were considerably below the proportion naming *other farmers* and much below if only the *county agent* is considered. The contrast is further increased if the one dealer-farmer in each community is added to friends and neighbors which is entirely proper because each was a farmer in his own right.

One word of caution needs to be added in interpreting the Missouri data. Some of the farmers obtaining information via the mass media surely recognized that the information that they received came to them indirectly from the agricultural experiment station via extension channels of the College of Agriculture. Thus, inferences drawn about the importance of agricultural agencies as legitimating influence may be slightly underestimated by looking only at percents attributed to them. Yet, with generous allowance for indirect influence through the mass media, the appropriate conclusion would seem to be that the importance of *other farmers* as legitimating influences is paramount.

In general, two patterns of farm information acquisition and use were suggested in the Taiwan study. The first and very predominant one was a strong reliance on Farmers Association extension advisers for obtaining first information, followed by a quest for additional information from other farmers, no doubt from a few selected ones suited to own needs. This tendency to talk to other farmers for additional information was clearly demonstrated by the very high proportion of farmers (about 70 percent in both Shangfung and Liupao) who talked to other farmers about the practices they eventually adopted. But in this context there seemed to be a considerable number who got additional information from Farmers Association extension advisers after first learning from other farmers. This is indicated by the somewhat higher percentage of farmers in both villages getting additional than first information from them. The second pattern seemed to be one in which there was an inclination to use other farmers as sources of farm information at all three stages, thus a pattern of getting information quite outside of the extension system.

This tendency to get additional information from direct agency sources was even more evident than first observation of Table 14 might suggest. In Shangfung, 16.3 percent of the farmers got additional information from Public Office extension advisers. Another 14.5 percent got information from even more direct sources—district agricultural improvement station technicians, extension publications, and other research sources. Although less marked, this general tendency was also apparent in economically disadvantaged Liupao. This is a type of information seeking behavior that may be expected only among farmers who feel quite capable of applying abstract knowledge to their own situation or who, upon learning about new farm practices, are quite willing to rely on professional agricultural workers as consultants in making applications to their own situation.

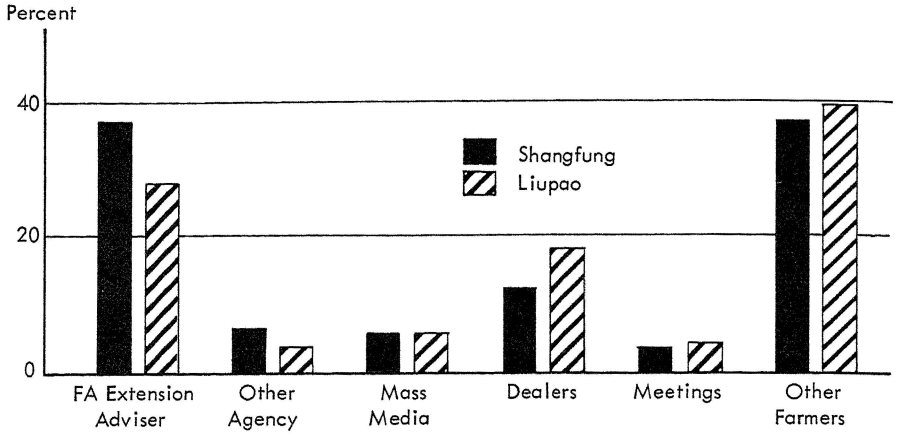
An inclination to use the mass media more as additional sources (27.3 percent in Shangfung and 23.3 in Liupao), rather than for first knowledge, was contrary to what might have been expected from studies made in the United States. In Shangfung more than one-fourth of the farmers said they got additional information from the mass media, compared to only 6 percent for first information and even less for "most influence" (see Table 14). The small number naming mass media for "most influence" is in accord with usual United States findings. The same pattern occurred in Liupao, but with somewhat fewer farmers getting additional information from the mass media and much fewer getting most influence about the practices that they had adopted. Farm magazines and radio were the most used mass media even though newspapers were more accessible to farmers than farm magazines.

Characteristically, farmers in the United States rely on other farmers as sources of most influence in arriving at adoption decisions, i.e., for legitimating purposes.²⁷ A high proportion of the Taiwan farmers responded in much the same manner. Yet, contrary to the usual United States findings, a higher proportion of farmers in both villages named Farmers Association extension advisers as most important influences. This suggests a very high degree of trust and confidence in Farmers Association extension advisers as farm consultants, a trust seemingly not accorded to Public Office extension workers even though they were quite frequently named as additional sources of farm information about new farm practices. Economically disadvantaged Liupao was somewhat more *other farmer* oriented for decision legitimation than economically favored Shangfung. This was expected, the reasoning being that more caution is needed in situations of high economic stress where the economic consequences of making a mistake are likely to be more severe than in situations where the general economic climate is better. In the former, a person in about the same situation as one's self is likely to be preferred as a consultant, particularly if he has had experience locally with a new practice.

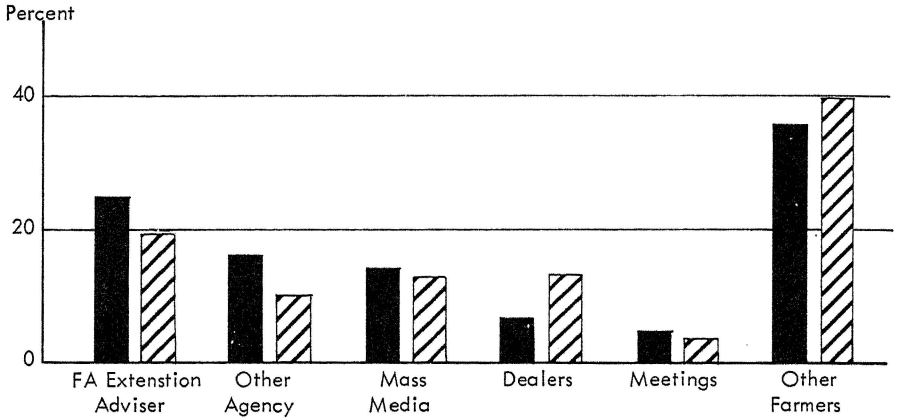
Some of these observations are apparent in Figure 5, showing percentages of total number of source mentions for each informational purpose (see Tables 2 and 3, Appendix III). This procedure had the net effect of lowering the percentage use for information sources in most cases since the number of mentions at each stage considerably exceeded the number of practices involved.

Whereas the percentages in Table 14 were figured on the 473 farm practice series in Shangfung and 316 in Liupao, those in the graphic representation and Table 3 in Appendix III were computed on the number of mentions ranging up to 952 for additional sources in Shangfung and 585 in Liupao. The last seemed to provide a more equitable basis for comparing frequency of mention of sources used for different practices, people and crops. To further facilitate comparison of salient differences and minimize less relevant details, attention was focused only on four of the most used sources of farm information and to extreme categories in attributes considered. For example, for age of farm operator, comparisons were made only between young and old farmers, omitting the middle-aged group.

FIRST INFORMATION



ADDITIONAL INFORMATION



MOST INFLUENCE

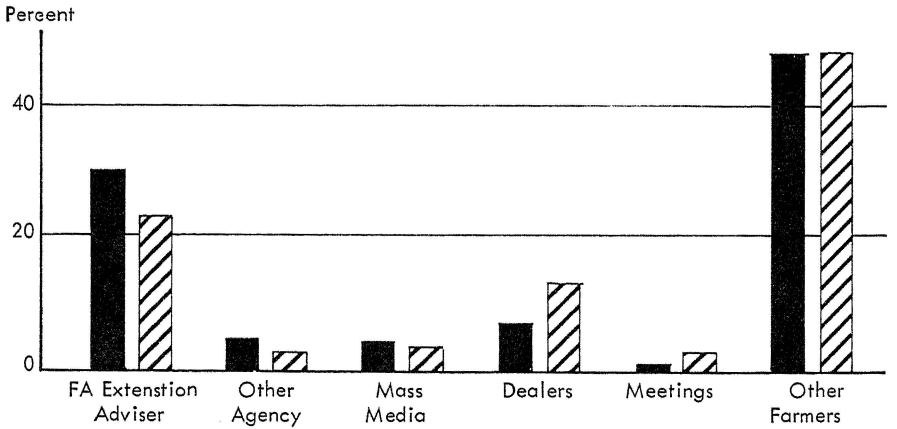


Fig. 5--Mentions of Selected Farm Information Sources as First, Additional, and Most Influence Sources of Farm Information in Adoption Decisions

Those interested in more detail may refer to the Appendix III Tables corresponding to the graphic representations.

Differences by Subject. Two comparisons in source use by subject matter content were considered: (1) differences by complexity of the practices involved and (2) differences by major-minor crops. The simple-complex division permitted an assessment of the degree to which extension channels were responding to and being used for kinds of information not likely to be readily available among the farmers themselves. The rationale for the major-minor classification was that the former was more likely to represent traditional crop patterns and attendant farm needs and the latter, the newer ones and thus emerging informational needs. The frequency with which farmers got *first*, *additional*, and *most* influence information for the newer crops through extension channels thus might be assumed to suggest the extent to which extension systems have adjusted to changing agricultural informational needs of the farmers. The complexity classification may be suggestive of adjustment to the more complex informational needs.

Simple versus complex practices. Complex practices require changes in technology and basic work habits like the use of a chemical for soil treatment instead of spraying or dusting used for plant protection and simple practices, such things as a change in seed variety. The former being more exacting in informational requirements, it was reasoned that farmers would rely more on extension advisers and other agricultural professionals for information about them than for the simpler practices. To provide a comparative base, farmers were questioned about the information sources they used for selected complex and simple practices. The relative frequency with which they used information sources for each of the three purposes for the two types of practices considered are reported in Figure 6 (also see Tables 4-7 in Appendix III).

Contrary to expectations, the predicted differences in source use did not occur (see Figure 6). In Shangfung farmers obtained first information about simple practices from extension sources almost as often as complex practices. Although the difference was slightly in the predicted direction, a slight reversal occurred in Liupao. A very interesting reversal from the expected was the much higher proportion in Liupao who got first information about complex practices from dealers. Perhaps many of these practices required the use of commercial products sold by local dealers who in turn supplied the needed information with it. Fewer farmers first learning about complex practices than simple ones from fellow farmers was no surprise. The simple practices were likely to be disproportionately related to traditional practices. Thus, other farmers likely would be more knowledgeable about these matters.

Other farmers were again most frequently mentioned for additional information for both kinds of practices in both villages. Although dealers were third in importance to other farmers and extension advisers in both villages for additional information about complex practices, they were used much more frequently in Liupao than in Shangfung. Farmers in Shangfung were more inclined to stress

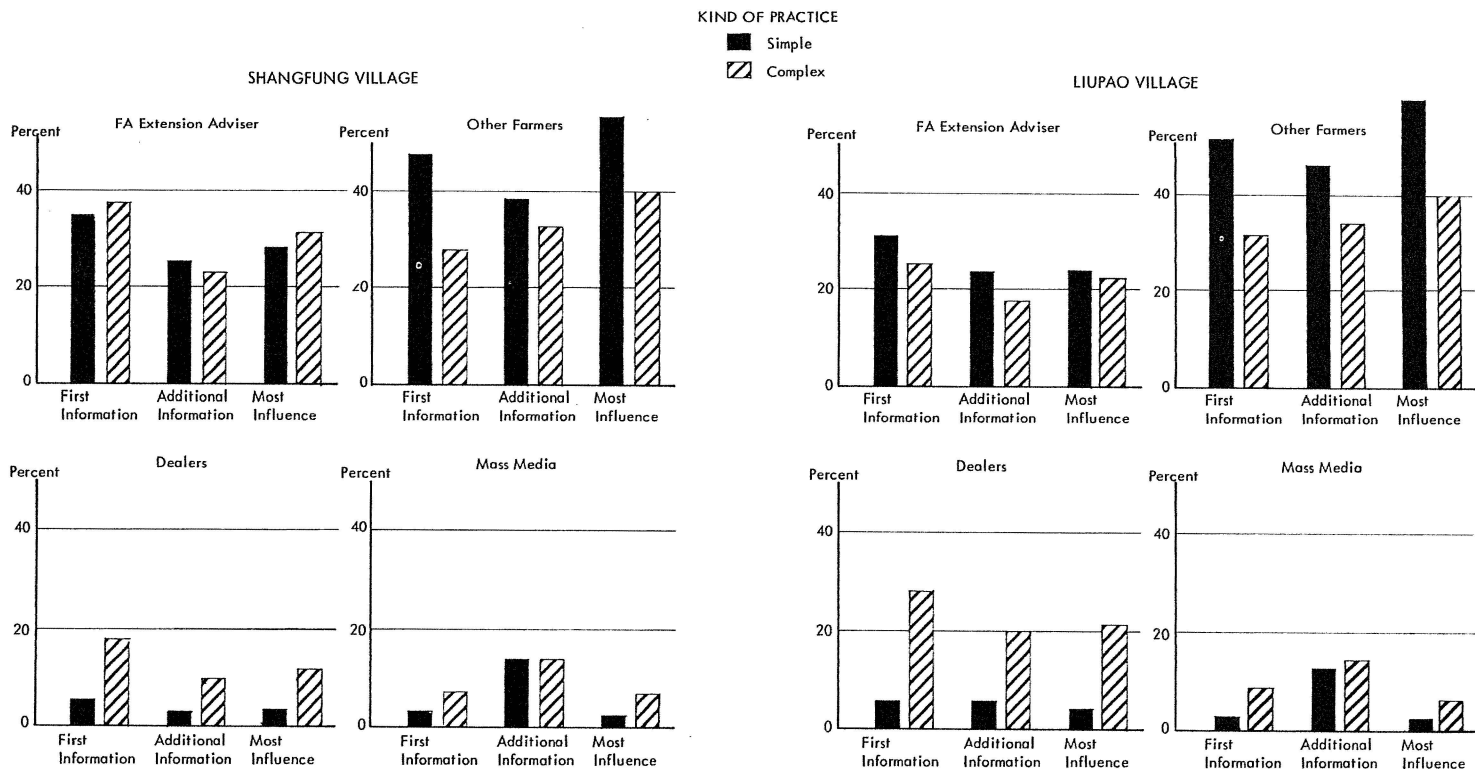


Fig. 6--Mentions of Selected Farm Information Sources for Designated Purposes in Adopting Simple and Complex Farm Practices

Farmers Association extension advisers as additional sources for both simple and complex practices.

Thus, it was seen that farmers in Shangfung were somewhat more responsive to obtaining information from extension sources for complex practices than in Liupao and that they were somewhat more likely to learn about and be convinced about the adoption of complex practices than the simple ones through extension channels. A slightly reversed situation in Liupao was likely due to habits of the farmers in obtaining farm information rather than to a limitation in capacity of the extension system to supply the needed information. If farmers in Shangfung could get needed information about complex practices, farmers in Liupao surely could have done so also.

Major-minor crops. This division was introduced as a possible indicator of the extent to which the agricultural information systems in Taiwan have adjusted to changing informational needs of the more innovative farmers regarding new crops. As agricultural information development and dissemination systems emerge in developing countries, first attention is usually directed to problems of production rather than distribution and consumption; and, usually to the most important food crops. In Taiwan these are rice and wheat. However, as the urgency of food production decreases and farming becomes more commercialized, farmers become money minded, even before national food problems are solved, and farmers search for new and promising cash crops. In such cases, institutionalized informational systems may lag rather than lead, particularly if government policy continues to stress food production to the relative exclusion of new cash crops.

Even though the major-minor crop classification does not provide a clear-cut distinction, it is an approximation, with new crops likely heavily represented in the minor category. This line of reasoning is not to imply that information development and dissemination systems ought to lead in either introducing or servicing the new commercialized developments. There may be good reasons why they should not. The question here is the extent to which they did or didn't in the Taiwan study area.

The manner in which farmers responded to information source questions in relation to major and minor crops is presented in Figure 7 and Tables 8-11, Appendix III. In accord with the lag hypothesis, more farmers in both villages learned about major than minor farm practices through Farmers Association extension channels. Although other farmers generally rated highest as first sources of information for both types of practices, they were used less for minor than for major crop practices in Shangfung. Alternate sources of learning were predominantly dealers in Shangfung and to a lesser degree farm magazines and a number of unspecified *other sources* in Liupao.

A similar but less marked pattern prevailed for getting "additional information" about major and minor crop practices. As sources of most influence, farmers in Shangfung were about as willing to trust Farmers Association extension advisers for one type of practice as the other, but they relied much more heavily on dealers for minor than for major crop practices.

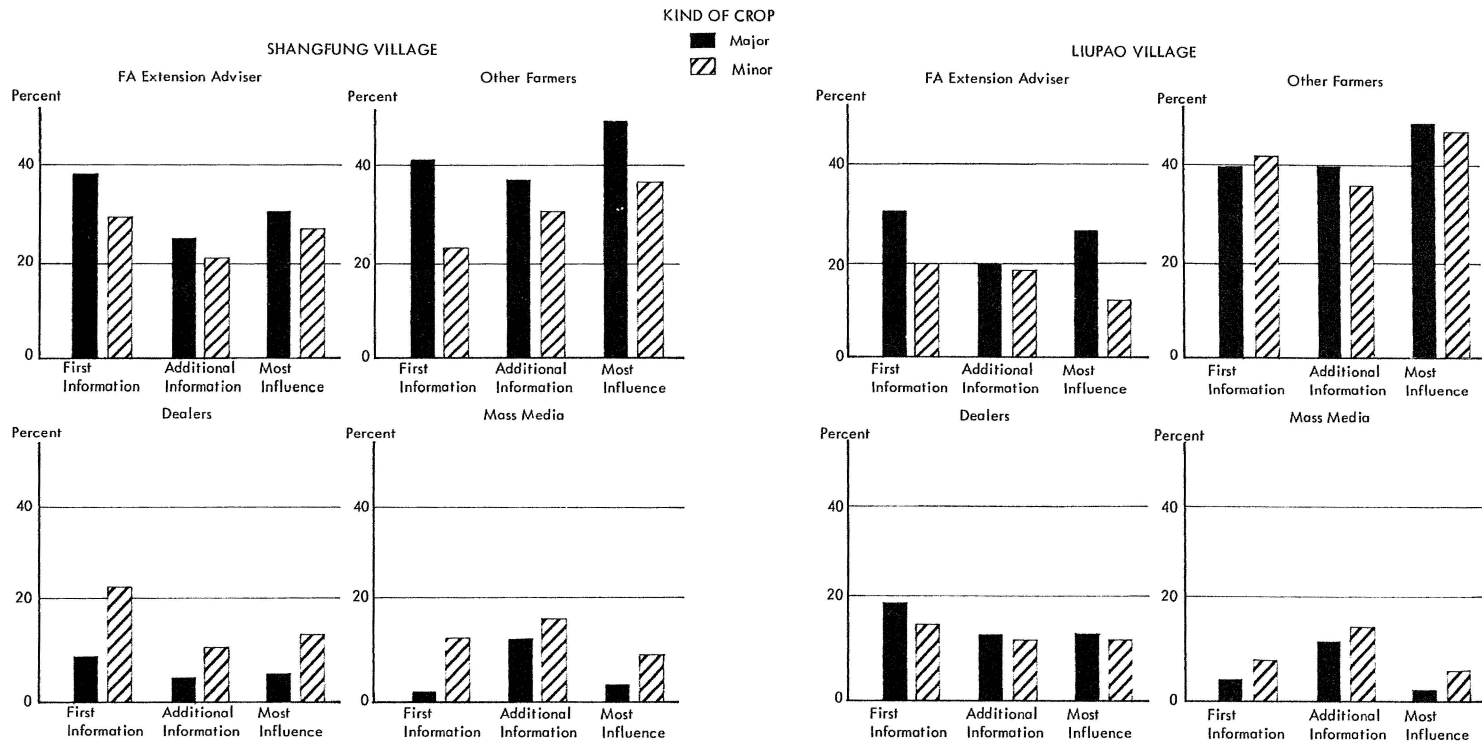


Fig. 7--Mentions of Selected Farm Information Sources for Designated Purposes in Adopting Major and Minor Crop Practices

In Liupao farmers were much less willing to accept the advice of the Farmers Association extension advisers for minor than major crop practices. They continued to rely disproportionately on farm magazines and a variety of other minor sources. All differences in source use occurred in a general pattern in which *other farmers* and *extension advisers* were most relied upon of all sources at all information stages for both major and minor crops. Even so, the extension system had adjusted better to the informational needs of farmers for major and thus the older, more traditional crops than for the minor, and likely newer ones.

Differences by Position of Farm Operator in the Interpersonal Communicative Structure. Questions raised in this section relate to how the use of farm information sources varies with the position of the farm operator in the communicative structure involving new farm practices. The questions cover own perception of rate of adoption of farm practices (i.e., in relation to others in the immediate locality), the perception that farmers held about the innovative tendencies of their associates and acquaintances, and the frequency with which farmers served as decision influencers of others.

The way individuals are variously positioned in the communicative arrangements of a village and the use that they make of outside sources of farm information is very important because of their potential for communicating such information to others and influencing them to adopt new farm practices. Thus, farmers first to adopt new farm practices can communicate what they know to others and advise them on these practices. It also follows that farmers who are otherwise favorably situated in the adoption or communication patterns of the area can be more useful as communicators of farm information and as consultants than those who are not. This section of the bulletin is primarily concerned with the farm information use patterns of farmers variously situated in the interpersonal communicative and farm practice adoption structure of the villages.

Perception of Own Rate of Adoption. Each farmer was asked whether he regarded himself as being either faster or slower, generally, than other farmers to adopt new farm practices. An average or in-between designation was permitted for those who were reluctant to label themselves as faster or slower. Comparisons in the test are only between those who made the "more than," "less than" distinction. This eliminated about one-third who regarded themselves as being about average. Data for this intervening group are in Tables 12-15 in Appendix III.

It might be expected that farmers who labeled themselves as fast adopters would be inclined to rely more on direct channels to obtain first information about new practices than the slow adopters. This would mean more reliance on extension advisers, research institutes, and, perhaps, the mass media, through which timely announcements of new developments in farming may be expected. Two quite different patterns of acquiring new practices were found in the two villages. Whereas more of the farmers who perceived themselves as fast adopters than of those who perceived themselves as slow adopters in Liupao were in-

clined to learn about new farm practices from Farmers Association extension advisers, the inclination in Shangfung was to obtain this information even more directly, through the district agricultural improvement station personnel (see Table 13, Appendix III). Fast adopters in both villages made more use of the mass media than slow adopters. Conversely, more self-labeled slow than fast adopters in both villages used dealers as sources of information for all three purposes.

The pattern of obtaining *additional* information from extension advisers in Shangfung was quite different from the pattern for first information. In both villages, more of those who thought they were fast adopters than of those who thought they were slow obtained additional information from the Farmers Association extension advisers. There was a distinct tendency for more of the former than the latter to rely on such printed materials as extension pamphlets, leaflets, posters, and farm magazines for additional information. These differences may be observed in Table 14, Appendix III. Also, as in acquiring first information, fewer who thought they were fast than who thought they were slow adopters got additional information from other farmers.

Perhaps the most significant difference in source use patterns was the much greater reliance of fast adopters on extension related sources in contrast to reliance on *other farmers* by the slow adopters (see Figure 8 and Table 15, Appendix III). This tendency, very distinctive in both villages, was greatest in Liupao.

Thus, legitimation of adoption decisions for self-styled early adopters was primarily a function of extension channels in contrast to later adopters who relied most heavily on other farmers. Also, Figure 8 indicates a few more self-styled fast than slow adopters in both villages named mass media as most influential and fewer in both villages named dealers.

To be sure, perceived rate of adoption may not directly coincide with actual adoption, but distinct farm information use patterns did occur on this basis. Assuming even a moderate correlation between actual and perceived rate, these differences are significant to the manner in which scientific farm information and influence filters through the interpersonal communicative network.

Differences in Information Sources of Persons Identified by Others as Innovators. An alternate way to identify potentially fast adopters for special consideration is to identify farmers who are generally regarded as first to adopt new farm practices in their immediate locality. Although this does not necessarily identify the ones who are actually first, it does designate those whom farmers generally regard as being first. These, rather than the actual firsts, if there is a difference, are the ones who serve as innovator referents in the adoption decisions of others.

In a naming procedure of this kind, local people would be expected to name a relatively few farmers as first to adopt new farm practices, leaving a high concentration in the *no mention* category. This was the case, a condition which is reflected in the "no" and "high" mention groups. Those mentioned three or more times are referred to as "high mention innovators" and those receiving no mentions as "non-innovators."²⁸

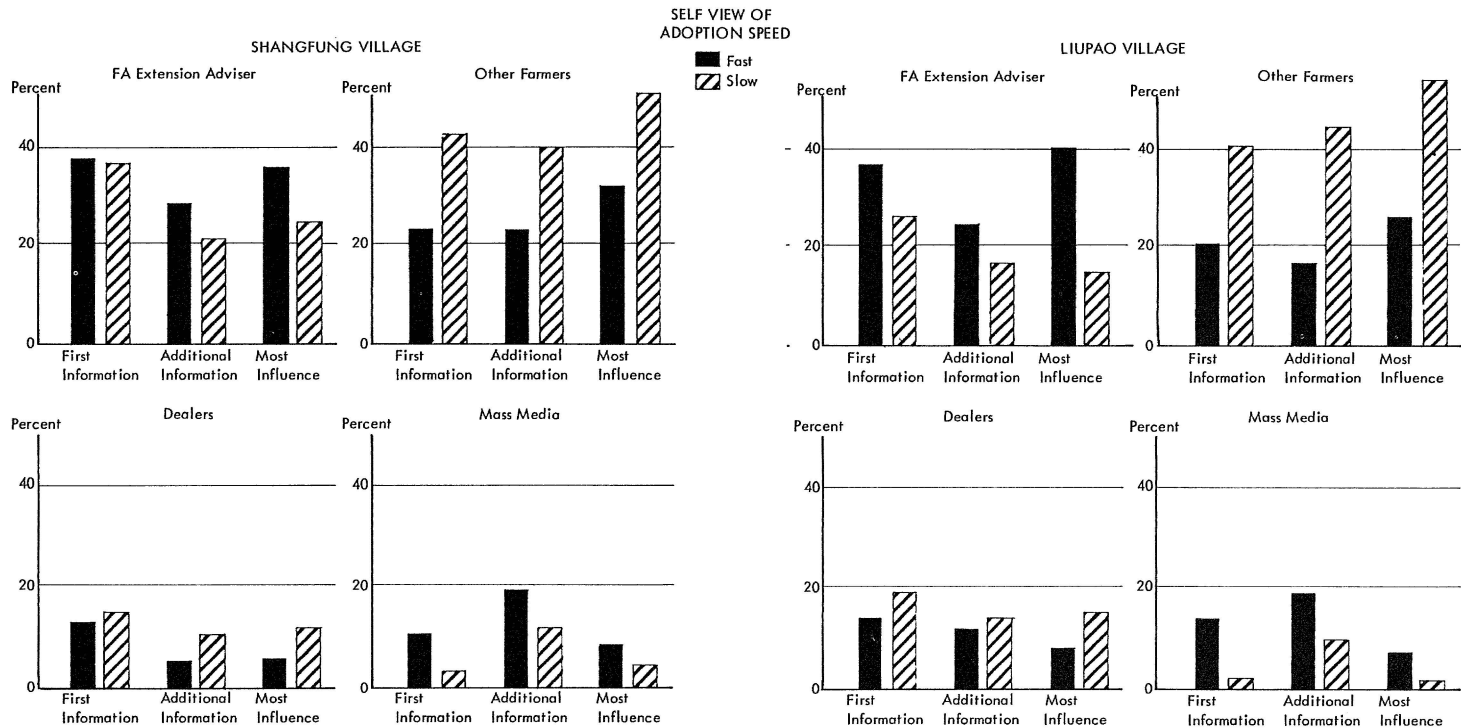


Fig. 8--Mentions of Selected Farm Information Sources for Designated Purposes by Self-Styled Fast and Slow Adopting Farmers

Figure 9 (also see Tables 16-19, Appendix III) shows a distinct tendency for high mention innovators to get first information about new farm practices from Farmers Association extension advisers. Non-innovators generally got first information from other farmers.

High mention innovators were also more likely to get first information from the mass media in Liupao. An inclination for innovators to learn about new farm practices from district agricultural improvement station (DAIS) personnel was also evident, particularly in Shangfung; also noted was an inclination to obtain first information from farm meetings in Liupao. Such meetings were likely to involve a disproportionately large number of progressive farmers. (see Table 17, Appendix III). However, the really big difference in sources for first information about new practices was the very high proportion of high mention innovators who learned first information from the Farmers Association extension advisers and the great proportion of the non-innovators who learned first from other farmers.

At the *additional information* stage, the general tendency in Shangfung was for innovators and non-innovators to revert more to the group average in the use of the Farmers Association extension advisers as sources. Nevertheless, high mention innovators in both villages continued to avoid other farmers as sources of additional information. Innovators more frequently mentioned mass media sources than non-innovators; also, Public Office extension advisers, not sought as sources of information for most farmers, were quite frequently sought by innovators (see Table 18, Appendix III). Innovators in both villages were further distinctive in avoiding dealers as sources of additional information.

A distinct tendency was for innovators to rely predominantly on extension people as their most influential sources in adoption decisions. The percentage in Liupao was 63. None of them named public office extension personnel. However, in Shangfung 15 percent did go to Public Office extension advisers (see Table 19, Appendix III). This, added to 37.5 percent naming Farmers Association extension advisers, gave 52.5 percent directed to extension channels. Another 5 percent used an even more direct source, DAIS personnel. Thus, for innovators, the extension and research channels were mentioned much more frequently than any other as legitimating sources of farm information. For the non-innovators, other farmers were distinctly the most mentioned.

Differences in Information Sources of Farmers Regarded as Most Influential. It has been frequently suggested and occasionally demonstrated that farmers distinguish between persons regarded as *first to adopt* new farm practices and those regarded as *most influential* in helping them decide to adopt new farm practices.²⁹ It has been suggested that the former may be regarded with skepticism as reliable sources of farm information, particularly where local norms dictate caution in the adoption of innovations in farming. Where innovators and legitimators are not one and the same persons, which is usually the case where caution in adoption is emphasized, the latter are more likely to be trusted as reliable sources of farm

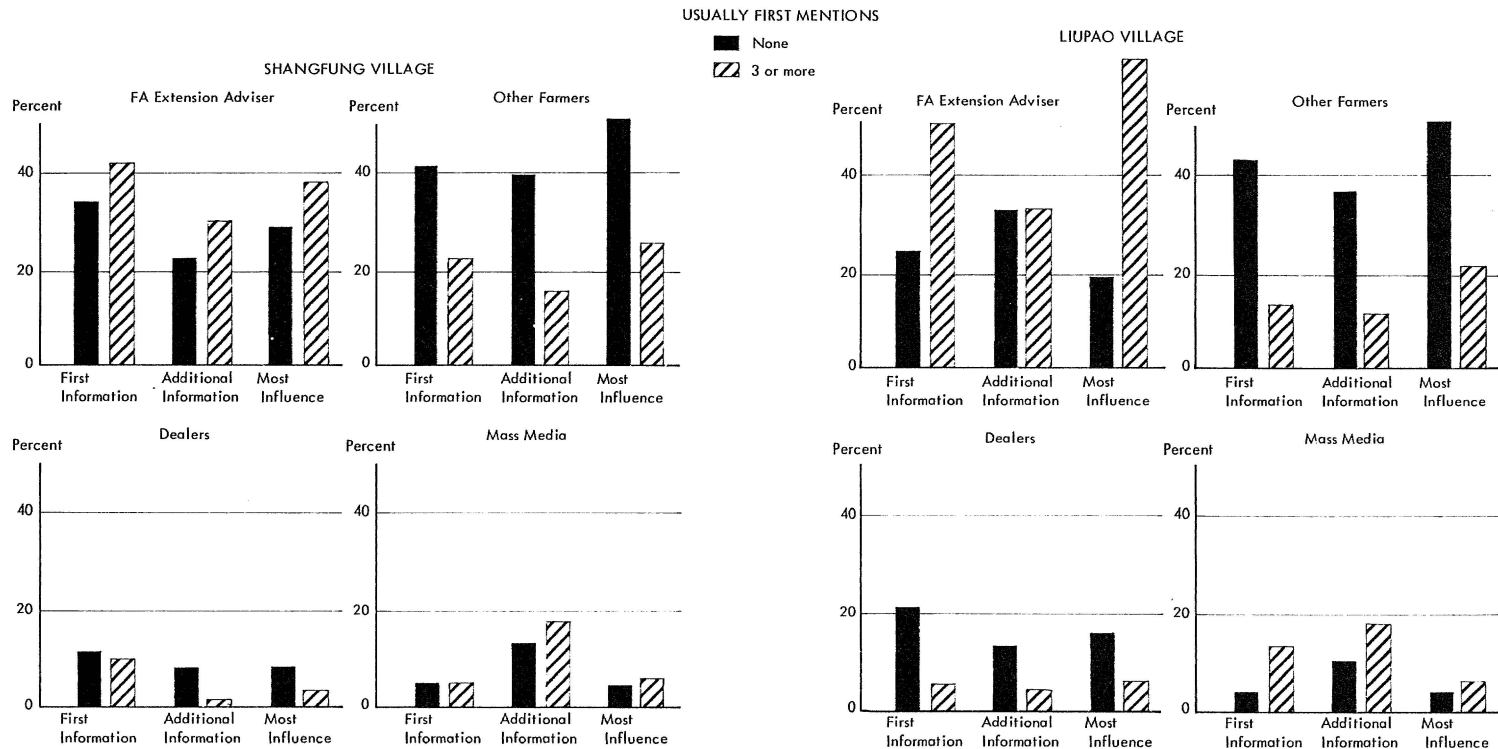


Fig. 9--Mentions of Selected Farm Information Sources for Designated Purposes by Farmers Not and Much Named as Usually First to Adopt New Farm Practices

information. Thus, the way they are linked communicatively to agency sources of information is very important in communication to others and in the adoption decisions of others. Farmers who are reluctant to use agency sources for first, additional, or most influence information may be perfectly willing to accept the same information from trusted persons much like themselves.

As with persons usually first to adopt new farm practices, those designated as having most influence were directed to a few farmers; actually fewer than for innovator mentions. Thus, comparisons of persons not named (non-legitimizers) and those named three or more times (legitimizers) involved only a few of the latter (see Tables 20-23, Appendix III).

Legitimizers in both villages were strongly inclined to get first information about new practices from extension sources and non-legitimizers, from other farmers. The last contrast was even more marked in Shangfung than in Liupao (see Table 21, Appendix III).

Legitimizers in Shangfung were much more likely to have obtained first information about new farm practices from the district agricultural improvement station (DAIS) personnel but, somewhat paradoxically, not from the mass media. Legitimizers in Liupao did not mention DAIS as a source at all. The comparative role of dealers in this regard is slightly reversed in the two villages with legitimizers in Liupao less likely to get first information about new practices from local dealers than the non-legitimizers.

While innovators were not clearly more inclined than non-innovators to get additional information from Farmers Association extension advisers, legitimizers in both communities were more inclined to do so than non-legitimizers (see Table 22, Appendix III). Public Office extension advisers were also used much more frequently in both villages, and DAIS personnel were used in Shangfung.

For legitimizers, the process of becoming convinced after receipt of additional information was essentially a matter of turning to Farmers Association extension advisers and away from other farmers. The reverse was true for non-legitimizers. Although Public Office extension advisers did not figure strongly as legitimizers in adoption decisions in Liupao, considerable reliance was placed on them in Shangfung. If those naming Public Office extension advisers in Shangfung are added to those naming Farmers Association extension advisers and the 6 percent relying on DAIS personnel, the number of *most influence* mentions directly attributed to scientific farm information development and dissemination systems is much larger than in Liupao. On the other hand, in Shangfung there was a greater inclination to go directly to the research sources.

Minor differences in other sources of farm information named by legitimizers and non-legitimizers appear in Figure 10 and in Table 23, Appendix III. Certainly, the most significant difference in the communicative behavior of legitimizers and non-legitimizers was the much greater reliance legitimizers put on extension sources for *first*, *additional*, and *most influence* information. Non-legitimizers relied more on other farmers for these purposes.

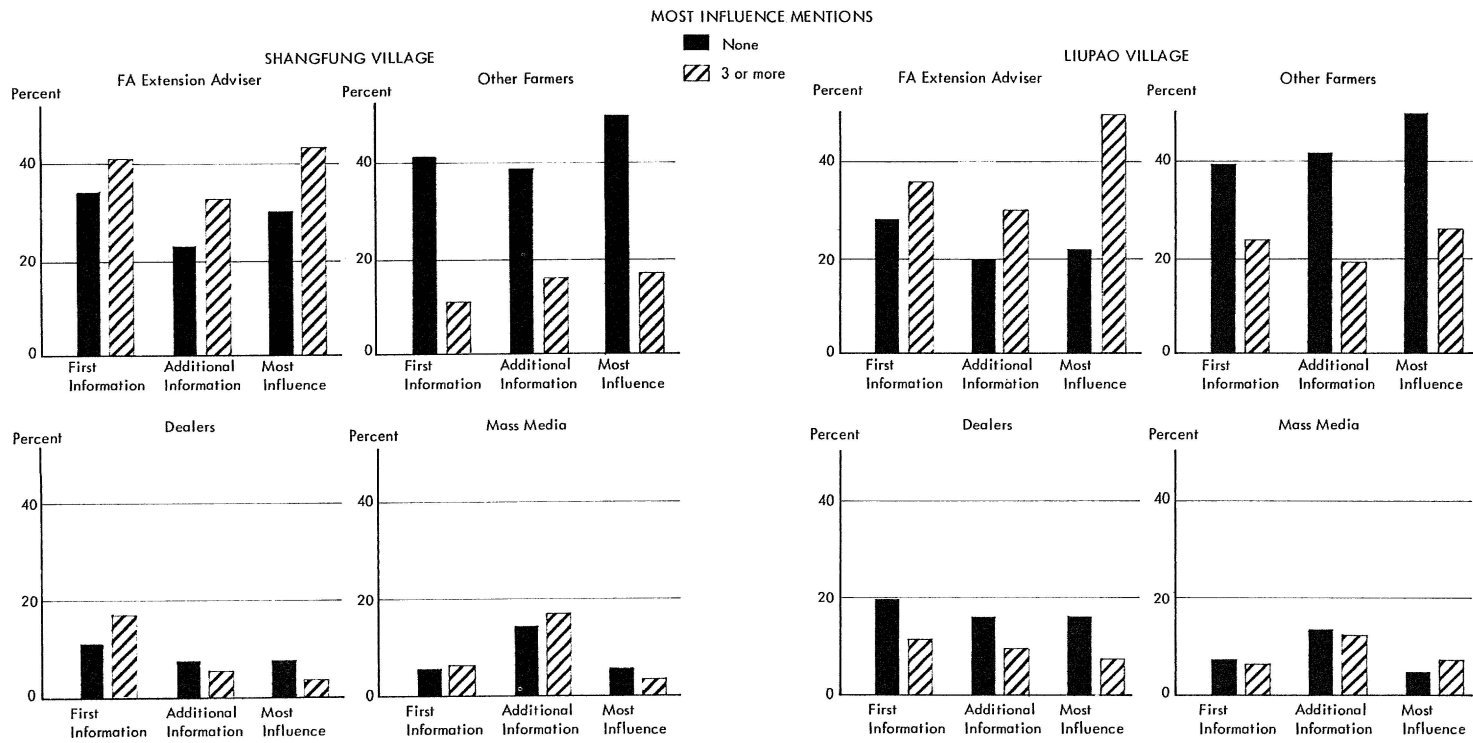


Fig. 10--Mentions of Selected Farm Information Sources, for Designated Purposes by Farmers Not and Much Named as Most Influence Sources in the Adoption of New Farm Practices

Differences by Other Characteristics of Farmers. Only two other characteristics were considered in this part of the study: age and percent of improved farm practices used on own farm.

Age was considered because of its possible implication for the assessment of the direction of change in the communication of scientific farm information to farmers. Percent of improved farm practices adopted was used as a rough indicator of competence of a farmer to give advice. The logic of the last is based on the fact that the improved farm practices about which farmers were questioned were those recommended by the local extension staff and district agricultural improvement station personnel as being generally suited to farmers and farms in the area (see Table 1, Appendix III, for a list of the improved practices used). This contention is held despite the fact that suitability of any practice varies with the farm and the circumstances of the farm operator and his family.

Age. It was reasoned that changes in communicative behavior in regard to the use of new farm practices would be manifest in young farmers more than the elderly. Thus, if there was a developing trend to make more direct use of scientific farm information originating sources (DAIS and research institutes), rather than intermediaries (e.g., extension advisers) or other farmers, such tendencies would be more manifest in the young than in the old farm operators. In the absence of such differences, a relatively stabilized communicative pattern might be assumed to exist. Comparisons were made accordingly between sources used by farmers under 40 and those 50 years old or older. Communicative behavior of the sizable intervening group is not reflected in the graphic representations but may be observed in Tables 24-27 in Appendix III.

Figure 11 depicts remarkably close parallels between the age groups in the use of farm information sources, with a few important exceptions. A few more young than old farmers in Liupao got first information about new farm practices from the Farmers Association extension advisers or via the mass media. In Liupao there was also an inclination for younger farmers to make more use of extension publications and farm magazines as a means of obtaining both first and additional information about farming (see Figure 11 and Tables 25 and 26 in Appendix III). Perhaps the most significant difference insofar as suggested trends is concerned was the much higher percent of young than old farmers in Liupao who regarded extension advisers as most influential in adoption decisions (see Table 27, Appendix III). Thus, patterns of seeking farm information in Liupao seemed to indicate a tendency to greater use of extension channels by younger farmers in learning about new practices and becoming convinced to adopt them.

In Shangfung, no such difference existed. Both age groups placed greater reliance on extension advisers for *first information* than in Liupao, but for *most influence* no such difference was found. Apparently what was in the process of becoming in Liupao had already become a well institutionalized reality in Shangfung.

One additional difference, slightly suggestive of a trend in both villages, was an inclination for young farmers to rely somewhat less than older ones on dealers

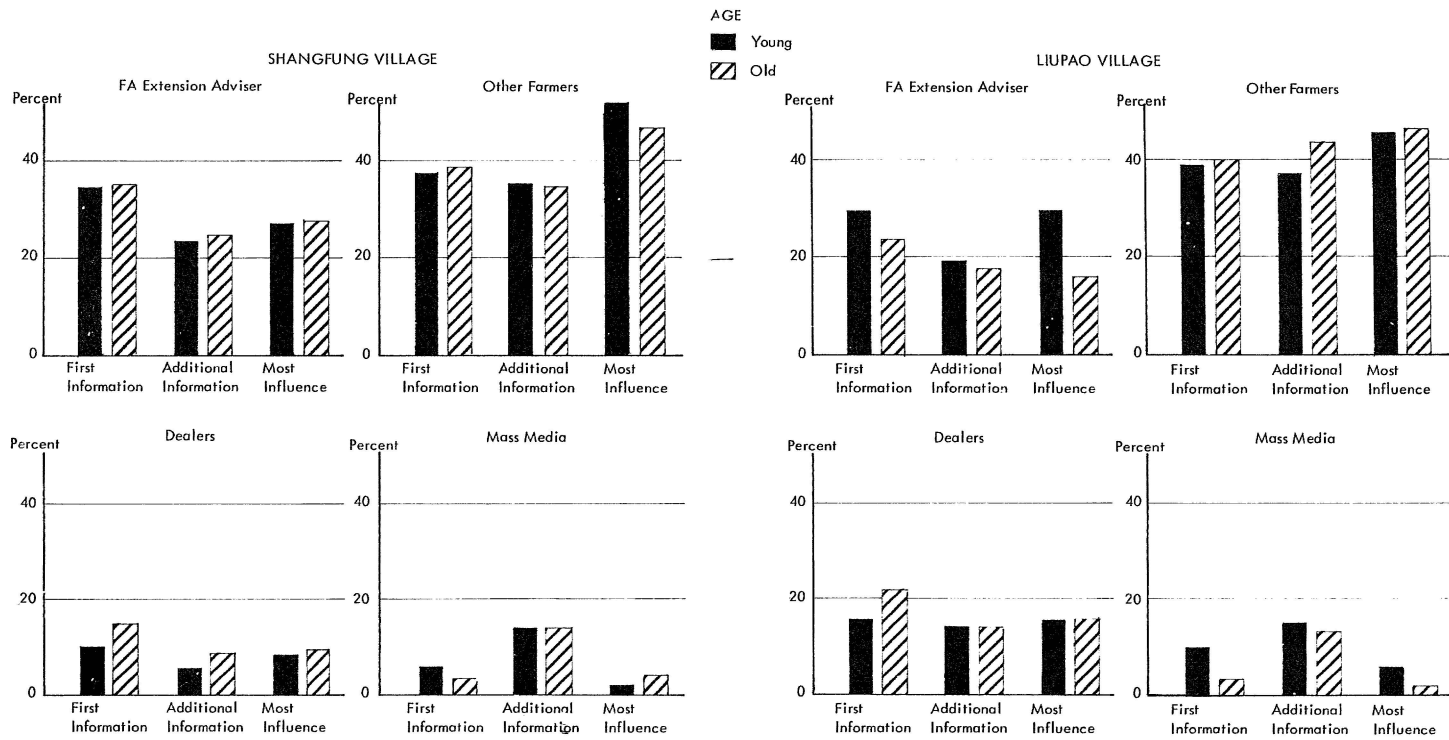


Fig. 11—Mentions of Selected Farm Information Sources for Designated Purposes by Age of Farm Operators

in learning about new farm practices. Perhaps their role in this regard was being replaced by a higher reliance on extension channels. It will be recalled that much the same type of difference occurred between farmers who perceived themselves as fast and those who saw themselves as slow adopters.

Improved Farm Practices Adopted. Although there certainly is no one-to-one relationship of farm practices adopted and competence to give advice on matters related to farming, practices adopted do give indication of quality of advice and experience with new farm practices.

The question posed here is where *high* and *low adopters* of new farm practices got the information they needed for obtaining *first*, *additional*, and *most influence* information in their own practice adoption decisions and the implication of this for information transfer.

When farmers were divided into high and low level adopters (Figure 12 and Appendix Tables 28-30), a greater inclination was noted for high level than low level adoption farmers to get information for all three purposes from Farmers Association extension advisers. The inclination was highest for the *most influence* purpose. In Shangfung these Farmers Association extension advisers were the leading source of first knowledge about new practices for the high level adopters and they about tied with *other farmers* as leading source in Liupao. For the lower level adopters, *other farmers* topped the list in both villages.

Conversely, high level adopters were much less likely than low level ones to get first information about new practices from other farmers. Difference in the use of dealers, by adopter levels in Shangfung was nil, but in Liupao the low level adopters were slightly more inclined than high level adopters to get first information from this source. On the other hand, distinctly more high than low level adopters got first information via the mass media.

Only slightly more high than low level adopters favored Farmers Association extension advisers as sources of *additional information* about the farm practices they had adopted. Other farmers, as in the case of *first information*, were still favored more by low than high level adopters. Yet, with both adoption groups, other farmers were strongly in the lead as a most frequently mentioned source of additional information. This was particularly true in Shangfung. The mass media was used much more as a source of *additional information* by high than low adopters, while in both villages the reverse occurred for *dealers*. Thus, low adopters were more likely to seek additional information from dealers than high adopters.

Other farmers topped the list as *most influence* sources for low adopters. High adopters were inclined to name Farmers Association extension advisers about as frequently as other farmers in Shangfung. Differences between the adopter levels were great in both villages, with the proportion favoring other farmers being much higher for low than high level adopters.

In both villages the mass media and dealers were in less demand as *most influence* sources for high than low adopters. Perhaps it is most significant that a much higher percentage of high than low adopters attributed *most influence* to Farmers Association extension advisers.

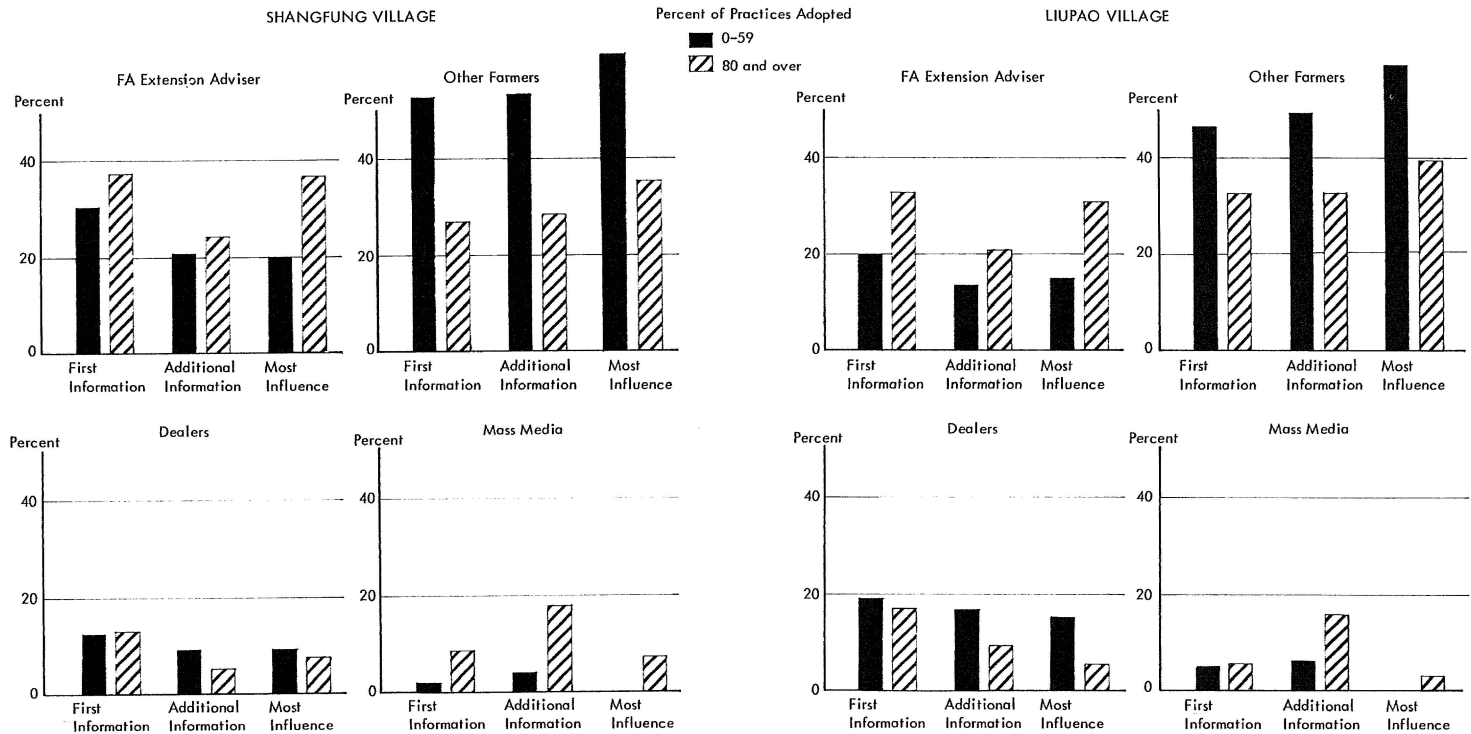


Fig. 12--Mentions of Selected Farm Information Sources for Designated Purposes by Farmers Having Low and High Adoption Rates

Differences were greater for *most influence* than for the other two purposes, *first source*, and *additional information*. Thus, it would appear that many high adopters were willing to accept the advice of extension advisers in arriving at own adoption decisions, presumably quite aside from local trial of other farmers in the immediate area. This, of course, would have the net effect of greatly facilitating adoption of new practices.

COMMUNICATION FACILITATING INFLUENCES

Farm information may be communicated (1) as a manifest function (planned or intended function) of a group meeting, or (2) as an extension advisory system of an extension organization. It also can be communicated as a latent function (unplanned, unintended consequence) of organizational participation. In either case, communication about matters of common concern are likely to be facilitated. Planned activities of the extension organization to disseminate farm information in Taya Township included method demonstrations, exhibits, contests, tours, result demonstrations, village service projects, subject-matter training meetings, and farm discussion groups. Farm information was disseminated as a direct consequence of these activities. At the same time these and special interest group meetings brought progressive farmers together where they could learn from each other and provide psychological support for potential new adopters (latent-unplanned functions).

These formal social groups (the kind that organize, adopt a constitution, appoint committees, and elect officers) are likely to bring together the more progressive farmers. Such farmers are mainly the product of a modernizing society, engaged in the development of special interests and organizing to pursue them. For members participating, these groups provide opportunities for contacts with people of common interests; for change agents, they provide mechanisms for implementing planned changes. In the two villages studied, the social groups included general farm discussion groups, community rice growing discussion groups, pest control teams, small agricultural units of the local Farmers Association, parent-teachers' associations, and supervisory boards including the Farmers Association board of directors, Farmers Association representatives, township representatives, and Farmers Association supervisory body.

Participation in Extension Activities

The section which follows examines the extent to which farmers engaged in extension activities, the resulting contacts with extension personnel, and the extent to which farm operators participated in formal special interest groups. Table 16 shows that participation in these and extension related activities was much more prevalent in Shangfung than in Liupao. Generally, less than half of the farmers in either community participated in the activities listed. Group discussions and exhibits were the most frequently attended extension activities. Approximately 35.0 percent of the farmers in Shangfung attended one or more dis-

TABLE 16--PERCENT OF FARM OPERATORS CLASSIFIED BY VILLAGE
RESIDENCE AND NUMBER OF EXTENSION RELATED ACTIVITIES
ATTENDED DURING THE PAST YEAR

Extension Related Activities and Village	Total	Number Attended			
		0 %	1 %	2 %	3 and over %
Method Demonstrations					
Total	100.0	85.6	6.1	5.3	3.0
Shangfung	100.0	80.6	7.2	7.2	5.0
Liupao	100.0	93.1	4.4	2.5	.0
Exhibits					
Total	100.0	68.7	23.7	5.1	2.5
Shangfung	100.0	64.2	26.6	6.3	2.9
Liupao	100.0	75.5	19.5	3.1	1.9
Contests (Exclusive to Method Demonstrations and Exhibits)					
Total	100.0	95.4	3.8	.5	.3
Shangfung	100.0	95.4	4.2	.4	.0
Liupao	100.0	95.7	3.1	.6	.6
Tours					
Total	100.0	79.5	10.4	4.8	5.3
Shangfung	100.0	76.5	11.4	4.6	7.5
Liupao	100.0	84.3	8.8	5.0	1.9
Result Demonstrations					
Total	100.0	95.7	3.0	.5	.8
Shangfung	100.0	95.0	3.0	.8	1.2
Liupao	100.0	96.9	3.1	.0	.0
Village Service Projects					
Total	100.0	91.2	1.3	3.0	4.5
Shangfung	100.0	86.2	2.1	4.6	7.1
Liupao	100.0	98.8	.0	.6	.6
Subject Matter					
Training Meetings					
Total	100.0	88.9	3.8	4.0	3.3
Shangfung	100.0	87.7	3.0	5.1	4.2
Liupao	100.0	90.7	5.0	2.5	1.8
Farm Discussion					
Group Meetings					
Total	100.0	74.0	1.5	4.5	20.0
Shangfung	100.0	65.5	1.7	5.5	27.3
Liupao	100.0	86.8	1.3	3.1	8.8

discussion meetings and 25.0 percent visited one or more exhibits. The high participation in extension sponsored discussion groups probably is mainly due to their recurrent nature, which was not true for most of the other activities.

A better estimate of actual linkages with various extension systems is the respondents' estimate of the number of contacts they had with the various personnel or agencies during the past year. On the basis of this kind of estimate, all but 17.3 percent of the farmers in Shangfung had contacts with Farmers Association extension advisers and all but 37.7 percent in Liupao had contacts with them (see Tables 17 and 18). The median number of contacts was 6.1 and 3.1, respectively. More than half of the farmers in Shangfung said they had five or more contacts with extension personnel and 34.0 percent in Liupao said they had that many. In Liupao public office extension adviser contacts were considerably less frequent than in Shangfung but nevertheless averaged 1.6 and 3.5, respectively.

Direct linkages between the farmer and farm information originating systems included contacts of farmers with the district agricultural improvement stations, research institutes, and the nearby agricultural university. These were much more numerous in Shangfung than in Liupao and mostly with district agricultural improvement stations. Number of contacts with the commodity organizations was very low, being 10 percent or less for virtually all of them. This was surely in part due to the small number of farmers in either village growing either tobacco or sugarcane. Also, since contacts with the Food Bureau were ordinarily indirect, they may not have been recognized and recalled.

The next question was who usually initiates the contacts, i.e., do the disseminating agents take information to the farmers or do the farmers go and get it? The answer was that a very high proportion of the farmers who had contacts with extension offices (FA and PO) initiated them, particularly contacts with the Farmers Association extension advisers. Although the proportion was much higher in Shangfung than in Liupao, the proportion who left initiation of contacts to the extension office was very small in both villages (Tables 17 and 18). Initiative was less often taken to contact the other agencies, again showing the strong orientation to the Farmers Association extension system and personnel.

Thus, extension advisers had a highly receptive clientele with which to work. More farmers in Shangfung (17.3 percent) than in Liupao initiated contacts with DAIS and research institutes.

Social Participation

Great variation in formal group membership and participation occurred between the villages; also among the organizations. Only two drew heavily from the farmers in both villages: the Parent-Teachers' Association and the small agricultural units. Membership in the last apparently was not always recognized since farmers who were relatively inactive in these units did not recognize them as the grassroots organization of their local Farmers Association. Yet, a very high proportion of farmers (from 64 to 74 percent) in both villages reported membership in both of these organizations.

TABLE 17--PERCENT OF FARM OPERATORS IN SHANGFUNG CLASSIFIED BY NUMBER OF CONTACTS DURING THE PAST YEAR WITH DESIGNATED AGRICULTURAL AGENCIES AND WHO USUALLY INITIATES THEM

Agricultural Agency or Agency Personnel	Total % (N=237)	Number of Contacts					Who Usually Initiates Contacts			
		0 %	1-2 %	3-4 %	5 and over %	Median Number %	Self %	Agency %	Self- Agency %	No Contacts* %
Township Farmers Association										
Extension Adviser	100.0	17.3	10.9	16.1	55.8	6.1	61.2	3.8	17.3	17.7
Public Office Extension Adviser	100.0	35.8	11.0	13.1	40.1	3.5	45.5	5.9	12.7	35.9
District Agricultural Improvement Station Technician	100.0	67.9	15.2	7.6	9.3	xx	12.7	5.1	13.9	68.3
Research Institutes	100.0	85.2	8.5	1.7	4.6	xx	4.6	2.5	7.6	85.3
Taiwan Sugar Corporation	100.0	99.6	0.0	0.0	0.4	xx	0.0	0.0	0.4	99.6
Taiwan Food Bureau	100.0	92.0	5.1	0.8	2.1	xx	1.7	2.5	3.8	92.0
Taiwan Wine and Tobacco Monopoly Bureau	100.0	97.1	1.2	0.0	1.7	xx	1.7	0.8	0.4	97.1
Chungshing University	100.0	93.7	3.4	0.4	2.5	xx	0.8	3.0	2.5	93.7
Other	100.0	92.1	1.3	1.7	4.9	xx	3.0	1.7	3.8	91.5

*Also includes small percent where usual initiation of contacts was not ascertained.

TABLE 18--PERCENT OF FARM OPERATORS IN LIUPAO CLASSIFIED BY NUMBER OF CONTACTS DURING THE PAST YEAR
WITH DESIGNATED AGRICULTURAL AGENCIES AND WHO USUALLY INITIATES THEM

Agricultural Agency or Agency Personnel	Total %	Number of Contacts					Who Usually Initiates Contacts			
		0 %	1-2 %	3-4 %	5 and over %	Median Number %	Self %	Agency %	Self- Agency 50-50 %	No Con- tacts or Unknown %
Township Farmers Association	100.0	37.7	11.3	17.0	34.0	3.1	40.3	3.1	18.9	37.7
Extension Adviser	100.0	48.4	12.6	14.5	24.5	1.6	32.1	2.5	17.0	48.4
Public Office Extension Adviser	100.0	48.4	12.6	14.5	24.5	1.6	32.1	2.5	17.0	48.4
District Agricultural Improvement Station Technician	100.0	88.6	6.9	2.6	1.9	xx	1.9	1.3	8.2	88.6
Research Institute	100.0	91.2	6.3	0.0	2.5	xx	1.9	1.3	5.7	91.1
Taiwan Sugar Corporation	100.0	91.8	2.5	1.9	3.8	xx	0.0	6.9	1.3	91.8
Taiwan Food Bureau	100.0	92.5	5.7	0.6	1.2	xx	1.3	2.5	3.8	92.5
Taiwan Wine and Tobacco Monopoly Bureau	100.0	97.5	0.0	0.6	1.9	xx	1.3	1.3	0.0	97.4
Chungshing University	100.0	98.7	0.6	0.0	0.6	xx	0.0	0.0	1.3	98.7
Other	100.0	94.4	3.1	1.9	0.6	xx	0.0	1.3	4.4	94.3

TABLE 19--PERCENT OF FARM OPERATORS CLASSIFIED BY VILLAGE RESIDENCE AND MEMBERSHIP IN FORMAL GROUPS

Membership in Formal Groups	Total % (N=396)	Village	
		Shangfung % (N=237)	Liupao % (N=159)
Farm Discussion Groups	29.3	38.8	15.1
Cooperative Rice Production	17.7	22.7	10.1
Discussion Group			
Insect and Pest Control Team	29.5	44.3	7.6
Small Agricultural Unit	63.9	73.7	64.2
Irrigation Unit	39.4	31.7	50.9
PTA	67.9	65.8	71.1
FA Representative	3.5	2.9	4.4
Township FA Board of Directors	1.3	1.6	0.6
Township FA Board of Supervisors	0.3	0.4	0.0
Township Representative to Assembly	0.8	0.8	0.6
Other Formal Organizations	7.6	6.7	9.5

A tendency to organize for specialized agricultural purposes was further demonstrated by the proportion of farmers in Shangfung who were members of such organizations as insect and pest control teams and cooperative rice production groups and by the proportion in both villages who were members of irrigation units.

Farm discussion groups, previously referred to as an extension activity, were very well organized and active in Shangfung and, to a lesser extent, Liupao, even though the percentage of farmers involved was much smaller than for some of the other formal groups. Except for a very few farmers in both villages, members actively participated in meetings and committee assignments and a few served as officers. Virtually all participants in Shangfung rated their participation in extension sponsored discussion groups as very helpful for obtaining information about their farming operations. In Liupao almost all thought the discussions were either somewhat or very useful.

Some idea of the magnitude of participation in formal social groups can be obtained by use of a modified Chapin rating scale.³⁰ This involved the assignment of scores for participation in any formal social group as follows:

Member	1
Attended meetings occasionally	2
Attended meetings regularly	3
Committee member, one or more committees	4
Officer in the organization	5

A person's score was computed by summing the scores assigned for participation at the levels indicated in all of the organizational activities listed in Table 20 and any other that a farmer specified. Thus if a farmer was a member of the local

TABLE 20--PERCENT OF FARM OPERATORS CLASSIFIED BY VILLAGE
RESIDENCE AND SOCIAL PARTICIPATION SCORE IN
FORMAL GROUPS

Social Participation Score	Total % (N=396)	Village	
		Shangfung % (N=237)	Liupao % (N=159)
Total	100.0	100.0	100.0
None	10.6	10.5	10.7
1-5	42.7	35.3	53.5
6-9	18.9	20.7	16.4
10-14	13.6	14.8	11.9
15-19	7.3	8.9	5.0
20-24	2.0	3.4	0.0
25-29	2.3	3.0	1.3
30-34	1.3	1.7	0.6
35 and over	1.3	1.7	0.6
Median	7.2	9.5	5.7

PTA, attended meetings regularly, and was the chairman of the Association, he would get a score of 1, plus 3, plus 5 or 9. If he was also a member of a small agricultural unit and attended meetings occasionally but never participated at any higher level, he would get an additional 1 for membership, 2 for occasional attendance or 3 for regular attendance to be added to the score of 9 in the other organization to make a total participation score of 12. The median level of participation so computed in Shangfung was 9.5, the equivalent of very active participation in one organization or moderately active participation (member and attended meetings regularly) in two organizations plus membership only, in a third (see Table 20). In Liupao the median was 5.7 which would be the equivalent of being a member and attending meetings regularly in one organization and being a member only of an additional two.

Although a sizable segment of farmers were relatively inactive in formal social groups, only slightly over 10 percent in each village were members of no such group, a small percentage indeed. At the other extreme, there were a few who participated at the officer level in three or more of such groups.

The groups just considered are types that provide opportunities for acquiring farm information as an incidental result of participating in activities designed for other purposes. Although an estimated 90 percent of this participation was with people in the same village, some of the organizations provided opportunities for contacts with persons outside of the village. This included such organizations as the Parent-Teachers' Association, Farmers Association organizations, and township assembly. Participants in some groups were likely chosen from their own respective areas on the basis of outstanding abilities. Thus, such groups were likely to be composed of persons with progressive outlook and behavior, in

a sense a forum for the progressive elites over an area considerably larger than the village.

Just under 12 percent of the farmers in Shangfung and 13.3 in Liupao participated in groups drawing membership from outside the village. Their levels of involvement in the groups ranged from mere membership in one organization to officerships in more than one.

An additional approximately 5 percent of the farmers in both communities were active members of special boards requiring the exercise of executive and administrative abilities either in matters related to the village or a larger area. Membership in such groups provided added accessibility to persons likely to be of higher caliber and higher change proneness than the rank and file citizen. This would also mean they provided potential channels of communication with elites from outside the village.

SUMMARY

This is the first of a series of research bulletins related to the development and dissemination of scientific farm information to farmers in Taiwan. It is concerned with characteristics and sources of farm information used by farmers in two villages in the better rice-wheat growing areas of the western plains area of Taiwan. All but about 5 percent of the chief farm decision makers in Shangfung, an agriculturally economically advantaged village, and Liupao, an economically disadvantaged one, were interviewed during the fall of 1966 to determine their characteristics and situation, and the information sources they used in adopting selected farm practices. Eighty percent of the 237 in Shangfung and 84.3 of the 159 in Liupao were household heads. At least four-fifths of them had lived on their farms for 20 or more years.

Farmer and His Household.

The typical farmer was 43.9 years of age and operated 2.5 acres of land, which he owned. The farmers generally grew two main crops of rice or rice and wheat with one or two minor crops of sweet potatoes, mushrooms, vegetables, rape seed, or other crops interspersed. With an average 4.4 persons 16 years of age and over, the joint family did virtually all work on the farm, mostly with simple hand tools and the animal power of one or two water buffalos or yellow cows for plowing and ordering the land.

He usually owned a sprayer or duster which he used freely and timely to protect his crops from insects and diseases with fungicides and insecticides bearing labels familiar to those used by the Midwestern farmer in the United States.

He emphasized the need for hard work for himself and his family and, although cordial to outsiders, was unappreciative of being bothered at peak work seasons. He considered completion of timely work assignments imperative. He lived in a house built of bamboo frame or brick. More frequently than not the roof was covered with tile, which is less subject than thatch to damage from the

frequent typhoons. His house, to which additional rooms were added as needed, housed an average of 7.6 persons, typically of two or three generations. His own family consisted of an average 5.6 members.

This house was likely equipped with electric lights, an electric fan, and a quality radio, often with record player attachment, over which he obtained farm information, news and music. It also probably had a sewing machine and such items as beds, benches, tables, and cooking utensils to be used on a substantially built wood-burning, brick range. A large metal kettle to cook feed for the hogs was also found on most ranges. Running water or a private well usually provided the needed water supply for the family.

They were likely to own one or more sturdily built bicycles used to transport both people and supplies for the farm and household. Less than 10 percent of the families owned a motor transport and almost no one a tractor. The few tractors were invariably two-wheeled Japanese diesel types. They may have owned a foot powered rice thrashing machine individually or cooperatively with other families.

Although farmers seemed well aware of population pressure on the land and, like farmers elsewhere, were aware of the price-cost squeeze, no more than 4 percent of those most responsible for farm management decisions worked off their farms for wages. Nevertheless, approximately one-fifth of the households did have one or more family members working off the farm for wages, 17 percent in Shangfung and 22.6 percent in Liupao.

More often than not the farmer reported that his family was better off than five years ago and was typically even more optimistic about the future. Although he ordinarily had spent less than 6 years in elementary school, he was likely to be functionally literate and to have access to one or more farm magazines in addition to a radio; few had a television set or telephone.

By either absolute or U.S. standards the Taiwan farmer possessed a high orientation to modernism in farming, recognizing that man is in control, knowing that scientific farm information and credit are important for achieving success in farming. The chances were at least one out of three that he had tried at least one new crop during the past 5 years and that he had most likely adopted a high proportion of the recommended new farm practices for the crops he was growing. Percentages were 78.4 in Shangfung and 71.2 in Liupao. These percentages are above adoption levels found in an earlier study in two Missouri farm communities.

Availability of Communication Facilities.

In Shangfung and Liupao the development and dissemination of scientific farm information was no longer a folk practice—the kind that holds that best knowledge about farming is found among other farmers, that friendship is more important than competence as a farmer for getting farm information, and carries a feeling that if anything new is developed, which is unlikely, it will be by other farmers.

In Taiwan, as in the United States, development and dissemination of scientific farm information has become an institutionalized system in which development and dissemination are regarded as separate functions and where farmers are well aware that at least some of their informational needs can be met through extension channels. The communicative means provided by the specialized system included special representatives of the research agencies, extension publications, radio broadcasts, farm magazines, and newspapers.

Two differences between the Taiwan and U.S. situation should be noted. One was a dual extension system in Taiwan. One branch of it was owned and operated by the farmers themselves through their local Farmers Association. It was concerned with a wide variety of informational matters. The second, and organizationally parallel one, was government operated and was concerned mainly with major crops, regulatory matters, and agricultural census taking. A second major difference from the usual U.S. situation was that extension advisers were usually no more than high school educated, often with some vocational agriculture training; thus they were not far removed from their farm clientele either culturally or educationally.

Farm Information Sources Used.

Generalizations about the use of farm information sources for *first*, *additional*, and *most influence* in adopting new practices in the United States are at best very tentative but a few observations for comparative purposes are warranted. One is the general inclination for U.S. farmers to learn about new farm practices through the mass media (radio, press, and television), with *agricultural agencies* or *other farmers* rating second and generally much less frequently used. New practice use-patterns tend to be about the same for getting additional information. A second observation is the marked inclination for U.S. farmers to rely heavily on other farmers as most important influences in arriving at adoption decisions.

Each farmer in the Taiwan study was asked about the farm information sources used for one simple and one complex practice he had recently adopted. The results revealed several important differences from usual U.S. findings. Comparatively speaking, Farmers Association extension advisers and such direct research sources as district agricultural improvement station personnel were mentioned much more as first sources of information about new practices than would have been expected from U.S. studies. These sources were close in frequency of mentions to *other farmers* as sources of first learning and were first in order for fast adopters. In the final analysis, learning about new farm practices for virtually all farmers was a matter either of using direct extension sources or other farmers. The mass media were used much less for any purpose than either extension or personal sources. They were used mostly for getting additional information about new things rather than first learning about them.

Very much like the American farmer, farmers in Shangfung and Liupao talked the matter over with or got additional information from other farmers between

first learning about the new practices and arriving at an adoption decision. Although other farmers were definitely used most for this purpose, farmers also frequently got additional information from extension sources.

Perhaps the most significant finding was the very high proportion of farmers who relied on extension channels as sources of most influence in their adoption decisions. Extension and direct research sources are often rated second in frequency of mention as *most influential sources*. In percentage, they ordinarily fell far short of *other farmers* for this purpose, but nearly 30 percent of the mentions in Shangfung and more than 20 percent in Liupao were directed to Farmers Association extension officers alone as *most important influences* in decisions. Percentages of mentions directed to extension and research sources were increased a little more by influences attributed to direct research sources of information. This clearly demonstrated the high confidence placed in such sources for information and advice.

Farmers who were regarded as usually *first to adopt* new farm practices (innovators) relied even more heavily on the extension channels as sources of information and influence. In Liupao, the Farmers Association extension advisers were mentioned by influentials three times as often as *other farmers* for most influence. This same inclination, but less marked, was evident in Shangfung.

Persons who were named three or more times as *most influential* in adoption decisions by other farmers also turned more heavily to extension advisers as sources of most influence. They were much more likely than those that had not been named to attribute most influence to Farmers Association extension advisers. This certainly had the net effect of enhancing the communication and influence position of the extension staff in promoting farm practice adoptions.

Reliance on Sources for Latest Scientific Information

In a changing agricultural situation with highly innovation-prone farmers, inability of extension systems to keep abreast with the changing times and thus to adequately service innovative farmers with the latest scientific farm information may become a problem. No conclusive test of the degree to which this may or may not have been true was possible, but two approaches were used to obtain an indication: the degree to which the extension system was servicing (1) minor versus major crops and (2) simple versus complex practices.

The major-minor crop distinction was made on the assumption that most major crops would involve established practices and the newer crops and practices would be included among the minor crops. Thus, attention was directed to practices related to rice and wheat regarded as major crops and all others regarded as minor crops. As hypothesized, farmers were actually more likely to have obtained first information about major crop than minor crop practices from the Farmers Association extension advisers. The same was true for additional information by a slight margin. Farmers Association extension advisers were named almost as frequently as *most influence* sources for minor crops as for major crop

practice adoptions in Shangfung. In Liupao, however, farmers were much less inclined to name the advisers as most influential for the minor than for the major crops.

There was a general inclination for farmers in Shangfung to switch to dealers for information about minor practices and those in Liupao to rely more on farm magazines and a variety of other sources. Overall, however, *other farmers* and Farmers Association extension advisers were used most frequently as sources for all three purposes and for both types of practices.

Farmers in Shangfung were more inclined in the case of complex practices than in the case of simple ones to get *first information* from extension advisers and regard them as *most influential* in decisions. Dealers were very important in both villages, particularly in Liupao. In a sense, dealers tended to assume a distinctly more important advisement role in the use of complex than the simple practices.

As might be expected, farmers were more in demand for information and influence about simple than complex practices in both villages. Thus, although extension advisers seemed to have slightly more of an edge in supplying information and in convincing farmers to adopt complex than simple practices in Shangfung, their function in this regard seems to have been somewhat superseded by dealers in Liupao. Their influence was quite high there for complex practices. Possibly the complex practices involved the use of supplies purchased from dealers who also supplied information and advice with the products they sold. Thus with practices of a particular class, where more than average technical information and advice was needed, the extension service may not have met the challenge as well as might have been hoped.

One final difference in farm information source use was the greater inclination of young than old farmers in Liupao to rely on Farmers Association extension advisers for *first* and *most influence* information. To a limited degree they also depended more on mass media for first information and to a still lesser degree for most influence. This was accompanied by some inclination to de-emphasize dealers as sources of first information. Perhaps, farmers in Liupao were in the process of achieving a pattern of use that had been more completely institutionalized in Shangfung, i.e. a more universal tendency to rely on Farmers Association extension advisers as *first* and *influential* information sources.

Information-Facilitating Activities.

Participation in groups and activities which expose farmers to new ideas from other farmers and provide contacts with professionals in agriculture tends to facilitate the communication of scientific farm information.

First, formal social groups provide opportunities to talk with other relatively competent farmers about farming. Second, they provide mechanisms for facilitating decisional processes which ordinarily intervene between first knowledge about a new practice and eventual adoption of it. Third, in many cases, they provide op-

portunities for contact with progressive farmers outside of the immediate locality.

Approximately 61 percent of the farmers in Shangfung and 25 percent in Liupao participated in an extension farm discussion group and/or a cooperative rice production discussion group. Other groups less directly concerned with communicating farm information included Parent-Teachers' Association, irrigation units, and pest control teams.

With one credit point assigned for membership in each formal social organization, two for occasional attendance at meetings, three for regular attendance, four for committee assignments, and five for officerships, average participation was 9.5 in Shangfung and 5.7 in Liupao. Although some farmers were much more active than others in such activities, all but about 10 percent belonged to at least one such group.

Farmers were typically involved in a variety of extension activities including tours, exhibits, result demonstrations, and special meetings. Shangfung farmers reported a median 6.1 contacts with Farmers Association extension advisers and those in Liupao, 3.1, during the past year in such activities. Only about 17 percent in Shangfung and 37.7 percent in Liupao reported none. Furthermore, they were more often than not inclined to initiate these contacts with the extension advisers. In general, the pattern was one of seeking information and advice through extension channels and a strong orientation to extension and research agencies.

Interpretations, Implications and Conclusions

The farmers were well supplied with farm information channels. They were generally optimistic about the future, quick to adopt new farm practices, and were highly oriented to obtaining scientific farm information from agency sources. The very high proportion who relied on Farmers Association extension advisers as most important influences in their adoption decisions suggests a very high confidence in this source of farm information. The confidence level for these advisers in this study was higher than diffusion studies elsewhere would indicate.³¹ Many diffusion studies show that farmers ordinarily express a preference for others of their own kind as most important influences in their farm practice adoption decisions.

Furthermore, interpersonal channels of communication were highly conducive to the quick acquisition and dissemination of scientific farm information from public research agencies to the farmers. Those regarded as *early adopters* relied more than late adopters on direct research sources. In fact they went directly to research sources more than to extension advisers. Also, those who influenced the adoption decisions of others were much more exposed to direct sources of farm information than those who did not.

When legitimation of farm practice decisions can be achieved directly by extension advisers, thus without local trial and consultation with other farmers who have tried the practice locally, change processes can be immensely accelerated. The high confidence vested in extension advisers poses a great responsi-

bility for them. They must depend on research and testing that leaves little doubt concerning the validity and applicability of the recommendations that they make to farmers.

Perhaps there is a general inclination among people to check important information received from one source against that from another for its validity. This is suggested by Schramm and seems to be quite generally true of the behavior of farmers in obtaining and checking information about farm practices.³² The usual pattern among farmers in the United States, insofar as may be inferred from diffusion research, is to check information obtained via such sources as the mass media, commercial channels, or even other farmers. Still other persons, mostly farmers, are likely to be more trusted than the source from which the original information was obtained.³³ But Taiwan farmers often seemed to use a different pattern. Information they obtained from dealers, mass media, and other farmers seemed to be frequently discussed and checked with Farmers Association extension advisers, who often seemed to serve as final arbiters in adoption decisions, particularly among early adopters and the more influential farmers.

The somewhat greater inclination of first adopters of new practices to use the mass media and such direct sources of scientific farm information as district agricultural improvement stations suggests a possible pattern of farm information use closely tied to the scientific farm information developing agencies. Thus the mass media is perhaps emerging as a frequently used source of first information, rather than a source for additional information as is presently the case.

Seemingly, the local extension system had adjusted better to the informational needs for major crop practices than for the minor ones. This might indicate extension personnel kept better informed on traditional (old crop) practices than the more recently introduced ones. Also, for complex practices (i.e., those requiring changes in technologies and/or equipment) for which extension advisers could be particularly helpful, their role was sometimes indeterminant. Dealers seemed to fill part of this need for *first* and *additional information* even if in lesser degree as a source of most influence.

Dealers can play a very important role as sources of information about many kinds of new farm practices. Development of advisory competence in key sales and farm service personnel is strongly suggested. The American farmer could easily recognize his plight if all written instructions were removed from the containers of insecticides, chemicals, and fertilizers he bought, if there were no instructions on labels attached to sprayers and the multitude of gadgets he purchased, if the booklets ordinarily included with equipment purchased were not supplied, and if farm machinery dealers would assume no responsibility for explaining the operation of new equipment.

When farmers were asked a general question about where they obtained farm information, they frequently designated public office extension advisers, although not so often as other farmers, Farmers Association extension advisers, and radio.

The relatively less frequent use of Public Office extension advisers as sources of information in Taiwan and the more limited confidence placed in them as

decision influencers is probably partly a function of their administrative, regulatory, and census-taking roles and limited responsibilities as information disseminating agents. Although U.S. agriculturists would be quick to charge unnecessary duplication of extension effort, the situation is not greatly different from the one in the United States where the Soil Conservation Service and other agencies are actually engaged partially in extension work.

There were both differences and similarities in patterns of source use by farmers in Shangfung and Liupao. The greatest similarity was the emphasis on Farmers Association extension advisers and other farmers as farm information sources in specific decisions to adopt new farm practices and in the use of Public Office extension advisers and radio as more general sources of farm information. However, the proportion of farmers in Shangfung naming Farmers Association and Public Office extension advisers as general sources of information was much higher than in Liupao, and the proportion was almost double for such direct sources as district agricultural improvement stations, research institutes, vocational agriculture teachers, Chungshing University, and extension publications.

Dealers were used more frequently in Liupao than in Shangfung as general sources of farm information. Such mass media as newspapers and farm magazines were more equally used. Almost no difference occurred in the proportion getting information via the radio, although regular use of radio was reported somewhat more frequently in Liupao than in Shangfung.

The results suggest an accessibility explanation for the greater use of Farmers Association and Public Office extension advisers in Shangfung. The fact that farmers in Liupao rated Farmers Association extension advisers as most helpful in final decisions to adopt new farm practices negates a lack of confidence explanation.

Patterns of source use for first, additional, and most influence in actual decisions to adopt farm practices in the two villages were much the same. There was little inclination to name Public Office extension workers for any of these specific purposes in either village. Most salient differences in use patterns were in terms of the manner in which different kinds of farmers used the various sources in their own adoption decisions. Thus, farmers in Liupao generally selected as their *most influential* sources in making adoption decisions, other farmers who relied heavily on Farmers Association extension advisers. This condition was even more marked for farmers named as usually first to adopt new farm practices. Those regarded as usually first not only were much more inclined to obtain original information from extension channels but were many times more likely to rely on Farmers Association extension advisers as most important influences in their adoption decisions. The fact that this kind of selectivity was much greater in Liupao than Shangfung can only mean that the structure of interpersonal communication and influence among farmers in Liupao was much more closely attuned to obtaining scientific farm information indirectly through

quality selected farmers than in Shangfung. In Shangfung direct use of agency sources of farm information was more prevalent.

This high selectivity of personal information and influence referents closely aligned with extension channels was a pattern also found in an economically disadvantaged farm community in Missouri.³⁴ It may be that where economic risks are high, low income farmers, especially, prefer to consult highly competent farmers in their own immediate locality for advice, even though they may hold extension advisers in high esteem as indeed was the case in Liupao. Consulting competent farmers may be one way of reducing risks that some farmers can ill afford.

A major conclusion from this study is that the information systems which, unlike U.S. systems, are disassociated from agricultural colleges do work well. The extension services were much used and highly valued by farmers, with many placing a high reliance on them for final decisions.

Other significant observations about extension work in Taiwan are: (1) that the most used and most influential branch of the extension service is the one that farmers assume responsibility for through their own farmers' associations (they receive partial public support and supervision); (2) that the high level of achievement has been accomplished by the use of extension advisers who normally have no more than an equivalent to a U.S. high school education, and often have had no prior academic training in technical agriculture; and (3) at least in the two villages studied, farmers normally took the initiative in obtaining information from extension advisers, rather than waiting for it to be brought to them.

The Taiwan farmer has reached a level of sophistication and individual initiative not characteristic of farmers in all developing countries of the world today. Perhaps their enterprising nature and inclination to quickly accept promising innovations in farming should be viewed in the context of a land policy which allows the farmer to benefit directly from his farm management ingenuity and hard labor that he and his family spend on the farm.

Finally, the reader is reminded that findings from this study should not be taken as valid assessment of the utility of comparative methods in carrying out extension work. This the reader may be tempted to do, particularly if it suits his purpose. But the purpose of this study was to examine the use of information sources in the adoption of selected new farm practices. For this, Farmers Association advisers rather than those from the Public Office are used most and trusted most. However, there are other informational needs of a more general nature for these agencies, plus the necessity of administering government agricultural programs. The dissemination of scientific information may be only a minor part of their function. The study was not designed to assess the performance of the administrative roles of the Public Office extension system and only incidentally their general information function.

The study's results can be viewed as a good example of what extension education conducted through Farmers Association channels can be under favorable

conditions. Although such conditions surely exist in many other localities, they obviously are not universal in developing countries.

For effective extension work with farmers: (1) there must be a firm financial and psychological commitment to the extension program by the local Farmers Association, (2) there probably must be a strong cooperative working relationship between the local Public Office and the local Farmers Association, and (3) there must be a relative absence of social cliques or factions among local people which tends to disrupt the effective operation of Farmers Association and Public Office activities.

All of these favorable conditions existed in the study area. The absence of any one of them could have seriously impaired the quality of the extension program. But given the proper conditions, the system can work very well indeed in supplying the informational needs of farmers as it did in Shangfung and Liupao.

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 26. The summary stated here is as cited by Herbert F. Lionberger in his *Adoption of New Ideas and Practices* previously cited, (p. 31). It is the same summary classification that was reported by the Subcommittee for the Study of the Diffusion of Farm Practices; see Subcommittee for the Study of the Diffusion of Farm Practices, *Adopters of New Ideas*, North Central Regional Extension Publication No. 13 of the Cooperative Extension Service, East Lansing: Michigan Agricultural Extension Service (October 1961). However, it should be noted that a more recent summary classification by Bohlen reverses the order of agricultural agencies and friends and neighbors at the awareness stage; realigns the listing at the information, interest, or additional information stage as follows: (1) mass media, (2) commercial, (3) neighbors and friends, (4) agricultural agencies and evaluation as (1) friends and neighbors, (2) commercial, (3) agricultural agencies, (4) mass media. It may well be that the increasing salience of agricultural agencies at the awareness stage and the commercial sources at the subsequent stages is a reflection of the changing

climate and structure of farm information acquisition and use in the Midwestern states of the United States. See: Joe M. Bohlen, "The Adoption and Diffusion of Ideas in Agriculture," in James H. Copp (Ed.), *Our Changing Rural Society: Perspectives and Trends*, Ames: Iowa State University Press, 1962.

27. Some of the specific studies which show this inclination are:

James H. Copp, Maurice L. Sill and Emory J. Brown, "The Function of Information Sources in the Farm Practice Adoption Process," *Rural Sociology*, XXIII (June 1958), pp. 146-157.

Paul Deutschmann and Orlando Fals Borda, *Communication and Adoption Patterns in an Andean Village*, San Jose, -Costa Rica: Program Interamericano de Informacion Popular, 1962.

Elihu Katz and Paul F. Lazarsfeld, *Personal Influence*, New York: The Free Press of Glencoe (formerly Glencoe, Ill.), 1955.

Herbert F. Lionberger, *Legitimation of Decisions to Adopt Farm Practices and Purchase Farm Supplies in Two Missouri Farm Communities: Ozark and Prairie*, Columbia: Missouri Agricultural Experiment Station Research Bulletin 826, (April 1963).

Robert K. Merton, "Patterns of Influence: A Study of Interpersonal Influence and of Communications Behavior in a Local Community," *Communications Research*, 1948-1949, Paul F. Lazarsfeld and Frank N. Stanton (Eds.), New York: Harper and Brothers, 1949.

Bryce Ryan and Neal Gross, *op. cit.*

Eugene A. Wilkening, "Role of Communicating Agents in Technological Change in Agriculture," *Social Forces*, XXXIV, (May 1956), pp. 361-367.

A general summary of the earlier agricultural studies may be found in Herbert F. Lionberger's *Adoption of New Ideas and Practices*, Ames, Iowa: The Iowa State University Press, 1960. A more recent and complete summary of diffusion studies including many from other fields may be found in Everett M. Rogers *Diffusion of Innovations*, New York: The Free Press of Glencoe, (formerly Glencoe, Ill.), 1962.

28. This operational definition of innovator is not in accord with the idea of innovation as the introduction of distinctly new ideas, beliefs, or practices into the culture of a society as used by anthropologists. Here it is used to indicate perceived introduction of new ideas or practices into a locality. The innovations may actually be very old and time-tested practices, new only to the immediate locality. Thus a person regarded as usually first to introduce new ideas or practices in the locality is here regarded as an innovator or more properly an innovator referent.
29. For example see Lionberger, *Legitimation of Decisions to Adopt Farm Practices and Purchase of Farm Supplies in Two Missouri Farm Communities: Ozark and Prairie*, *op. cit.*, and Lionberger and Chang, *op. cit.*
30. F. Stuart Chapin, *Experimental Design in Social Research*, New York: Harper and Brothers, 1947, p. 191.
31. Findings in this study may be compared to farm decision legitimating sources listed in Herbert F. Lionberger, *Legitimation of Decisions to Adopt Farm Practices and Purchase Farm Supplies in two Missouri Farm Communities: Ozark and Prairie*, *op. cit.*, p. 7.
32. This general inclination and evidence in support thereof is discussed in Everett M. Rogers, *Diffusion of Innovations*, *op. cit.* pp. 98-102.
- For this kind of inclination in a non-farm clientele see Elihu Katz and Paul F. Lazarsfeld, *Personal Influence*, *op. cit.*, pp. 175-186.
- For the inclination for individuals to check the validity of information received through one channel with the same thing from another see Wilbur Schramm, *Mass Media and National Development: The Role of Information in Developing Countries*. Stanford: Stanford University Press, 1964, pp. 87-89.
33. For a further discussion of farmers to rely on local persons as most influential in final decisions to adopt new farm practices see Subcommittee for the Study of the Diffusion of Farm Practices, Subcommittee of Northcentral Rural Sociology Committee, *Adopters of New Farm Ideas: Characteristics and Communication Behavior*, *op. cit.*; Herbert F. Lionberger, *Adoption of New Ideas and Practices*, *op. cit.*, pp. 42-51.

34. This inclination was seen in yet unpublished materials relating to information sources used by farmers in an economically advantaged and economically disadvantaged sections of the state and to a limited degree in Herbert F. Lionberger and H. C. Chang, *Comparative Characteristics of Special Functionaries in the Acceptance of Agricultural Innovations in Two Missouri Communities, Ozark and Prairie, op. cit.*
35. Arthur W. Peterson, "An Economic Study of Land Use—Taichung Hsien and City, 1960," Taichung, Taiwan: Provincial Chungshing University, p. 72.
36. Robert N. Ford, "A Rapid Scoring Procedure for Scaling Attitude Questions," *Public Opinion Quarterly*, 1950, 14:507-532.

APPENDIX I

DESCRIPTION OF COMPONENTS OF THE FARM INFORMATION DEVELOPMENT AND DISSEMINATION SYSTEMS

The farm information development and dissemination social systems in Taiwan depicted in Figure 3 in the text involve a very complex set of relationships originating with the Provincial Department of Agriculture and Forestry (PDAF) and ending with farmers who use the scientific farm information. The information is developed within one set of subsystems and disseminated mainly through another. Both are referred to as separate social systems in this description. The Provincial Department of Agriculture and Forestry, which is a part of the provincial government of Taiwan, is dedicated to agricultural research, development, and administration of agricultural and forestry programs. Although it is not operationally involved in either, it supervises both agricultural research for farm information development (except the agricultural colleges) and activities for disseminating the information to the farmers.

Farm Information Development Social System

This system is composed of three types of organizations—the research institutes (RI), the district agricultural improvement stations (DAIS), and the agricultural colleges. Organizationally, the first two come directly under the supervision of PDAF, while the agricultural colleges are responsible to a different governmental department or ministry. The research institutes are organized on a crop and livestock basis, with the former being called agricultural research institutes and the latter livestock research institutes. These are located where the physical conditions are most suited to the particular crop or livestock in which the institute specializes. The district agricultural improvement stations are operated on regional bases and their activities are concerned with local problems in agriculture. The agricultural colleges are closely associated with the activities of the research institutes and the district agricultural improvement stations, despite the fact that they are not administratively subordinate to the Provincial Department of Agriculture and Forestry.

Farm Information Dissemination System

Two parallel extension organizations or channels operate side by side from the provincial down to the township level. On the government side, the extension function is performed by agricultural divisions or offices at each governmental level: the Provincial Department of Agriculture and Forestry at the provincial level, the hsien or city government at the hsien or city level, and the Public Office at the township level. The second channel of agricultural extension education operates through the Farmers Association extension offices at the three levels.

In both cases, the higher the office the more indirect its involvement in the information dissemination function. The two parallel extension channels are distinct in two respects: (1) on the government side the line of authority is clearly

pronounced, while the Farmers Association offices at all levels are autonomous with no hierarchical exercise of authority; (2) the government agricultural offices perform functions more administrative and regulatory in nature and are not so actively engaged in disseminating farm information as the Farmers Association offices.

The Provincial Department of Agriculture and Forestry, being the sponsoring agency of the extension program on Taiwan, enters into contractual relationships with the Provincial Farmers Association (the executing agency) on an annual basis, providing the latter and the hsien and township associations with both financial and technical assistance and at the same time supervising their extension operations. This type of relationship is only in nominal existence between government offices and Farmers Associations at the hsien and township levels, although good working relationship among them is a prerequisite to effective extension programs. Extension advisory committees work with the Farmers Association offices on budgetary and policy matters. They are generally headed by a high-ranking government official at each level. The commissioner of the Provincial Department of Agriculture and Forestry is the chairman of the provincial extension advisory committee, the hsien magistrate is the chairman of the hsien committee, and the head of the township Public Office is the chairman of the township committee. The village committee is generally convened by the leader of the small agricultural unit, a grass-root organ of the Farmers Association.

Mass media occupy an increasingly important place in the farm information dissemination system, even though they are still in the process of institutionalization as accepted channels of information about farming. These consist of radio, newspapers, and farm magazines.

Dealers are becoming important sources of farm information. With educational activities tending to be synchronized with their sales efforts, they are handy and accessible when needed. There is also some inclination for them to fill in the information gaps concerning new products and enterprises where these are not adequately supplied by the officially constituted information dissemination agencies.

Other Organizations

Although not directly relevant to this study, there are a number of other organizations involved in disseminating farm information to farmers. These include The Food Bureau, Taiwan Sugar Corporation, the Wine and Tobacco Monopoly Bureau, fruit cooperatives, and other agencies, mostly private. The Food Bureau carries out its farm programs indirectly through either the Township Farmers Association or the Public Office extension services. Farmers, therefore, do not readily identify this source when questioned about where they get farm information. The other organizations or agencies tend to operate quite independently of the Public Office and Farmers Association offices. These relatively autonomous agencies ordinarily have their own research and educational programs which are directed to the farmers with whom they have a contractual relationship. However, since there was little sugar cane and tobacco grown in Taya Township, the influence of the Taiwan Sugar Corporation and the Wine and Tobacco Monopoly Bureau was minimal.

APPENDIX II

IMPLEMENTING THE PROJECT IN TAIWAN

Establishing Relations Abroad

At least one year before actual field work began contacts were made with the Provincial Department of Agriculture and Forestry, the Provincial Farmers Association, the Joint Commission on Rural Reconstruction and the Extension Department of the National Taiwan University to obtain their reactions to the proposed study and their eventual approval of it. With reactions universally favorable, general working relationships were then established with the Farmers' Services Division of the Joint Commission on Rural Reconstruction and the Extension Department of the National Taiwan University. The former agreed to provide transportation, clerical and legitimating services, some financial assistance if needed, and per diem for two National Taiwan University staff members and most valuable of all, the services of two able staff members from the Farm Services Division who knew farm life and conditions well by virtue of having worked closely with farmers in the Province. The Extension Department of the National Taiwan University agreed to provide office space, assistance in recruiting and training interviewers, and to provide professional counseling to the project. All of the agencies involved actually exceeded promised support in a highly timely and efficient manner which was a very important contributing factor to the project's success.

Cross-cultural Conceptualization and Instrument Design

The investigators were cognizant of some of the difficulties of cross-cultural conceptualization of research problems and research designs and had apprehensions concerning other matters. Thus, more than average care was taken in all phases of the field operation. Tentative schedules for interviewing farmers made in the United States were carefully tested for common meaning and adequacy of conceptualization after careful translation of intended meaning into Chinese. Practice was also sought in communicating questions to convey the intended meaning. Doubtful questions and portions of the schedules were discussed with farmers to obtain their reactions and recommendations for more appropriate ways of asking questions.

Especially careful attention was given to the adequacy of the individual adoption model to the Taiwan situation and to precise designation of meaning of the (paired comparison) word scales used for assessing views of farmers about information sources. Some item scales used in the U.S. had to be discarded because no way of conveying intended meaning could be found. For the others, a precise terminology had to be formulated with attention in each case given to cross-cultural shades of meaning since written symbols apparently were often subject to unintended or unanticipated meanings attached to them. After the third pretest and revision, the interview schedule was finalized and printed.

Selection and Training of Interviewers

The second set of problems centered about selection and training of interviewers. Boys in the graduating class of agricultural extension at the National Taiwan University, originally sought as interviewers, were unavailable because all had to report for military training during the interim summer months when the University was not in session. The 10 girls finally selected from the junior class in agricultural extension were mostly from urban areas. To avoid the possibility of further compounding communication difficulties with farmers, selections were made only from those who could speak Taiwanese, the dialect generally spoken by farmers in the interview area. The girls who gave every appearance of being conscientious students dedicated to academic excellence were exposed to a 12-day intensive training period which included lectures on or exercises in:

1. The nature, scope, and importance of diffusion research mainly from an action point of view.
2. The purpose of the Taiwan agricultural diffusion study, how it was developed, and the intended purpose of each item in the interview schedule.
3. What constitutes good interviewing procedure and mistakes to be avoided.
4. Class discussion and demonstration in conveying intended meanings to farmers conducted by those familiar with "farmer" language.
5. Lecture on new crop practices being promoted by agricultural agencies and adopted by farmers in the study area.
6. Drill in asking questions in a uniform manner and in a language that farmers could understand by assistants proficient in these skills.
7. Role playing in which girls alternately served as interviewers and as farmers and with knowledgeable agricultural professionals also posing as troublesome farmers to interview.
8. Practice interview with a farmer in a class situation with reactions obtained from the farmer and an extension worker who accompanied him to the classroom.
9. Practice interviews in the field under supervision and with observation of fellow interviewers teamed up in pairs.
10. Correction of mistakes and drill in proper interviewing procedure after each stage in the training program.
11. Discussion of ways of making oneself welcome in a farm home, fears of farmers they would likely encounter, and mistakes to avoid.
12. Discussion and resolution of anticipated difficulties of a personal nature involved in living in a farm village, and own anticipated problems of adjustment.

13. Introduction of girls to the farm leaders in the village who agreed to help them establish contacts with other farmers and in arranging interviews with them.

A concerted attempt was made to provide academically meaningful experiences to the interviewers in the training sessions in addition to the utilitarian aspects of obtaining quality data for the project. The girls repeatedly confirmed the utility of this attempt and its contribution to their knowledge. Also, it was agreed that a bonus would be paid for completion of the assignment and for quality work. The last was carefully explained and presumably well understood in advance of the field work. Volume of work expected was left to the development of group norms of "how much;" formulation under carefully supervised field operations resulted.

All of the interviewers completed the assignment and measured up amply to quality standards imposed. In addition to becoming very effective in obtaining the information specified in the interview schedule and in establishing rapport with farmers, they became very skillful in keeping interviews moving without offending farmers who often preferred discussing other matters more than answering questions.

Data Collection and Processing

Much care and forethought was given to legitimating the research in the eyes of relevant leaders in government at all levels from farmers to the central government and in the eyes of local leaders residing in the township and villages. The approval and promised support of provincial, hsien, township government, Farmers Associations and leaders in the villages were obtained prior to conducting formal interviews with farmers.

As an initial activity at the township and village level, a meeting was called of representatives of the local hsien, provincial government, and Farmers Association at the township Farmers Association hall. The research program was carefully explained, statements in support of the research program were made by government and Farmers Association officials and farmers were urged to ask questions about the research program. The senior investigator was dissuaded from an attempt to legitimize the research in terms of long-term utility to farmers and extension workers in favor of presenting it as a strictly academic undertaking, completely devoid of tax implications of which farmers were apparently very fearful. This explanatory meeting was immediately followed by a customary luncheon (at the expense of the project) at which time much informal exchange took place among interviewers, research staff, farmers, and public officials present. Second and third publicity meetings and luncheons were repeated for lin headmen and selected other village officers in each of the villages just prior to interviewing. It was anticipated the largest village would be most receptive and it was scheduled first for interviewing.

Interviewing proceeded to completion with only periodic emergencies which were quickly attended to by the field staff, often with the able assistance of local leaders who stood in readiness to help in the project in whatever capacity they could. The problem of restraining overly enthusiastic supporters was sometimes more difficult, even though more pleasant, than clearing up misunderstandings and alleviating local resistances.

Coding began in the field two weeks after interviewing started and was done by two NTU students in agricultural extension who lived in the same farmhouse as the ten interviewers. This assignment was completed about two weeks after interviewing was completed.

Schedules, coded materials, and punched IBM cards were sent to the University of Missouri for processing and analysis with an agreement that raw data tables of the first phase of the study would be returned to the Department of Agriculture Extension for classroom use and use in extension educational work.

Question of Generalizability of Findings

A basic sampling problem was to select villages which would represent relatively advantaged and disadvantaged farming conditions from an economic point of view in a township or townships that could be regarded as reasonably representative of a larger geographic area. This would permit broader generalization of findings to include more than the two villages. Interviews with all farmers in the villages chosen were required for assessing interpersonal communication and influence in the adoption of new farm practices. Although it was initially hoped that at least two villages in each category could be included in the study, time and resources did not permit this. Shangfung and Liupao were chosen to represent the two polar types in Taya township. It in turn was regarded as generally typical of the hsien of which it was a part and to a somewhat lesser degree a 3-hsien area—Taichung, Changhwa, and Yunlin—along the fertile west coast of the Province.

The problem here was to determine the degree to which this was the case from limited census data and other secondary sources of information. Relevant information available from secondary sources included land quality, proportion of irrigated paddy land, average yield of paddy rice per hectare, and gross farm income by land class. Land classes developed and delineated by Peterson placed both Shangfung and Liupao and Taya Township (by visual inspection of land map) in Class I and Class II land.³⁵ Thus, the land of the two villages and of Taya had high agricultural productivity and income-yielding potential. These two land classes predominated in Changhwa and Yunlin hsien and to a somewhat lesser degree also in Taichung hsien.

Table 1 shows that nearly 100 percent of the paddy lands (97.5 to 99.8) in these hsien were irrigated. This compared to about 95.0 percent in Taya Township. Although no statistics on the proportion of irrigated land were available for the two villages, local estimates suggest that nearly 100 percent of the land in

TABLE 1--PERCENT OF IRRIGATED PADDY LAND
CLASSIFIED BY HSIEN, 1966

Hsien	Percent of Irrigated Paddy Land
Taichung	99.5
Changhwa	99.8
Nantou	97.5
Yunlin	99.8

Source: Report of The 1966 Census of Agriculture, Taiwan, Republic of China, p. 137.

Shangfung was irrigated but a little less than the 3-hsien average was irrigated in Liupao. Also, the latter, being at the "end of the water," was subjected to adverse water supply conditions. Yet, the two-village average seemed to approximate the average for the larger area.

In the 3-hsien area (Taichung, Changhwa, and Yunlin) where the most important cash crop was rice, the average of paddy rice per year per hectare for the two crops grown for two out of the three hsien (Taichung and Changhwa) was 4,143.5 kilograms. Data for Yunlin was lacking. This compares to an average of 3,998.6 kilograms for Taya Township, which is almost identical to the 2-hsien average.

Gross farm income per hectare for the Class I land ranged from US\$936.50 for Taichung hsien and city combined to US\$843.75 for Yunlin (Table 3). The relatively larger income figure for Taichung hsien and city can be attributed to the outstanding productivity of land in the Taichung city limits. Gross farm income per hectare from Class II land was more uniform than for Class I, with a range from US\$614.70 for Yunlin to US\$646.67 for Changhwa and Nantou reported together in the land studies cited herein. Comparative income figures were not available for Taya Township or the two villages, but it would appear that they were quite typical of the larger 3-hsien area in this regard also, because of the similarity of the land quality.

TABLE 2--AVERAGE YIELD OF PADDY RICE (TWO CROPS) PER HECTARE
CLASSIFIED BY LOCATION, 1966

	Average Yield Per Hectare* (Kilograms)
Taichung Hsien	4,111.6
Taya Township	3,998.6
Changhwa Hsien	4,175.3
2-HSIEN AVERAGE	4,143.5

*For two crops per year

Source: Annual Report from Taichung, Changhwa, and Nantou Hsien, 1966.

TABLE 3--GROSS FARM INCOME (US\$) PER HECTARE OF CULTIVATED LAND CLASSIFIED BY LOCATION AND LAND CLASS

Location	Land Class		
	1	2	3
Taichung Hsien and City	936.50	615.50	506.00
Changhwa and Nantou Hsien*	862.22	646.67	465.72
Yunlin and Chiayi Hsien*	843.75	614.70	496.65

Source: Arthur W. Peterson, "An Economic Study of Land Use - Taichung Hsien and City, 1960," Taichung, Taiwan: Provincial Chungshing University, p. 22.

Shison C. Lee, "An Economic Study of Land Use - Changhwa and Nantou Hsien, 1961," Taichung, Taiwan: Provincial Chungshing University, pp. 45-46.

Shison C. Lee, "An Economic Study of Land Use - Yunlin and Chiayi Hsien, 1962," Taichung, Taiwan: Provincial Chungshing University, pp. 26-34.

*The original studies were based on two-hsien areas and they are cited accordingly. Since gross farm income was presented with land classes controlled, it can be regarded as an approximation to both hsien.

Thus, from these agriculturally related statistics and from the judgments of local agricultural professional workers, it would appear that Taya Township and the two villages selected were quite similar to the 3-hsien area, particularly in regard to the relative amount of Class I and Class II land comprising an estimated 30-60 percent of the land area in the 3 hsien.

Furthermore, from a cultural standpoint the inhabitants of Shangfung and Liupao were ethnically similar to a great majority of those residing in the larger area. The area was inhabited primarily by early imigrants from Min Nan or, literally, southern Fukien, known also as Amoy, a term deriving primarily from the dialect they speak and the geographic area from which they came.

Ideally, selection of villages would have been done on the basis of careful assessment of relative degrees of homogeneity or heterogeneity with regard to agricultural and cultural indices relevant to the communication and dissemination of farm information. However, due to time pressures and lack of such information and knowledge concerning these matters, selection was made largely on the judgment of local agricultural officers and extension advisers knowledgeable about agriculturally related conditions of the region. It was on the assumption that the two villages were representative of the larger area that tests of statistical significance were made for selected findings reported in this study.

Derived Measures

Improved Farm Practice Rating. Each farmer was asked a series of questions about the improved farm practices he was using in his rice growing enterprise and a second crop usually designated by the farmer as being the one from which he obtained second most money during the year preceding interview. Rice

was usually named in the first position. The practices used were selected from those being currently recommended by the local extension staff and the district agricultural improvement station agricultural technicians specializing in the respective crops. All crop practices in turn were then assumed to apply to the farmer's own farming operation. Improved farm practice ratings were in turn computed as the percent of applicable improved practices for the two crops that the farmer was using in his own farming operations at the time of the interview or had used in a previous season within the year.

Modernism Scale. The Guttman scaling techniques were applied to the two villages in Taiwan (Shangfung and Liupao) and a south Missouri community (Ozark) for the purpose of developing a modernism scale. Six items scaled for the farmers in Ozark, but only 4 in Shangfung and Liupao with a coefficient of reproducibility of .89 and .88, respectively. These scale items are scaled in the following ascending order:

For Farmers in Shangfung and Liupao

Hard work (lowest)
 Latest scientific farm information
 Management
 Production credit (highest)

For Farmers in Ozark

Management (lowest)
 Hard work
 Own experience
 Family help in the fields
 Latest scientific farm information
 Production credit (highest)

A comparison of the two scales revealed that all items but management in the Taiwan scale were in relatively the same order as the corresponding items in the Ozark scale. The idea of management (lowest on the scale in Ozark) is likely taken for granted by farmers in this area as is hard work (lowest on the scale) in Taiwan. In Taiwan very little labor-saving machinery is available and this may be regarded as a common denominator in almost any degree of modernism known to the Taiwan farmer.

In the Ozark study, six possible graded answers could be given in response to the question of how important each item was: no, little, some, much, very much, and most. In the Taiwan study five possible choices were used: no, some, much, 2nd most, and 1st most. For scaling purposes, each item had to be dichotomized. In the Ozark study the cutting point for dichotomization was subjectively set between "some" and "much;" in Taiwan it was set between much and 2nd most.

Several limitations in the scaling process in the Taiwan study were noted by the authors. First, the proportions of the sample responding positively to each item did not all meet the desired lowest limit of 20 percent positive responses.³⁶ For production credit positive responses were 15.2 percent; for management 17.7 percent. A second limitation: there should be at least 5 percent difference between the proportions responding positively on consecutive items in the scale. This recommended standard was not met by the percent responding positively to the

credit and management items. The difference was 2.5 percent. Finally, the scale did not meet the arbitrary minimum .90 reproducibility standard. In spite of the limitations, a Chi Square test for the fit between the observed and expected positive responses produced a significance level of .05, which gave some confidence in the scale as a crude measure of modernism.

APPENDIX III (Tables)

TABLE 1--FARM OPERATORS IN SHANGFUNG AND LIUPAO WHO WERE ASKED ABOUT USE OF DESIGNATED FARM PRACTICES CLASSIFIED BY CROP AND PERCENT WHO HAD ADOPTED THE PRACTICES

Crop and Improved Farm Practices Adopted	Total	Village	
		Shangfung	Liupao
RICE	(N=368)*	(N=220)*	(N=148)*
Growing an improved variety of rice	96.7	97.3	95.9
Using basic fertilizer	81.3	90.5	67.6
Top dressing at least twice per crop	95.9	94.5	98.0
Applying 200 or more kilograms of phosphorous per hectare	81.5	84.1	77.7
Applying 100 or more kilograms of potassium per hectare	57.9	65.0	47.3
Using improved seedbed	54.9	55.9	53.4
Spacing of plants 8" x 6"	4.3	6.4	1.4
Using parathion for stem borers	96.2	93.6	100.0
Using BHC Gamma for stem borers	68.2	68.2	68.2
Using other chemicals for stem borers	54.3	64.1	39.9
SWEET POTATO	(N=38)*	(N=16)*	(N=22)*
Growing an improved sweet potato variety	84.2	81.3	86.4
Using relay interplanting	47.4	62.5	36.4
Using 100 kilograms or more of potassium per hectare	15.8	12.5	18.2
WHEAT	(N=211)*	(N=104)*	(N=107)*
Growing an improved wheat variety	98.1	98.1	98.1
Applying basic fertilizer	89.6	92.3	86.9
Top dressing at least once	95.7	92.3	99.1
Applying 200 kilograms or more of phosphorous per hectare	66.4	75.0	57.9
Applying 80 kilograms or more of potassium per hectare	69.2	76.9	61.7
Using Dithane-78 to control rust	37.0	35.6	38.3

TABLE 1 (Cont.)

Crop and Improved Farm Practices Adopted	Total	Village	
		Shangfung	Liupao
VEGETABLE	(N=59)*	(N=50)*	(N=9)*
Using malathion to control insects	61.0	66.0	33.3
Using DDVP to control insects	16.9	20.0	0.0
Using DDT to control insects	30.5	26.0	55.6
Using other recommended insecticides	54.2	60.0	22.2
Using no insecticides within one week before harvest	89.8	90.0	88.9
MUSHROOM	(N=46)*	(N=30)*	(N=16)*
Making compost on concrete floor	34.8	33.3	37.5
Using light lime to neutralize PH.	97.8	96.7	100.0
Using 100 kilograms of compost per 4 square meters	45.7	43.3	50.0
Using DDT in treatment of mushroom house	63.0	73.3	43.8
Using formalin in treatment of mushroom house	78.3	83.3	68.8
Using DDVP insecticides	52.2	63.3	31.3
Using pyrethrin insecticides	63.0	66.7	56.3

*N's refer to those who were asked about practices in designated crops. Although conditions were such that all farmers growing each crop could not be asked about all relevant practices, the percentages should represent a fair approximation of prevailing adoption levels for farmers and practices relating to selected crops.

TABLE 2--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED FOR DESIGNATED PURPOSES IN FARM PRACTICE ADOPTIONS: SHANGFUNG AND LIUPAO

Kind of Information Source	Purpose of Source		
	First In-formation	Additional Information	Most In-fluence
	% (N=941)*	% (N=1537)*	% (N=844)*
TOTAL	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(36.9) ^a	(35.5) ^b	(30.7) ^c
Farmers Association			
Extension Adviser	32.6	22.2	26.9
Public Office			
Extension Adviser	1.7	7.2	2.1
Agricultural Improvement			
Station Technician	2.0	2.3	.9
Chungshing University	.0	.1	.1
Extension Pamphlets, Leaflets and Posters	.6	3.7	.7
MASS MEDIA	(5.0) ^d	(13.2) ^e	(3.9) ^f
Farm Magazines	2.9	4.9	2.4
Newspapers	.3	.9	.2
Radio	1.8	7.4	1.3
PERSONAL (Non-agency)	(54.8) ^g	(49.5) ^h	(58.5) ⁱ
Dealers	14.1	9.0	9.8
Meetings	3.1	4.2	1.4
Other Farmers	37.6	36.3	47.3
ALL OTHER	3.3	1.8	6.9

N = number of practice series examined.

h-i $P < .05$

All other within row differences $P > .05$

TABLE 3--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED FOR DESIGNATED PURPOSES
IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY
VILLAGE RESIDENCE OF FARM OPERATORS

Kind of Information Source	Shangfung Village			Liupao Village		
	Purpose of Source			Purpose of Source		
	First In- formation % (N=583)*	Add. In- formation % (N=952)*	Most In- fluence % (N=518)*	First In- formation % (N=358)*	Add. In- formation % (N=585)*	Most In- fluence % (N=326)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(41.8) ^a	(39.3) ^b	(34.1) ^c	(29.7) ^d	(28.9) ^e	(25.2) ^f
Farmers Association						
Extension Adviser	36.1	24.0	29.7	27.5	19.4	22.5
Public Office						
Extension Adviser	2.0	8.1	2.7	.8	5.4	1.2
Agricultural Improvement						
Station Technician	3.2	2.9	1.3	.6	1.1	.3
Chungshing University	.0	.2	.1	.0	.0	.0
Extension Pamphlets, Leaflets and Posters	.5	4.1	.3	.8	3.0	1.2
MASS MEDIA	(5.0) ^g	(13.4) ^h	(4.1) ⁱ	(5.3) ^j	(12.6) ^k	(3.3) ^l
Farm Magazines	3.2	5.4	2.7	2.8	4.1	1.8
Newspapers	.5	.9	.3	.0	.8	.0
Radio	1.3	7.1	1.1	2.5	7.7	1.5
PERSONAL (Non-agency)	(50.5) ^m	(46.0) ⁿ	(55.5) ^o	(60.8) ^p	(56.1) ^q	(63.5) ^r
Dealers	11.5	6.2	7.5	17.9	13.2	13.2
Meetings	2.7	4.5	.7	3.6	3.7	2.5
Other Farmers	36.3	35.3	47.3	39.3	39.2	47.8
ALL OTHER	2.7	1.3	6.3	4.2	2.4	8.0

*N=number of times farm information sources were mentioned.
a-d, m-p, b-e, and n-q P<.05

All other within row differences P>.05

TABLE 4--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED FOR DESIGNATED PURPOSES IN DECISIONS TO ADOPT NEW SIMPLE AND COMPLEX FARM PRACTICES: SHANGFUNG AND LIUPAO

Kind of Information Source	Purpose of Source					
	First Information		Additional Information		Most Influence	
	Simple Practices	Complex Practices	Simple Practices	Complex Practices	Simple Practices	Complex Practices
	% (N=405)	% (N=536)	% (N=661)	% (N=876)	% (N=360)	% (N=484)
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(38.7) ^a	(35.6) ^b	(37.1) ^c	(34.2) ^d	(29.8) ^e	(31.6) ^f
Farmers Association						
Extension Adviser	33.3	32.0	24.1	20.6	26.1	27.5
Public Office						
Extension Adviser	1.5	1.9	6.1	8.0	1.1	2.9
Agricultural Improvement						
Station Technician	3.2	1.1	3.2	1.6	1.7	.4
Chungshing University	.0	.0	.2	.1	.3	.0
Extension Pamphlets, Leaflets and Posters	.7	.6	3.5	3.9	.6	.8
MASS MEDIA	(2.2) ^g	(7.1) ^h	(13.1) ⁱ	(13.4) ^j	(1.7) ^k	(5.6) ^l
Farm Magazines	1.5	3.9	4.4	5.4	1.1	3.3
Newspapers	.2	.4	.8	1.0	.0	.4
Radio	.5	2.8	7.9	7.0	.6	1.9
PERSONAL (Non-agency)	(56.4) ^m	(53.6) ⁿ	(48.6) ^o	(50.2) ^p	(61.3) ^q	(56.2) ^r
Dealers	4.7	21.3	3.0	13.5	3.3	14.7
Meetings	2.7	3.4	5.0	3.7	1.1	1.7
Other Farmers	49.0	28.9	40.6	33.0	56.9	39.8
ALL OTHER	2.7	3.7	1.2	2.2	7.2	6.6

None of the row differences are significant at the .05 level.

TABLE 5--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS FIRST SOURCES IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY COMPLEX AND SIMPLE PRACTICES AND VILLAGE RESIDENCE OF FARM OPERATORS

Kind of Information Source	Shapfung Village			Liupao Village		
	Complexity of Practices			Complexity of Practices		
	Total % (N=583)*	Simple % (N=256)*	Complex % (N=327)*	Total % (N=358)*	Simple % (N=149)*	Complex % (N=209)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(41.6) ^a	(41.5) ^b	(41.9) ^c	(29.2) ^d	(34.2) ^e	(25.9) ^f
Farmers Association						
Extension Adviser	36.0	34.8	37.0	27.0	30.9	24.4
Public Office						
Extension Adviser	2.2	1.6	2.8	.8	1.3	.5
Agricultural Improvement Station Technician	2.9	4.3	1.8	.6	1.3	.0
Chungshing University	.0	.0	.0	.0	.0	.0
Extension Pamphlets, Leaflets and Posters	.5	.8	.3	.8	.7	1.0
MASS MEDIA	(4.8) ^g	(2.4) ^h	(4.7) ⁱ	(5.3) ^j	(2.0) ^k	(7.6) ^l
Farm Magazines	2.9	1.6	4.0	2.8	1.3	3.8
Newspapers	.5	.4	.6	.0	.0	.0
Radio	1.4	.4	2.1	2.5	.7	3.8
PERSONAL (Non-agency)	(50.9) ^m	(54.5) ⁿ	(47.7) ^o	(61.3) ^p	(63.8) ^q	(62.7) ^r
Dealers	11.7	4.7	17.1	18.1	4.7	27.8
Meetings	2.7	2.3	3.1	3.9	3.4	3.8
Other Farmers	36.5	47.5	27.5	39.3	51.0	31.1
ALL OTHER	2.7	1.6	3.7	4.2	4.7	3.8

*N = number of times farm information sources were mentioned.
a-d, m-p, c-f, and o-r P<.05

All other within row differences P>.05

TABLE 6--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS ADDITIONAL SOURCES
IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY COMPLEX AND SIMPLE
PRACTICES AND VILLAGE RESIDENCE OF FARM OPERATORS

Kind of Information Source	Shangfung Village			Liupao Village		
	Complexity of Practices			Complexity of Practices		
	Total % (N=952)*	Simple % (N=422)*	Complex % (N=530)*	Total % (N=585)*	Simple % (N=239)*	Complex % (N=346)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(39.3) ^a	(39.8) ^b	(39.0) ^c	(29.0) ^d	(32.2) ^e	(27.0) ^f
Farmers Association						
Extension Adviser	23.9	24.9	23.2	19.3	23.0	16.8
Public Office						
Extension Adviser	8.3	6.4	9.6	5.5	5.4	5.5
Agricultural Improvement						
Station Technician	2.9	4.3	1.9	1.1	1.3	1.2
Chungshing University	.2	.2	.2	.0	.0	.0
Extension Pamphlets, Leaflets and Posters	4.0	4.0	4.1	3.1	2.5	3.5
MASS MEDIA	(13.4) ^g	(13.7) ^h	(13.4) ⁱ	(12.6) ^j	(11.7) ^k	(13.3) ^l
Farm Magazines	5.4	5.2	5.7	4.1	2.9	4.9
Newspapers	.9	.9	.9	.8	.4	1.2
Radio	7.1	7.6	6.8	7.7	8.4	7.2
PERSONAL (Non-agency)	(45.8) ^m	(45.6) ⁿ	(45.9) ^o	(56.0) ^p	(54.4) ^q	(56.8) ^r
Dealers	6.2	2.1	9.4	13.5	4.6	19.7
Meetings	4.5	5.4	3.8	3.8	4.2	3.5
Other Farmers	35.1	38.1	32.7	38.7	45.6	33.6
ALL OTHER	1.5	.9	1.7	2.4	1.7	2.9

*N = number of times farm information sources were mentioned.

All other within row differences $P > .05$

a-d, m-p, c-f, and o-r $P < .05$

TABLE 7--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS MOST INFLUENTIAL SOURCES IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY COMPLEX AND SIMPLE PRACTICES AND VILLAGE RESIDENCE OF FARM OPERATORS

Kind of Information Source	Shangfung Village			Liupao Village		
	Complexity of Practices			Complexity of Practices		
	Total % (N=518)*	Simple % (N=225)*	Complex % (N=293)*	Total % (N=326)*	Simple % (N=135)*	Complex % (N=191)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(34.4) ^a	(32.8) ^b	(35.6) ^c	(25.2) ^d	(24.4) ^e	(25.7) ^f
Farmers Association						
Extension Adviser	29.7	28.0	31.1	22.5	23.0	22.0
Public Office						
Extension Adviser	2.7	1.3	3.8	1.2	.7	1.6
Agricultural Improvement Station Technician	1.4	2.2	.7	.3	.7	.0
Chungshing University	.2	.4	.0	.0	.0	.0
Extension Pamphlets, Leaflets and Posters	.4	.9	.0	1.2	.0	2.1
MASS MEDIA	(4.2) ^g	(1.7) ^h	(6.2) ⁱ	(3.3) ^j	(1.4) ^k	(4.7) ^l
Farm Magazines	2.7	1.3	3.8	1.8	.7	2.6
Newspapers	.4	.0	.7	.0	.0	.0
Radio	1.1	.4	1.7	1.5	.7	2.1
PERSONAL (Non-agency)	(55.0) ^m	(59.7) ⁿ	(51.4) ^o	(64.1) ^p	(64.6) ^q	(63.3) ^r
Dealers	7.5	3.1	10.9	13.5	3.7	20.4
Meetings	.8	.9	.7	2.5	1.5	3.1
Other Farmers	46.7	55.7	39.8	48.1	59.4	39.8
ALL OTHER	6.4	5.8	6.8	7.4	9.6	6.3

*N = number of times farm information sources were mentioned, m-p and o-r P<.05

All other within row differences P>.05

TABLE 8--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED FOR DESIGNATED PURPOSES IN DECISIONS TO ADOPT NEW FARM PRACTICES RELATING TO MAJOR AND MINOR CROPS: SHANGFUNG AND LIUPAO

Kind of Information Source	Purpose of Source					
	First Information		Additional Information		Most Influence	
	Major Crops % (N=729)	Minor Crops % (N=212)	Major Crops % (N=1182)	Minor Crops % (N=355)	Major Crops % (N=655)	Minor Crops % (N=189)
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(38.5) ^a	(31.6) ^b	(35.8) ^c	(34.3) ^d	(32.5) ^e	(24.9) ^f
Farmers Association						
Extension Adviser	34.3	26.9	22.9	19.7	28.2	22.2
Public Office						
Extension Adviser	1.6	1.9	7.1	7.3	2.4	1.1
Agricultural Improvement						
Station Technician	2.3	.9	2.5	1.7	1.2	.0
Chungshing University	.0	.0	.2	.0	.2	.0
Extension Pamphlets, Leaflets and Posters	.3	1.9	3.1	5.6	.5	1.6
MASS MEDIA	(3.0) ^g	(11.7) ^h	(12.3) ⁱ	(16.3) ^j	(2.4) ^k	(9.0) ^l
Farm Magazines	1.5	7.5	4.1	7.6	1.2	6.3
Newspapers	.1	.9	.8	1.4	.0	1.1
Radio	1.4	3.3	7.4	7.3	1.2	1.6
PERSONAL (Non-agency)	(56.0) ^m	(50.6) ⁿ	(53.3) ^o	(47.1) ^p	(59.3) ^q	(55.5) ^r
Dealers	12.2	20.8	8.3	11.3	8.9	13.2
Meetings	3.4	1.9	4.4	3.7	1.2	2.1
Other Farmers	40.4	27.9	37.6	32.1	49.2	40.2
ALL OTHERS	2.5	6.1	1.6	2.3	5.8	10.6

None of the row differences are significant at the .05 level.

TABLE 9--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS FIRST SOURCES
IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY NATURE OF CROPS GROWN
AND VILLAGE RESIDENCE OF FARM OPERATORS

Information Sources	Shangfung Village			Liupao Village		
	Nature of Crops Grown			Nature of Crops Grown		
	Total % (N=583)*	Major** % (N=428)*	Minor % (N=155)*	Total % (N=358)*	Major** % (N=301)*	Minor % (N=57)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(41.6) ^a	(44.3) ^b	(34.3) ^c	(29.2) ^d	(30.3) ^e	(24.6) ^f
Farmers Association						
Extension Adviser	36.0	38.3	29.8	27.0	28.6	19.3
Public Office						
Extension Adviser	2.2	2.1	2.6	.8	1.0	.0
Agricultural Improvement						
Station Technician	2.9	3.5	1.3	.6	.7	.0
Chungshing University	.0	.0	.0	.0	.0	.0
Extension Pamphlets, Leaflets and Posters	.5	.4	.6	.8	.0	5.3
MASS MEDIA	(4.8) ^g	(1.7) ^h	(12.9) ⁱ	(5.3) ^j	(4.7) ^k	(8.8) ^l
Farm Magazines	2.9	1.1	7.7	2.8	2.0	7.0
Newspapers	.5	.2	1.3	.0	.0	.0
Radio	1.4	.4	3.9	2.5	2.7	1.8
PERSONAL (Non-agency)	(50.9) ^m	(51.9) ⁿ	(48.3) ^o	(61.3) ^p	(62.0) ^q	(56.1) ^r
Dealers	11.7	7.4	23.2	18.1	18.9	14.0
Meetings	2.7	3.0	1.9	3.9	4.0	1.8
Other Farmers	36.5	41.5	23.2	39.3	39.1	40.3
ALL OTHER	2.7	2.1	4.5	4.2	3.0	10.5

**rice and wheat

*N=number of times farm information sources were mentioned.

a-d, m-p, b-e, and n-q P<.05

All other within row differences P>.05

TABLE 10--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS ADDITIONAL SOURCES
IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY NATURE OF CROPS GROWN
AND VILLAGE RESIDENCE OF FARM OPERATORS

Information Sources	Shangfung Village			Liupao Village		
	Nature of Crops Grown			Nature of Crops Grown		
	Total % (N=952)*	Major** % (N=696)*	Minor % (N=256)*	Total % (N=585)*	Major** % (N=486)*	Minor % (N=99)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(39.3) ^a	(40.4) ^b	(36.0) ^c	(29.0) ^d	(28.9) ^e	(30.4) ^f
Farmers Association						
Extension Adviser	23.9	25.0	21.1	19.3	20.0	16.2
Public Office						
Extension Adviser	8.3	8.1	8.2	5.5	5.6	5.1
Agricultural Improvement						
Station Technician	2.9	3.4	1.6	1.2	1.0	2.0
Chungshing University	.2	.2	.0	.0	.0	.0
Extension Pamphlets, Leaflets and Posters	4.0	3.7	5.1	3.0	2.3	7.1
MASS MEDIA	(13.4) ^g	(12.1) ^h	(16.8) ⁱ	(12.7) ^j	(12.1) ^k	(15.2) ^l
Farm Magazines	5.4	4.4	8.2	4.1	3.7	6.1
Newspapers	.9	.7	1.6	.9	.8	1.0
Radio	7.1	7.1	7.0	7.7	7.6	8.1
PERSONAL (Non-agency)	(45.8) ^m	(46.2) ⁿ	(45.6) ^o	(55.9) ^p	(57.0) ^q	(50.4) ^r
Dealers	6.2	4.4	10.9	13.5	13.8	12.1
Meetings	4.5	4.8	3.5	3.8	3.7	4.0
Other Farmers	35.1	37.0	31.2	38.6	39.5	34.3
ALL OTHER	1.5	1.2	1.6	2.4	2.0	4.0

**rice and wheat

*N=number of times farm information sources were mentioned.

a-d, m-p, b-e, and n-q P<.05

All other within row differences P>.05

TABLE 11--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS MOST INFLUENTIAL SOURCES IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY NATURE OF CROPS GROWN AND VILLAGE RESIDENCE OF FARM OPERATORS

	Shangfung Village			Liupao Village		
	Nature of Crops Grown			Nature of Crops Grown		
	Total % (N=518)*	Major** % (N=385)*	Minor % (N=133)*	Total % (N=326)*	Major** % (N=270)*	Minor % (N=56)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(34.4) ^a	(36.3) ^b	(28.6) ^c	(25.1) ^d	(27.1) ^e	(16.1) ^f
Farmers Association						
Extension Adviser	29.7	30.6	27.1	22.4	24.8	10.7
Public Office						
Extension Adviser	2.7	3.1	1.5	1.2	1.5	.0
Agricultural Improvement						
Station Technician	1.4	1.8	.0	.3	.4	.0
Chungshing University	.2	.3	.0	.0	.0	.0
Extension Pamphlets, Leaflets and Posters	.4	.5	.0	1.2	.4	5.4
MASS MEDIA	(4.2) ^g	(2.3) ^h	(9.8) ⁱ	(3.3) ^j	(2.6) ^k	(7.2) ^l
Farm Magazines	2.7	1.3	6.8	1.8	1.1	5.4
Newspapers	.4	.0	1.5	.0	.0	.0
Radio	1.1	1.0	1.5	1.5	1.5	1.8
PERSONAL (Non-agency)	(55.0) ^m	(56.2) ⁿ	(51.8) ^o	(63.9) ^p	(63.6) ^q	(64.2) ^r
Dealers	7.5	5.5	13.5	13.5	13.7	12.5
Meetings	.8	.8	.8	2.5	1.9	5.4
Other Farmers	46.7	49.9	37.5	47.9	48.0	46.3
ALL OTHER	6.4	5.2	9.8	7.7	6.7	12.5

**rice and wheat

*N = number of times farm information sources were mentioned.

m-p P<.05

All other within row differences P>.05

TABLE 12--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED FOR DESIGNATED PURPOSES IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY FARMERS' OWN PERCEPTION OF RATE OF ADOPTION IN COMPARISON TO VILLAGE AVERAGE

Kind of Information Source	Purpose of Source					
	First Information		Add. Information		Most Influence	
	Faster % (N=263)	Slower % (N=369)	Faster % (N=492)	Slower % (N=585)	Faster % (N=218)	Slower % (N=351)
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(46.7) ^a	(33.4) ^b	(48.4) ^c	(29.0) ^d	(45.8) ^e	(23.1) ^f
Farmers Association						
Extension Adviser	37.2	31.2	27.0	19.3	37.5	20.9
Public Office						
Extension Adviser	3.8	.8	10.6	5.6	5.0	1.1
Agricultural Improvement						
Station Technician	5.3	.3	3.9	1.2	2.8	.0
Chungshing University	.0	.0	.0	.0	.0	.0
Extension Pamphlets, Leaflets and Posters	.4	1.1	6.9	2.9	.5	1.1
MASS MEDIA	(10.7) ^g	(1.9) ^h	(18.5) ⁱ	(10.4) ^j	(7.9) ^k	(2.5) ^l
Farm Magazines	8.4	.5	9.8	2.2	6.0	1.1
Newspapers	.4	.3	1.4	1.0	.5	.3
Radio	1.9	1.1	7.3	7.2	1.4	1.1
PERSONAL (Non-agency)	(38.8) ^m	(61.4) ⁿ	(31.5) ^o	(58.4) ^p	(37.6) ^q	(67.6) ^r
Dealers	11.4	16.5	6.1	11.1	5.5	12.8
Meetings	4.6	2.7	4.1	4.3	1.8	1.1
Other Farmers	22.8	42.2	21.3	43.0	30.3	53.7
ALL OTHER	3.8	3.3	1.6	2.2	8.7	6.8

a-b, m-n, c-d, o-p, e-f, and q-r $P < .05$

All other within row differences $P > .05$

TABLE 13--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS FIRST SOURCES IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY FAST AND SLOW ADOPTION AND VILLAGE RESIDENCE OF FARM OPERATORS

Kind of Information Source	Shangfung Village				Liupao Village			
	Perceived Adoption Speed				Perceived Adoption Speed			
	Total % (N=583)*	Faster % (N=189)*	Slower % (N=196)*	Av. % (N=197)*	Total % (N=358)*	Faster % (N=74)*	Slower % (N=173)*	Av. % (N=111)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(41.6) ^a	(48.7) ^b	(38.4) ^c	(38.4)	(29.4) ^d	(41.8) ^e	(28.1) ^f	(23.4)
Farmers Association								
Extension Adviser	36.1	37.1	35.9	35.9	27.2	37.7	26.3	21.6
Public Office								
Extension Adviser	2.1	4.2	1.0	1.0	.8	2.7	.6	.0
Agricultural Improvement Station Technician	2.9	6.9	.5	1.5	.6	1.4	.0	.9
Chungshing University Extension Pamphlets, Leaflets and Posters	.0	.0	.0	.0	.0	.0	.0	.0
Leaflets and Posters	.5	.5	1.0	.0	.8	.0	1.2	.9
MASS MEDIA	(4.8) ^g	(9.5) ^h	(2.0) ⁱ	(3.1)	(5.3) ^j	(13.6) ^k	(1.8) ^l	(5.4)
Farm Magazines	2.9	7.9	.5	.5	2.8	9.5	.6	1.8
Newspapers	.5	.5	.5	.5	.0	.0	.0	.0
Radio	1.4	1.1	1.0	2.1	2.5	4.1	1.2	3.6
PERSONAL (Non-agency)	(50.8) ^m	(38.1) ⁿ	(57.6) ^o	(55.9)	(61.1) ^p	(40.5) ^q	(65.4) ^r	(67.6)
Dealers	11.7	10.6	13.8	10.3	18.0	13.5	19.3	18.9
Meetings	2.8	4.2	1.5	2.6	3.7	5.4	4.1	1.8
Other Farmers	36.3	23.3	42.3	43.0	39.4	21.6	42.0	46.9
ALL OTHER	2.8	3.7	2.0	2.6	4.2	4.1	4.7	3.6

*N = number of times farm information sources were mentioned.
Includes one "perceived speed of adoption" unknown in Shangfung.

a-d and m-p $P < .05$
All other within row differences $P > .05$

TABLE 14--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS ADDITIONAL SOURCES
IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY FAST AND SLOW ADOPTION AND
VILLAGE RESIDENCE OF FARM OPERATORS

Kind of Information Source	Shangfung Village				Liupao Village			
	Perceived Adoption Speed				Perceived Adoption Speed			
	Total % (N=952)*	Faster % (N=340)*	Slower % (N=323)*	Av. % (N=289)*	Total % (N=585)*	Faster % (N=152)*	Slower % (N=262)*	Av. % (N=171)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(39.3) ^a	(49.0) ^b	(34.0) ^c	(33.9)	(29.2) ^d	(46.6) ^e	(23.2) ^f	(23.9)
Farmers Association								
Extension Adviser	23.9	28.0	21.0	22.5	19.4	24.9	17.4	18.4
Public Office								
Extension Adviser	8.3	10.7	6.8	6.6	5.5	9.9	4.2	3.7
Agricultural Improvement								
Station Technician	2.9	3.8	1.9	3.1	1.2	3.9	.4	.0
Chungshing University	.2	.0	.0	.7	.0	.0	.0	.0
Extension Pamphlets, Leaflets and Posters	4.0	6.5	4.3	1.0	3.1	7.9	1.2	1.8
MASS MEDIA	(13.4) ^g	(18.6) ^h	(11.1) ⁱ	(10.3)	(12.7) ^j	(18.5) ^k	(9.7) ^l	(12.9)
Farm Magazines	5.4	9.7	3.1	3.1	4.1	9.9	1.2	3.7
Newspapers	.9	1.2	1.2	.3	.9	2.0	.8	.0
Radio	7.1	7.7	6.8	6.9	7.7	6.6	7.7	9.2
PERSONAL (Non-agency)	(45.8) ^m	(31.5) ⁿ	(53.0) ^o	(54.4)	(55.7) ^p	(31.6) ^q	(64.4) ^r	(62.0)
Dealers	6.2	3.8	9.0	6.2	13.4	11.2	13.9	15.3
Meetings	4.5	4.4	4.0	5.2	3.8	3.3	4.6	3.1
Other Farmers	35.1	23.3	40.0	43.0	38.5	17.1	45.9	43.6
ALL OTHER	1.5	.9	1.9	1.4	2.4	3.3	2.7	1.2

*N = number of times farm information sources were mentioned.
Includes one "perceived speed of adoption" unknown in Shangfung.

a-d, m-p, and o-r $P < .05$
All other within row differences $P > .05$

TABLE 15--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS MOST INFLUENTIAL SOURCES
IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY FAST AND SLOW ADOPTION AND
VILLAGE RESIDENCE OF FARM OPERATORS

Kind of Information Source	Shangfung Village				Liupao Village			
	Perceived Adoption Speed				Perceived Adoption Speed			
	Total % (N=518)*	Faster % (N=153)*	Slower % (N=194)*	Av. % (N=170)*	Total % (N=326)*	Faster % (N=65)*	Slower % (N=157)*	Av. % (N=104)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(34.5) ^a	(45.7) ^b	(27.4) ^c	(32.4)	(25.2) ^d	(46.1) ^e	(18.1) ^f	(23.2)
Farmers Association								
Extension Adviser	29.8	35.9	25.4	29.4	22.5	41.5	15.5	21.2
Public Office								
Extension Adviser	2.7	5.9	1.0	1.8	1.2	3.1	1.3	.0
Agricultural Improvement								
Station Technician	1.4	3.9	.0	.6	.3	.0	.0	1.0
Chungshing University	.2	.0	.0	.6	.0	.0	.0	.0
Extension Pamphlets, Leaflets and Posters	.4	.0	1.0	.0	1.2	1.5	1.3	1.0
MASS MEDIA	(4.3) ^g	(7.9) ^h	(3.7) ⁱ	(1.8)	(3.4) ^j	(7.7) ^k	(1.2) ^l	(3.8)
Farm Magazines	2.7	6.5	1.6	.6	1.9	4.6	.6	1.9
Newspapers	.4	.7	.5	.0	.0	.0	.0	.0
Radio	1.2	.7	1.6	1.2	1.5	3.1	.6	1.9
PERSONAL (Non-agency)	(54.8) ^m	(37.9) ⁿ	(62.7) ^o	(61.1)	(63.7) ^p	(37.0) ^q	(73.0) ^r	(66.3)
Dealers	7.5	4.6	10.4	6.5	13.3	7.7	15.5	13.5
Meetings	.8	1.3	.5	.6	2.5	3.1	1.9	2.9
Other Farmers	46.5	32.0	51.8	54.0	47.9	26.2	55.6	49.9
ALL OTHER	6.4	8.5	6.2	4.7	7.7	9.2	7.7	6.7

*N = number of times farm information sources were mentioned.
Includes one "perceived speed of adoption" unknown in Shangfung.

m-p P < .05
All other within row differences P > .05

TABLE 16--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED FOR DESIGNATED PURPOSES IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY INNOVATOR MENTIONS RECEIVED BY THE FARM OPERATOR

Kind of Information Source	Purpose of Source								
	First Information			Additional Information			Most Influence		
	No Men- tion % (N=740)	1-2 Men- tions % (N=129)	3 or More Mentions % (N=72)	No Men- tion % (N=1150)	1-2 Men- tions % (N=243)	3 or More Mentions % (N=144)	No Men- tion % (N=664)	1-2 Men- tions % (N=121)	3 or More Mentions % (N=59)
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(32.8) ^a	(51.1)	(55.5) ^b	(30.4) ^c	(44.4)	(61.1) ^d	(26.5) ^e	(39.6)	(61.0) ^f
Farmers Association									
Extension Adviser	29.6	43.3	44.3	20.2	26.6	30.5	24.3	31.4	45.7
Public Office									
Extension Adviser	1.1	3.9	4.2	5.6	9.1	16.7	1.1	4.1	10.2
Agricultural Improvement									
Station Technician	1.4	3.9	5.6	1.8	2.1	6.3	.0	4.1	5.1
Chungshing University	.0	.0	.0	.2	.0	.0	.2	.0	.0
Extension Pamphlets, Leaflets and Posters	.7	.0	1.4	2.6	6.6	7.6	.9	.0	.0
MASS MEDIA	(3.9) ^g	(10.1)	(7.0) ^h	(11.7) ⁱ	(18.6)	(16.6) ^j	(3.3) ^k	(7.5)	(5.1) ^l
Farm Magazines	1.9	7.0	5.6	3.6	9.1	9.0	1.7	5.0	5.1
Newspapers	.4	.0	.0	.8	2.1	.0	.2	.8	.0
Radio	1.6	3.1	1.4	7.3	7.4	7.6	1.4	1.7	.0
PERSONAL (Non-agency)	(59.8) ^m	(37.2)	(33.3) ⁿ	(56.2) ^o	(35.4)	(20.2) ^p	(62.8) ^q	(47.9)	(28.8) ^r
Dealers	15.3	10.9	8.3	10.3	6.6	2.1	10.9	6.6	3.4
Meetings	3.0	2.3	5.6	4.8	1.6	4.2	1.4	1.7	1.7
Other Farmers	41.5	24.0	19.4	41.1	27.2	13.9	50.5	39.6	23.7
ALL OTHER	3.5	1.6	4.2	1.7	1.6	2.1	7.4	5.0	5.1

a-b, m-n, c-d, o-p, e-f, and q-r P<.05

All other within row differences P>.05

TABLE 17--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS FIRST SOURCES IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY VILLAGE RESIDENCE AND NUMBER OF INNOVATOR MENTIONS RECEIVED BY THE FARM OPERATOR

Kind of Information Source	Shangfung Village				Liupao Village			
	Innovator Mentions				Innovator Mentions			
	Total % (N=583)*	None % (N=437)*	1-2 % (N=96)*	3 or more % (N=50)*	Total % (N=358)*	None % (N=303)*	1-2 % (N=33)*	3 or more % (N=22)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(41.6) ^a	(37.6) ^b	(54.2)	(52.0) ^c	(29.2) ^d	(25.6) ^e	(42.4)	(59.2) ^f
Farmers Association								
Extension Adviser	36.0	33.4	44.8	42.0	27.0	24.0	39.4	50.2
Public Office								
Extension Adviser	2.2	1.6	4.2	4.0	.8	.3	3.0	4.5
Agricultural Improvement Station Technician	2.9	2.1	5.2	6.0	.6	.3	.0	4.5
Chungshing University Extension Pamphlets, Leaflets and Posters	.0	.0	.0	.0	.0	.0	.0	.0
Leaflets and Posters	.5	.5	.0	2.0	.8	1.0	.0	.0
MASS MEDIA	(4.8) ^g	(4.2) ^h	(8.3)	(4.0) ⁱ	(5.3) ^j	(3.6) ^k	(15.2)	(13.6) ^l
Farm Magazines	2.9	2.1	7.3	2.0	2.8	1.6	6.1	13.6
Newspapers	.5	.7	.0	.0	.0	.0	.0	.0
Radio	1.4	1.4	1.0	2.0	2.5	2.0	9.1	.0
PERSONAL (Non-agency)	(50.9) ^m	(55.5) ⁿ	(36.5)	(36.0) ^o	(61.3) ^p	(66.2) ^q	(39.4)	(27.2) ^r
Dealers	11.7	11.8	11.5	10.0	18.1	20.1	9.1	4.5
Meetings	2.7	2.9	1.0	4.0	3.9	3.3	6.1	9.1
Other Farmers	36.5	40.8	24.0	22.0	39.3	42.8	24.2	13.6
ALL OTHER	2.7	2.7	1.0	6.0	4.2	4.6	3.0	.0

*N = number of times farm information sources were mentioned.

All other within row differences P>.05

a-d, m-p, and n-q P<.05

TABLE 18--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS ADDITIONAL SOURCES IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY VILLAGE RESIDENCE AND NUMBER OF INNOVATOR MENTIONS RECEIVED BY THE FARM OPERATOR

Kind of Information Source	Shangfung Village				Liupao Village			
	Innovator Mentions				Innovator Mentions			
	Total % (N=952)*	None % (N=680)*	1-2 % (N=180)*	3 or more % (N=92)*	Total % (N=585)*	None % (N=470)*	1-2 % (N=63)*	3 or more % (N=52)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(39.3) ^a	(34.3) ^b	(48.3)	(58.6) ^c	(29.0) ^d	(38.3) ^e	(33.3)	(65.5) ^f
Farmers Association								
Extension Adviser	23.9	21.9	28.8	29.3	19.3	32.6	20.6	32.8
Public Office								
Extension Adviser	8.3	6.5	10.6	16.3	5.5	3.6	4.8	17.3
Agricultural Improvement								
Station Technician	2.9	2.6	2.8	5.4	1.2	.5	.0	7.7
Chungshing University	.2	.3	.0	.0	.0	.0	.0	.0
Extension Pamphlets, Leaflets and Posters	4.0	3.0	6.1	7.6	3.0	1.6	7.9	7.7
MASS MEDIA	(13.4) ^g	(12.4) ^h	(16.7)	(16.4) ⁱ	(12.7) ^j	(8.9) ^k	(23.7)	(17.3) ^l
Farm Magazines	5.4	4.0	10.0	7.7	4.1	2.5	6.3	11.5
Newspapers	.9	1.2	.6	.0	.9	.2	6.3	.0
Radio	7.1	7.2	6.1	8.7	7.7	6.2	11.1	5.8
PERSONAL (Non-agency)	(45.8) ^m	(52.1) ⁿ	(33.3)	(21.7) ^o	(55.9) ^p	(51.9) ^q	(41.4)	(17.2) ^r
Dealers	6.2	7.3	4.4	1.1	13.5	12.3	12.7	3.8
Meetings	4.5	5.1	1.7	5.4	3.8	3.6	1.6	1.9
Other Farmers	35.1	39.7	27.2	15.2	38.6	36.0	27.1	11.5
ALL OTHER	1.5	1.2	1.7	3.3	2.4	.9	1.6	.0

*N = number of times farm information sources were mentioned.

All other within row differences P>.05

a-d and m-p P<.05

TABLE 19--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS MOST INFLUENTIAL SOURCES
IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY VILLAGE RESIDENCE AND NUMBER OF
INNOVATOR MENTIONS RECEIVED BY THE FARM OPERATOR

Kind of Information Source	Shangfung Village				Liupao Village			
	Innovator Mentions				Innovator Mentions			
	Total % (N=518)*	None % (N=387)*	1-2 % (N=91)*	3 or more % (N=40)*	Total % (N=326)*	None % (N=277)*	1-2 % (N=30)*	3 or more % (N=19)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(34.4) ^a	(30.0) ^b	(42.9)	(57.5) ^c	(25.2) ^d	(21.6) ^e	(30.0)	(68.3) ^f
Farmers Association								
Extension Adviser	29.7	28.2	33.0	37.5	22.5	19.2	26.7	63.0
Public Office								
Extension Adviser	2.7	1.0	4.4	15.0	1.2	1.1	3.3	.0
Agricultural Improvement								
Station Technician	1.4	.0	5.5	5.0	.3	.0	.0	5.3
Chungshing University	.2	.3	.0	.0	.0	.0	.0	.0
Extension Pamphlets, Leaflets and Posters	.4	.5	.0	.0	1.2	1.4	.0	.0
MASS MEDIA	(4.2) ^g	(4.0) ^h	(5.5)	(5.0) ⁱ	(3.3) ^j	(2.2) ^k	(13.4)	(5.3) ^l
Farm Magazines	2.7	2.1	4.4	5.0	1.8	1.1	6.7	5.3
Newspapers	.4	.3	1.1	.0	.0	.0	.0	.0
Radio	1.1	1.6	.0	.0	1.5	1.1	6.7	.0
PERSONAL (Non-agency)	(55.0) ^m	(59.3) ⁿ	(47.2)	(30.0) ^o	(64.1) ^p	(67.8) ^q	(49.9)	(26.4) ^r
Dealers	7.5	8.0	7.7	2.5	13.5	15.2	3.3	5.3
Meetings	.8	.8	.0	2.5	2.5	2.2	6.7	.0
Other Farmers	46.7	50.5	39.5	25.0	48.1	50.4	39.9	21.1
ALL OTHER	6.4	6.7	4.4	7.5	7.4	8.3	6.7	.0

*N = number of times farm information sources were mentioned.
m-p P<.05

All other within row differences P>.05

TABLE 20--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED FOR DESIGNATED PURPOSES IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY NUMBER OF MOST LEGITIMATOR MENTIONS RECEIVED BY THE FARM OPERATOR

	Purpose of Source								
	First Information			Additional Information			Most Influence		
	No Men- tion % (N=686)	1-2 Men- tions % (N=201)	3 or More Mentions % (N=54)	No Men- tion % (N=1099)	1-2 Men- tions % (N=336)	3 or More Mentions % (N=102)	No Men- tion % (N=617)	1-2 Men- tions % (N=176)	3 or More Mentions % (N=51)
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(34.9) ^a	(39.8)	(51.9) ^b	(31.9) ^c	(39.6)	(58.8) ^d	(29.0) ^e	(28.9)	(58.8) ^f
Farmers Association									
Extension Adviser	31.3	35.3	38.8	20.7	24.1	31.3	26.1	24.4	45.1
Public Office									
Extension Adviser	1.3	2.0	5.6	5.8	8.9	15.7	1.3	2.8	9.8
Agricultural Improvement									
Station Technician	1.7	2.0	5.6	1.6	3.3	5.9	.8	.6	3.9
Chungshing University	.0	.0	.0	.2	.0	.0	.2	.0	.0
Extension Pamphlets, Leaflets and Posters	.6	.5	1.9	3.6	3.3	5.9	.6	1.1	.0
MASS MEDIA	(5.6) ^g	(2.5)	(5.6) ^h	(13.1) ⁱ	(13.4)	(14.7) ^j	(4.5) ^k	(1.7)	(3.9) ^l
Farm Magazines	2.9	2.5	3.7	4.5	6.0	6.9	2.4	1.7	3.9
Newspapers	.4	.0	.0	1.3	.0	.0	.3	.0	.0
Radio	2.3	.0	1.9	7.3	7.4	7.8	1.8	.0	.0
PERSONAL (Non-agency)	(56.4) ^m	(54.7)	(35.1) ⁿ	(53.2) ^o	(45.5)	(24.5) ^p	(59.9) ^q	(63.1)	(25.5) ^r
Dealers	13.8	14.9	14.8	9.7	7.4	5.9	9.9	11.4	3.9
Meetings	2.5	4.5	5.6	4.3	4.5	2.9	1.1	2.3	2.0
Other Farmers	40.1	35.3	14.7	39.2	33.6	15.7	48.9	49.4	19.6
ALL OTHER	3.1	3.0	7.4	1.8	1.5	2.0	6.6	6.3	11.8

c-d, o-p, e-f, and q-r P<.05; all other within row differences P>.05

TABLE 21--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS FIRST SOURCES IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY VILLAGE RESIDENCE AND NUMBER OF LEGITIMATOR MENTIONS RECEIVED BY THE FARM OPERATOR

Kind of Information Source	Shangfung Village				Liupao Village			
	Legitimitor Mentions				Legitimitor Mentions			
	Total % (N=583)*	None % (N=424)*	1-2 % (N=122)*	3 or more % (N=37)*	Total % (N=358)*	None % (N=262)*	1-2 % (N=79)*	3 or more % (N=17)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(41.6) ^a	(38.3) ^b	(48.4)	(56.8) ^c	(29.4) ^d	(29.6) ^e	(26.7)	(41.1) ^f
Farmers Association								
Extension Adviser	36.0	33.7	42.6	40.6	27.2	27.6	24.1	35.2
Public Office								
Extension Adviser	2.2	1.7	3.3	5.4	.8	.8	.0	5.9
Agricultural Improvement Station Technician	2.9	2.5	2.5	8.1	.6	.4	1.3	.0
Chungshing University	.0	.0	.0	.0	.0	.0	.0	.0
Extension Pamphlets, Leaflets and Posters	.5	.4	.0	2.7	.8	.8	1.3	.0
MASS MEDIA	(4.8) ^g	(5.4) ^h	(2.5)	(5.4) ⁱ	(5.3) ^j	(6.1) ^k	(2.5)	(5.9) ^l
Farm Magazines	2.9	3.0	2.5	2.7	2.8	2.7	2.5	5.9
Newspapers	.5	.7	.0	.0	.0	.0	.0	.0
Radio	1.4	1.7	.0	2.7	2.5	3.4	.0	.0
PERSONAL (Non-agency)	(50.9) ^m	(53.7) ⁿ	(47.5)	(29.7) ^o	(61.1) ^p	(60.3) ^q	(65.7)	(47.1) ^r
Dealers	11.6	10.1	15.6	16.2	17.9	19.5	13.9	11.8
Meetings	2.7	3.3	.8	2.7	3.6	1.1	10.1	11.8
Other Farmers	36.6	40.3	31.1	10.8	39.6	39.9	41.7	23.5
ALL OTHER	2.7	2.6	1.6	8.1	4.2	3.8	5.1	5.9

*N = number of times farm information sources were mentioned.
a-d and m-p P<_.05

All other within row differences P> .05

TABLE 22--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS ADDITIONAL SOURCES IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY VILLAGE RESIDENCE AND NUMBER OF LEGITIMATOR PRACTICES RECEIVED BY THE FARM OPERATOR

Kind of Information Source	Shangfung Village				Liupao Village			
	Legitimitor Mentions				Legitimitor Mentions			
	Total % (N=952)*	None % (N=672)*	1-2 % (N=212)*	3 or more % (N=68)*	Total % (N=585)*	None % (N=427)*	1-2 % (N=124)*	3 or more % (N=34)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(39.2) ^a	(35.8) ^b	(43.8)	(60.3) ^c	(29.0) ^d	(26.1) ^e	(32.2)	(56.0) ^f
Farmers Association								
Extension Adviser	23.9	22.3	26.4	32.3	19.3	18.3	20.2	29.6
Public Office								
Extension Adviser	8.2	6.5	10.8	16.2	5.5	4.7	5.6	14.7
Agricultural Improvement								
Station Technician	2.9	2.4	3.3	7.4	1.2	.5	3.2	2.9
Chungshing University	.2	.3	.0	.0	.0	.0	.0	.0
Extension Pamphlets, Leaflets and Posters	4.0	4.3	3.3	4.4	3.0	2.6	3.2	8.8
MASS MEDIA	(13.4) ^g	(13.5) ^h	(12.8)	(16.2) ⁱ	(12.7) ^j	(12.2) ^k	(14.6)	(11.8) ^l
Farm Magazines	5.4	5.2	5.7	7.4	4.1	3.3	6.5	5.9
Newspapers	.9	1.3	.0	.0	.9	1.2	.0	.0
Radio	7.1	7.0	7.1	8.8	7.7	7.7	8.1	5.9
PERSONAL (Non-agency)	(46.1) ^m	(49.2) ⁿ	(42.5)	(22.0) ^o	(55.9) ^p	(59.4) ^q	(50.8)	(29.3) ^r
Dealers	6.2	6.2	6.6	4.4	13.5	15.2	8.9	8.8
Meetings	4.5	5.0	3.3	2.9	3.8	3.0	6.5	2.9
Other Farmers	35.4	38.0	32.6	14.7	38.6	41.2	35.4	17.6
ALL OTHER	1.3	1.5	.9	1.5	2.4	2.3	2.4	2.9

*N = number of times farm information sources were mentioned,
a-d, m-p, and n-q P<.05

All other within row differences P>.05

TABLE 23--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS MOST INFLUENTIAL SOURCES
IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY VILLAGE RESIDENCE AND NUMBER OF
LEGITIMATOR MENTIONS RECEIVED BY THE FARM OPERATOR

Kind of Information Source	Shangfung Village				Liupao Village			
	Legitimitor Mentions				Legitimitor Mentions			
	Total % (N=518)*	None % (N=376)*	1-2 % (N=107)*	3 or more % (N=35)*	Total % (N=326)*	None % (N=241)*	1-2 % (N=69)*	3 or more % (N=16)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(34.4) ^a	(32.7) ^b	(30.8)	(62.9) ^c	(25.2) ^d	(23.2) ^e	(26.0)	(49.9) ^f
Farmers Association								
Extension Adviser	29.7	29.3	27.1	42.9	22.5	21.2	20.3	49.9
Public Office								
Extension Adviser	2.7	1.3	3.7	14.3	1.2	1.2	1.4	.0
Agricultural Improvement								
Station Technician	1.4	1.3	.0	5.7	.3	.0	1.4	.0
Chungshing University	.2	.3	.0	.0	.0	.0	.0	.0
Extension Pamphlets, Leaflets and Posters	.4	.5	.0	.0	1.2	.8	2.9	.0
MASS MEDIA	(4.2) ^g	(4.8) ^h	(2.8)	(2.9) ⁱ	(3.3) ^j	(4.2) ^k	(.0)	(6.3) ^l
Farm Magazines	2.7	2.7	2.8	2.9	1.8	2.1	.0	6.3
Newspapers	.4	.5	.0	.0	.0	.0	.0	.0
Radio	1.1	1.6	.0	.0	1.5	2.1	.0	.0
PERSONAL (Non-agency)	(55.0) ^m	(55.8) ⁿ	(63.6)	(22.8) ^o	(64.1) ^p	(66.4) ^q	(62.4)	(31.3) ^r
Dealers	7.5	6.7	12.1	2.9	13.5	14.9	10.1	6.3
Meetings	.8	.8	.0	2.9	2.5	1.7	5.8	.0
Other Farmers	46.7	48.3	51.5	17.0	48.1	49.8	46.5	25.0
ALL OTHER	6.4	6.7	2.8	11.4	7.4	6.2	11.6	12.5

*N = number of times farm information sources were mentioned.
m-p and n-q P<.05

All other within row differences P>.05

TABLE 24--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED FOR DESIGNATED PURPOSES CLASSIFIED BY AGE OF THE FARM OPERATOR

Kind of Information Source	Purpose of Source								
	First Information			Additional Information			Most Influence		
	Under 39 Years	40-49 Years	50 Years & Over	Under 39 Years	40-49 Years	50 Years & Over	Under 39 Years	40-49 Years	50 Years & Over
	% (N=381)	% (N=256)	% (N=304)	% (N=631)	% (N=404)	% (N=502)	% (N=324)	% (N=228)	% (N=292)
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(38.2) ^a	(39.4)	(33.2) ^b	(35.2) ^c	(37.9)	(33.9) ^d	(30.5) ^e	(36.0)	(27.0) ^f
Farmers Association Extension Adviser Public Office	32.5	35.1	30.6	21.5	23.5	21.9	27.5	30.7	23.3
Extension Adviser Agricultural Improvement Station Technician	1.8	.8	2.3	5.9	8.2	8.0	1.2	2.6	2.7
Chungshing University	3.1	2.3	.3	2.1	3.7	1.4	.6	1.8	.7
Extension Pamphlets, Leaflets and Posters	.0	.0	.0	.0	.0	.4	.0	.0	.3
MASS MEDIA	.8	1.2	.0	5.7	2.5	2.2	1.2	.9	.0
Farm Magazines	(6.3) ^g	(5.5)	(3.0) ^h	(13.7) ⁱ	(12.9)	(13.0) ^j	(3.1) ^k	(6.1)	(3.1) ^l
Newspapers	2.9	3.9	2.0	5.7	5.0	4.0	2.2	3.5	1.7
Radio	.8	.0	.0	1.0	1.0	.8	.3	.4	.0
PERSONAL (Non-agency)	2.6	1.6	1.0	7.0	6.9	8.2	.6	2.2	1.4
Dealers	(53.4) ^m	(50.4)	(60.2) ⁿ	(49.5) ^o	(47.2)	(51.3) ^p	(61.2) ^q	(52.6)	(60.0) ^r
Meetings	12.1	13.7	17.1	8.9	7.4	10.4	10.8	6.6	11.3
Other Farmers	3.4	2.0	3.6	5.2	3.7	3.4	1.5	.0	2.4
ALL OTHER	37.9	34.7	39.5	35.4	36.1	37.5	48.9	46.0	46.3
	2.1	4.7	3.6	1.6	2.0	1.8	5.2	5.3	9.9

None of the row differences are significant at the .05 level.

TABLE 25--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS FIRST SOURCES IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY VILLAGE RESIDENCE AND AGE OF FARM OPERATOR

Kind of Information Source	Shangfung Village				Liupao Village			
	Age of Farm Operator				Age of Farm Operator			
	Total % (N=583)*	Under 39 % (N=228)*	40-49 % (N=169)*	50 and over % (N=186)*	Total % (N=358)*	Under 39 % (N=153)*	40-49 % (N=87)*	50 and over % (N=118)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(41.6) ^a	(43.4) ^b	(43.1)	(38.1) ^c	(29.3) ^d	(30.9) ^e	(32.1)	(25.4) ^f
Farmers Association								
Extension Adviser	36.0	35.1	38.3	34.9	27.1	28.8	28.7	23.8
Public Office Extension Adviser	2.2	2.6	.6	3.2	.8	.7	1.1	.8
Agricultural Improvement Station Technician	2.9	4.8	3.6	.0	.6	.7	.0	.8
Chungshing University Extension Pamphlets, Leaflets and Posters	.0	.0	.0	.0	.0	.0	.0	.0
	.5	.9	.6	.0	.8	.7	2.3	.0
MASS MEDIA	(4.8) ^g	(4.4) ^h	(7.1)	(3.2) ⁱ	(5.3) ^j	(9.1) ^k	(2.2)	(2.5) ^l
Farm Magazines	2.9	1.3	5.3	2.7	2.8	5.2	1.1	.8
Newspapers	.5	1.3	.0	.0	.0	.0	.0	.0
Radio	1.4	1.8	1.8	.5	2.5	3.9	1.1	1.7
PERSONAL (Non-agency)	(50.9) ^m	(50.4) ⁿ	(45.1)	(56.5) ^o	(61.2) ^p	(57.4) ^q	(61.1)	(66.2) ^r
Dealers	11.7	10.1	10.7	14.5	18.2	15.0	19.5	21.2
Meetings	2.7	3.1	2.4	2.7	3.6	3.9	1.1	5.1
Other Farmers	36.5	37.2	32.0	39.3	39.4	38.5	40.5	39.9
ALL OTHER	2.7	1.8	4.7	2.2	4.2	2.6	4.6	5.9

*N = number of times farm information sources were mentioned. All other within row differences P > .05
a-d and m-p P < .05

TABLE 26--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS ADDITIONAL SOURCES IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY VILLAGE RESIDENCE AND AGE OF FARM OPERATOR

Kind of Information Source	Shangfung Village				Liupao Village			
	Age of Farm Operator				Age of Farm Operator			
	Total % (N=952)	Under 39 % (N=360)*	40-49 % (N=271)*	50 and over % (N=321)*	Total % (N=585)*	Under 39 % (N=271)*	40-49 % (N=133)*	50 and over % (N=181)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(39.3) ^a	(39.3) ^b	(39.8)	(39.3) ^c	(29.0) ^d	(30.0) ^e	(33.9)	(24.4) ^f
Farmers Association Extension Adviser Public Office	24.0	23.1	24.7	24.3	19.3	19.6	21.1	17.7
Extension Adviser Agricultural Improvement Station Technician	8.2	6.4	8.5	10.0	5.5	5.2	7.5	4.4
Chungshing University Extension Pamphlets, Leaflets and Posters	2.9	2.8	4.4	1.9	1.1	1.1	2.3	.6
	.1	.0	.0	.6	.0	.0	.0	.0
	4.1	7.0	2.2	2.5	3.1	4.1	3.0	1.7
MASS MEDIA	(13.5) ^g	(13.4) ^h	(14.0)	(13.4) ⁱ	(12.6) ^j	(14.0) ^k	(10.5)	(12.2) ^l
Farm Magazines	5.5	5.6	5.9	5.0	4.1	5.9	3.0	2.2
Newspapers	.9	1.1	.7	.9	.8	.7	1.5	.6
Radio	7.1	6.7	7.4	7.5	7.7	7.4	6.0	9.4
PERSONAL (Non-agency)	(45.9) ^m	(45.9) ⁿ	(45.1)	(46.1) ^o	(56.0) ^p	(54.5) ^q	(51.8)	(60.6) ^r
Dealers	6.2	5.6	4.1	8.7	13.5	13.3	14.3	13.3
Meetings	4.5	5.6	4.8	3.1	3.8	4.8	1.5	3.9
Other Farmers	35.2	34.7	36.2	34.3	38.7	36.4	36.0	43.4
ALL OTHER	1.3	1.4	1.1	1.2	2.4	1.5	3.8	2.8

*N = number of times farm information sources were mentioned.

All other within row differences P>.05

a-d, m-p, and o-r P<.05

TABLE 27--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS MOST INFLUENTIAL SOURCES
IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY VILLAGE RESIDENCE AND
AGE OF FARM OPERATOR

Kind of Information Source	Shangfung Village				Liupao Village			
	Age of Farm Operator							
	Total %	Under 39 %	40-49 %	50 and over %	Total %	Under 39 %	40-49 %	50 and over %
(N=518)*	(N=186)*	(N=153)*	(N=179)*	(N=326)	(N=138)*	(N=75)*	(N=113)*	
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(34.4) ^a	(30.7) ^b	(41.1)	(32.5) ^c	(25.1) ^d	(30.4) ^e	(25.4)	(18.6) ^f
Farmers Association								
Extension Adviser	29.7	26.3	35.9	27.9	22.4	29.0	20.0	15.9
Public Office								
Extension Adviser	2.7	2.2	2.6	3.4	1.2	.0	2.7	1.8
Agricultural Improvement								
Station Technician	1.4	1.1	2.6	.6	.3	.0	.0	.9
Chungshing University	.2	.0	.0	.6	.0	.0	.0	.0
Extension Pamphlets, Leaflets and Posters	.4	1.1	.0	.0	1.2	1.4	2.7	.0
MASS MEDIA	(4.2) ^g	(1.6) ^h	(7.9)	(3.9) ⁱ	(3.3) ^j	(5.0) ^k	(2.7)	(1.8) ^l
Farm Magazines	2.7	1.1	5.2	2.2	1.8	3.6	.0	.9
Newspapers	.4	.5	.7	.0	.0	.0	.0	.0
Radio	1.1	.0	2.0	1.7	1.5	1.4	2.7	.9
PERSONAL (Non-agency)	(55.0) ^m	(60.7) ⁿ	(46.4)	(56.3) ^o	(63.9) ^p	(61.7) ^q	(65.2)	(65.4) ^r
Dealers	7.5	8.1	5.2	8.9	13.5	14.5	9.3	15.0
Meetings	.8	1.1	.0	1.1	2.5	2.2	.0	4.4
Other Farmers	46.7	51.5	41.2	46.3	47.9	45.0	55.9	46.0
ALL OTHER	6.4	7.0	4.6	7.3	7.7	2.9	6.7	14.2

*N = number of times farm information sources were mentioned.

All other within row differences P > .05

m-p P < .05

TABLE 28--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS FIRST SOURCES
IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY PERCENT OF APPLICABLE
NEW FARM PRACTICES ADOPTED AND VILLAGE RESIDENCE OF FARM OPERATORS

Kind of Information Source	Shangfung Village				Liupao Village			
	Percent of Practices Adopted				Percent of Practices Adopted			
	Total % (N=583)*	0-59 % (N=66)*	60-79 % (N=256)*	80 and over % (N=261)*	Total % (N=358)*	0-59 % (N=84)*	60-79 % (N=197)*	80 and over % (N=77)*
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(41.6) ^a	(30.3) ^b	(40.2)	(46.0) ^c	(29.3) ^d	(22.6) ^e	(30.4)	(33.8) ^f
Farmers Association								
Extension Adviser	36.0	30.3	35.9	37.6	27.1	20.2	27.9	32.5
Public Office								
Extension Adviser	2.2	0.0	1.2	3.8	.8	1.2	.5	1.3
Agricultural Improvement								
Station Technician	2.9	0.0	2.3	4.2	.6	0.0	1.0	0.0
Chungshing University	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Extension Pamphlets, Leaflets and Posters	.5	0.0	.8	.4	.8	1.2	1.0	0.0
MASS MEDIA	(4.8) ^g	(1.5) ^h	(2.4)	(8.1) ⁱ	(5.3) ^j	(4.8) ^k	(5.6)	(5.2) ^l
Farm Magazines	2.9	0.0	1.2	5.4	2.8	0.0	4.1	2.6
Newspapers	.5	1.5	.4	.4	0.0	0.0	0.0	0.0
Radio	1.4	0.0	.8	2.3	2.5	4.8	1.5	2.6
PERSONAL (Non-agency)	(50.8) ^m	(68.2) ⁿ	(55.4)	(41.7) ^o	(61.2) ^p	(67.8) ^q	(59.9)	(57.1) ^r
Dealers	11.7	12.1	10.5	12.6	18.2	19.0	18.3	16.9
Meetings	2.8	3.0	3.1	2.3	3.6	2.4	2.5	7.8
Other Farmers	36.3	53.1	41.8	26.8	39.4	46.4	39.1	32.4
ALL OTHER	2.8	0.0	2.0	4.2	4.2	4.8	4.1	3.9

*N = number of times farm information sources were mentioned.
a-d and m-p $P < .05$

All other within row differences $P > .05$

TABLE 29--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS ADDITIONAL SOURCES IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY PERCENT OF APPLICABLE FARM PRACTICES ADOPTED AND VILLAGE RESIDENCE OF FARM OPERATORS

Kind of Information Source	Shangfung Village				Liupao Village			
	Percent of Practices Adopted				Percent of Practices Adopted			
	Total %	0-59 %	60-79 %	80 and over %	Total %	0-59 %	60-79 %	80 and over %
(N=952)*	(N=77)*	(N=410)*	(N=465)*	(N=585)*	(N=115)*	(N=335)*	(N=135)*	
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(39.3) ^a	(24.7) ^b	(38.3)	(42.8) ^c	(29.1) ^d	(21.7) ^e	(29.6)	(34.1) ^f
Farmers Association								
Extension Adviser	23.9	20.8	23.9	24.5	19.3	13.9	20.6	20.7
Public Office								
Extension Adviser	8.2	2.6	6.8	10.3	5.5	4.3	5.4	6.7
Agricultural Improvement								
Station Technician	2.9	0.0	3.9	2.6	1.2	0.0	.6	3.7
Chungshing University	.2	0.0	.5	0.0	0.0	0.0	0.0	0.0
Extension Pamphlets, Leaflets and Posters	4.1	1.3	3.2	5.4	3.1	3.5	3.0	3.0
MASS MEDIA	(13.6) ^g	(3.9) ^h	(10.5)	(17.9) ⁱ	(12.7) ^j	(6.0) ^k	(13.8)	(15.4) ^l
Farm Magazines	5.5	0.0	3.9	7.7	4.1	1.7	4.2	5.9
Newspapers	1.0	0.0	1.2	.9	.9	0.0	1.5	0.0
Radio	7.1	3.9	5.4	9.3	7.7	4.3	8.1	9.6
PERSONAL (Non-agency)	(45.7) ^m	(70.1) ⁿ	(49.7)	(38.0) ^o	(55.8) ^p	(69.7) ^q	(55.1)	(46.0) ^r
Dealers	6.2	9.1	6.1	5.8	13.5	16.5	14.3	8.9
Meetings	4.5	7.8	4.6	3.9	3.8	3.5	3.6	4.4
Other Farmers	35.0	53.2	39.0	28.3	38.5	49.7	37.2	32.7
ALL OTHER	1.4	1.3	1.5	1.3	2.4	2.6	1.5	4.4

*N = number of times farm information sources were mentioned.
a-d and m-p P < .05

All other within row differences P > .05

TABLE 30--PERCENT OF TIMES FARM INFORMATION SOURCES WERE MENTIONED AS MOST INFLUENTIAL SOURCES IN DECISIONS TO ADOPT NEW FARM PRACTICES CLASSIFIED BY PERCENT OF APPLICABLE FARM PRACTICES ADOPTED AND VILLAGE RESIDENCE OF FARM OPERATORS

Kind of Information Source	Shangfung Village				Liupao Village			
	Percent of Practices Adopted				Percent of Practices Adopted			
	Total %	0-59 %	60-79 %	80 and over %	Total %	0-59 %	60-79 %	80 and over %
(N=518)*	(N=55)*	(N=229)*	(N=234)*	(N=326)*	(N=73)*	(N=184)*	(N=69)*	
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
AGRICULTURAL AGENCIES	(34.4) ^a	(20.0) ^b	(28.3)	(43.6) ^c	(25.1) ^d	(19.2) ^r	(23.8)	(34.7) ^f
Farmers Association								
Extension Adviser	29.7	20.0	25.3	36.3	22.4	15.1	22.3	30.4
Public Office								
Extension Adviser	2.7	0.0	1.3	4.7	1.2	1.4	.5	2.9
Agricultural Improvement								
Station Technician	1.4	0.0	.4	2.6	.3	0.0	.5	0.0
Chungshing University	.2	0.0	.4	0.0	0.0	0.0	0.0	0.0
Extension Pamphlets, Leaflets and Posters	.4	0.0	.9	0.0	1.2	2.7	.5	1.4
MASS MEDIA	(4.3) ^g	(.0) ^h	(2.1)	(7.2) ⁱ	(3.3) ^j	(.0) ^k	(4.9)	(2.9) ^l
Farm Magazines	2.7	0.0	1.3	4.7	1.8	0.0	3.3	0.0
Newspapers	.4	0.0	.4	.4	0.0	0.0	0.0	0.0
Radio	1.2	0.0	.4	2.1	1.5	0.0	1.6	2.9
PERSONAL (Non-agency)	(54.9) ^m	(72.7) ⁿ	(63.5)	(42.8) ^o	(63.9) ^p	(75.3) ^q	(63.7)	(52.3) ^r
Dealers	7.5	9.1	7.9	6.8	13.5	15.1	15.8	5.8
Meetings	.8	1.8	.9	.4	2.5	1.4	1.1	7.2
Other Farmers	46.6	61.8	54.7	35.6	47.9	58.8	46.8	39.3
ALL OTHER	6.4	7.3	6.1	6.4	7.7	5.5	7.6	10.1

*N = number of times farm information sources were mentioned.
m-p P < .05

All other within row differences P > .05