

Impulsora de Puebla. This stratified sample was used because it was thought that there might be significant differences among the characteristics of the groups of farmers receiving credit from the four institutions.

The components of variance among and within the strata were estimated using the maize yields of farmers on credit lists in the 1970 season. (These yields had been estimated using an indirect procedure described on page 76). These components were used to determine the size of the sample necessary to estimate averages in maize yields with a 90-percent probability. There were 213 farmers in the sample.

A sample design in two stages, similar to that of 1967, was used for the survey of all farmers in the area. The components of variance among and within segments were estimated using the 1970 maize yields of all farmers in the area. The size of the sample of segments and number of farmers per segment were calculated using these components of variance, together with the quotient estimated in 1967 by dividing the average cost of identifying and taking a census of a segment by the average cost of interviewing a farmer. The number of segments was calculated at 25, but was increased to 31 to provide greater precision in the estimates. There were seven farmers per segment.

The sampling procedure used in 1967 assumed an unrestricted, random distribution of variables throughout the Project area. This random selection of segments, however, produced a pattern in which some parts of the area were sampled with greater intensity than others. Between 1967 and 1970, geographical trends in the distribution of variability were discerned in the area. These trends showed the assumptions of the 1967 sample to be faulty; the sample left large areas unrepresented, whereas other areas were sampled quite intensively.

Because of the above findings, plus the high costs involved in taking the census of segments, the following arbitrary scheme was developed for the first-stage sampling in 1970.

Twenty-one of the segments identified in 1967 were used in the 1970 survey. Ten new segments were added, located at random in parts of the area not adequately covered in 1967. Information about the Project area collected between 1967 and 1970 was used in delineating the 10 zones in which the new segments were located. The new segments were located in the field and the individual parcels identified.

A listing was made of all farmers who worked at least one parcel in the 31 segments. The sample of farmers was selected at random from these lists and interviews were made during the summer of 1971 by students from the National School of Agriculture at Chapingo, who had received 10 days of specialized training.

The completed questionnaires from the sample of farmers on credit lists and the sample of all farmers in the area were checked, and the information transferred to coded sheets. Data processing was done at the Statistics and Computation Center of the Graduate College, Chapingo.

STUDIES OF AGRICULTURAL INSTITUTIONS AND FARM SECTOR

Information relative to the infrastructure that had been collected through interviews with farmers was supplemented with data obtained directly from the agricultural institutions in special studies done in 1968 and 1973.

The 1968 study focused on the level of services provided by the credit banks, crop insurance company, and the marketing agency. In addition, the fertilizer distribution network was identified by compiling a list of all persons who sold fertilizer in the villages of the area.

The objectives of the 1973 study were: (a) to obtain a detailed understanding of the operating procedures and policies of the three official credit banks, the Impulsora de Puebla, and the crop insurance company; (b) to tabulate the amount of services provided by these institutions during the period 1965-1973; (c) to observe changes that had occurred in the operating procedures of these institutions in recent years; and (d) to determine to what extent such changes had been influenced by the Puebla Project.

Changes in the operating procedures of the institutions, and the amounts of services which they provided to farmers, were studied by gathering information directly from the institutions. Interviews were held with decision-makers, both in the office and field, and additional information was obtained from their files.

The Project farmers were interviewed in 1973 to obtain a better understanding of why many farmers were not following the Project recommendations. Among the specific issues covered in this study were: (a) the effect of farmer organizations on the adoption of the new technology, (b) the level of understanding by the farmers of the maize recommendations, and (c) the farmers' impressions of the efficiency of the services provided by the agricultural institutions.

The farmers interviewed in 1973 were located in 10 communities distributed throughout the five Project zones. These 10 communities were selected because they appeared to represent the area adequately in terms of the attention received from the Project technical assistance agents, and from the agricultural service institutions in Puebla. The first part of the study consisted of informal visits by the investigator to the communities over a period of 6 months to establish rapport with the villagers. In the second phase of the study a structured questionnaire was used to interview samples of: (a) farmers in organized groups, and (b) unorganized farmers. The first sample included 69 farmers, 35 of whom were group representatives and 34 were group members. The sample of unorganized farmers consisted of 29 heads of families in five communities where organized groups had functioned during the previous 3 or 4 years.