

indicates the previously discussed (page 80) reluctance of the farmers in the Puebla area to use high plant populations. Perhaps this reluctance is a reflection of the fact that information received by the farmer is imperfect, or that the farmers adjust the recommendations in terms of their perception of application to their local conditions.

CHANGES IN AVERAGE MAIZE YIELDS

Information on average maize yields in the Puebla area was available for the years 1967 through 1972. Estimations of yield were made directly in the field from 1968 to 1972, using the method described in Chapter 8. Maize yields also were estimated for 1967 and 1970 from information collected from farmers in the surveys, taking into account all the parcels on which the interviewed farmers grew maize.

The average maize yields for all farmers in the area and for farmers on credit lists are shown in Table 9.8. Using 1968 as a base, the changes in average yields for the following years were calculated and are shown in the table as percentages. The year 1968 was used as a base, rather than 1967, because it was felt that the Puebla Project could not have influenced the general average for 1967 and because all estimations of yields were made in the same way beginning in 1968.

The average maize yields for farmers on credits lists (Table 9.8) varied from 3,985 kg/ha in 1968 to 2,679 kg/ha in 1971. The high average in 1968 can be attributed to very favorable rainfall conditions, and to the fact that the yields of only 103 carefully selected farmers (who received close supervision by the technical assistance agents) entered into the calculation. The average yields of farmers on credit lists varied little from 1969 through 1972.

The average maize yields for all farmers in the area have varied from 1,330 kg/ha in 1967 to 2,499 kg/ha in 1972. Comparing only the average yields for the first and the last years, it is seen that the average yield increased by 88 percent. This, however, overestimates the real increase in maize

TABLE 9.8. Average maize yields* for all farmers in the Puebla area and for farmers on credit lists.

Year	All farmers in the area		Farmers on credit lists	
	Average yield kg/ha	% change compared to 1968	Average yield kg/ha	% change compared to 1968
1967	1330			
1968	2140	base	3985	base
1969	1832	-14.4	2829	-29.0
1970	1962**	- 8.3	2732	-31.4
1971	1927	- 9.9	2679	-32.8
1972	2499	+16.8	2920	-26.7

* Grain with 14%moisture. The value for 1967 was calculated from information provided by farmers in the survey; values for the other years were calculated from field measurements made just prior to harvest.

** The average yield for 1970, calculated from the survey data, was 1864 kg/ha.

yields in the area, because rainfall conditions were much more favorable in 1972 than in 1967.

In a rainfed area like Puebla, average maize yields in a given year are determined largely by the climatic conditions that prevail and the production technology that is used. To estimate the effect of the new technology on average yields in the Puebla area, it is necessary to adjust the average yields in Table 9.8 by eliminating the effect of climate.

Two methods have been used to estimate the percent increase in average maize yields of all farmers in the area due to use of the production practices recommended by the



Average maize yields for the project area were adjusted for the effects of climate using yield data from fertilizer rate experiments conducted each year in the area. The yields of plots receiving a uniform treatment in the several experiments conducted each year were averaged, and the variation in these yearly averages was assumed to be due to climatic differences.