SECTION 4

The Effects on Agricultural Production and Yields

4.1. Introduction

The droughts that occurred in Northeast Brazil (NEB) during the 1979–1983 period brought serious consequences to the economy and population of that region. The extreme drought of 1983, which affected 88% of NEB, reduced the regional gross product by 15.8%. It was worse than in 1979 and 1980, when production growth rates were zero and −0.9%, respectively (MINTER, 1973). In 1983, some 12.5 million people received assistance in coping with the drought, but it has been estimated that the total number affected reached 12 million people (Section 1).

There is evidence that the industrial sector is less affected by drought, partly because some of its raw materials can be obtained from other regions (MINTER, 1973). The most severe impacts of droughts are on the agricultural sector, especially on subsistence crops. As noted in Section 1, subsistence crops are more affected than cattle, and small farmers are more affected than large landowners. Figueroa (1977) reports that, for medium and large farm owners, drought is mainly a problem of production, while for small farmers it involves family subsistence.

Examination of the distribution of workers engaged in emergency public works (*Table 4.1*) reveals that in these projects landless farmers predominated (75.1%), followed by landowners. Together, they represented 95.2% of the sample analyzed by the Joaquim Nabuco Foundation (*see* Subsections 1.4.4 to 1.4.6). This labor force came mainly from farms of 100 ha or less. *Table 4.2* shows that these farms supplied 69.7% of the people enlisted in the work projects. The remainder came from farms larger than 100 ha.

Among landholders, 92.2% owned a mean area of land up to 100 ha or less, and the majority of farmers (59.9%) owned a mean area of 20 ha or less. This

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Table 4.1. Main occupation and other occupations of workers enlisted in emergency public works, by type of occupation, 1978.

Type of occupation	*Main occupations* (%)	*Other occupations* (%)
Landholder	20.1	0.8
Landless farmer	75.1	11.4
Herdsman	1.2	2.9
Tradesman	0.2	1.2
Urban worker	1.2	3.8
Other	1.8	2.6
Without occupation	0.4	77.3
Total	100.0	100.0

Source: Nabuco (1983).

Table 4.2. Percentage of those enlisted in public works, classified by size of their farms, 1978.

Area intervals (ha)	≤20	21–100	101–500	≥501	Total
Enlisted workers (%)	32.1	37.6	22.0	8.3	100.0

Source: Nabuco (1983).

size of landholding was considerably smaller than the mean farm area in NEB, which was 36.5 ha in 1980 (IBGE CAB, 1984). The landless farmers have been responsible for very small areas of land, and in the sample taken by the Joaquim Nabuco Foundation, 73.8% were responsible for areas up to 5 ha at most. Taking these area limits into account and comparing them with the distribution of food production in NEB, it can be seen that the farmers owning 100 ha or less were responsible for almost all the food production in the region. In 1980 they produced 76.3% of the rice, 82.0% of the regional production of beans and 94.0% of the manioc (IBGE CAB, 1984). Crop production is mainly concentrated in the semi-arid zone, where half of the NEB rural population is concentrated. Its mean annual precipitation varies from 400–800 mm, and the variability of precipitation reaches 60% (Ferraz, 1925).

The technical basis of food production in NEB is severely limited. From the distribution of the cultivated area according to technological groups (*Table 4.3*), it can be seen that 70.8% of the corn area, 74% of the rice area and 61.1% of the beans area are grown under a system where only common seeds are used, i.e., seeds stored by the farmer from his own previous crop. Also, under this system the seeds are planted by simply scattering them on the ground and counting upon the help of nature to produce a crop. *Table 4.3* shows that only a very small proportion of the food-cropped area is cultivated using modern technology. Irrigation, which should be a fundamental practice in NEB, is used in only 0.54% of the corn area, 0.43% of the rice area and 1.88% of the beans area. Although cotton and sugarcane represent the largest proportion of cultivated area involving modern techniques, even they are still mainly grown by traditional methods. Both for food and nonfood crops, agriculture in NEB is almost entirely based on