

SECTION 6

Smallholder Vulnerability and Response to Drought

6.1. Introduction

Previous sections have outlined the drought climatology of the Kirinyaga-Embu-Machakos area and the results of several agroclimatic models that indicate agricultural and livestock potentials in different climatic scenarios. Even using very simple models, it is clear that climate and weather are the primary variables in determining potential productivity (and its temporal and spatial patterns) in the area. The next step is to trace the importance of variability in agricultural and livestock production to smallholder agriculturalists. Over 80% of the population of Kenya resides in the rural areas, and the majority are smallholder farmers. Development policy in Kenya has long recognized the importance of drought in planning agricultural and livestock development. It must also incorporate consideration of the smallholders' vulnerability to drought and their means of coping with recurrent droughts of various magnitudes and durations.

In general, most smallholder farmers can be characterized as "satisfyzers" (Rempel and Lobdell, 1985) – balancing labor and capital investment in agriculture with a number of other activities and satisfied with a reasonable level of productivity, rather than trying to maximize output in all, or any distribution of, seasons. Climatic variability includes extremes of good and bad years. A complete description of smallholder agriculture must be related to expectations in both good and bad years. Thus, maize is widely grown in places where sorghum is more suitable. Livestock are kept as insurance, even in areas of acute shortages of grazing land. As discussed in Subsection 6.3 below, one strategy for coping with drought is to take maximum advantage of good years, and save the surplus (food or cash) for times of need. The primary concern in this section is with the impact of, and responses to, the bad years.

Impacts of climatic variability, drought in particular, are difficult to trace in a socioeconomic environment that includes many other variables. Subsection 6.2 provides a framework for identifying the linkages between drought and household economics, by presenting a typology of food entitlement and household characteristics. Subsections 6.3 to 6.7 utilize this typology to describe smallholder vulnerability to drought and drought coping strategies. Two scenarios (10% and 2% probability of drought) defined in previous sections are used here. As in the case of the agroclimatic models, only a few relevant variables (which largely determine the patterns of impacts and responses and are amenable to policy decisions and interventions) have been chosen for discussion. The methodology is admittedly descriptive. A fuller treatment of the relationship between climatic variability and household economics would require elaboration of household budget models, for which the present data base is inadequate. A more quantified approach would require computerization and analysis of the Central Bureau of Statistics (CBS) household budget survey of 1981–1982 and the CBS/NES drought survey. Both of these data sets are near the stage of systematic analysis. The present analysis, therefore, does not indicate the percentage of population likely to experience certain impacts or undertake various coping strategies (except in rough categories shown in *Table 6.3*). An indication of the distribution of the effect of food shortages may be inferred from the distribution of wealth. Within a community, economic differentiation among rural smallholders is occurring according to access to the cash economy, rather than through differing levels of agricultural productivity. Between agroecological zones the primary differentiation is the ability to raise productive cash crops, rather than inherent differences in productivity or food self-sufficiency.

Typically, a smallholder in Kenya is defined as a rural landowner with less than 22 hectares (Central Bureau of Statistics, 1985). In the drier areas, this may be increased somewhat so that sedentary agropastoralists are included. The discussion focuses on smallholders and generally excludes the landless and urban dwellers, due to the lack of relevant data, although the impact of climatic variability is certainly significant among these groups of people. There are few pastoralists in the study area (*see* Campbell, 1985, for an assessment of drought responses in the neighboring pastoral areas). Large landowners in this area tend to be managers of capitalist farms and ranches and are thus quite distinct in their vulnerability and response to climatic variability.

An important observation of this section is that household well-being and responses to drought are primarily determined by nonclimatic factors. This is supported by national nutritional surveys. Nutritional status is an indicator of vulnerability to drought and the impact of changes in sources of food supply. Where nutrition in “normal” times is poor, due to any number of conditions, the population is likely to be even more vulnerable to drought: there is little margin for food shortages. Young children are most sensitive to nutritional deficiencies and various measures are commonly used. The percentage of children below a standard height for age (HA) index indicates those who are stunted, reflecting a long-term nutritional deficiency. Wasting, which may be a short-term phenomena, is measured by low weights for age (WA) or weights for height (WH), if age is unknown. In the most recent nutritional survey (1982), children