In many regions where FEWS NET works, the majority of the population grows food in subsistence rain-fed agricultural systems as all or part of their income generating activities (Galvin et al., 1997). Access to food for these farmers as well as people who do not farm involves small, informal markets where grain is bought and sold. Food prices are therefore influenced in these markets both by local production and by the price and availability of food produced elsewhere. FEWS NET is working towards monitoring the coupled response of food prices to food production through predictive economic modeling. This chapter will describe how FEWS NET uses price data and the predictive model and how it may be used in FEWS NET’s analysis.

The most rural agriculturalists in semi-arid Africa have a flexible response to food supply and demand. Farmers typically sell a portion of their crop on the market after harvest, save a portion for consumption, and purchase food from the market as their own supplies diminish later in the year. This interaction with the market tends to amplify the response of market prices to the production of low-cost, locally grown grains such as millet. The farmer’s flexibility in timing the sale of grain provides a linkage between grain prices in the spring and summer and the vegetation conditions during the previous summer’s growing season. When cereal prices rise generally as they have done in recent years, however, farmers with cereal stocks to sell can significantly benefit. Rainfall variability from year to year changes how much grain is available for sale in the market, which has implications for future food security of the region.

Other people in the countries where FEWS NET works have no agricultural land and thus are completely dependent on the price of food in the market to determine access. When these individuals also work in the agricultural sector as laborers, vulnerability to periodic crashes in the agricultural labor market due to weather-related crop failure, coupled with simultaneous sharp increases in food prices can cause extreme food insecurity. Variations in the global commodity prices also have an important role in determining local food prices, particularly in Southern Africa, a region well integrated into the global food economy. When the South African maize harvest goes poorly and commodity prices are high generally, regions with weak
economies and poor terms of trade can have difficulty in importing sufficient grain, resulting in localized price increases.

Higher food prices can cause food insecurity among the most vulnerable in a population even in times with adequate or even abundant food supplies (Sen, 1981). Early warning of these price increases can enable organizations to increase food or income assistance in order to reduce the loss of lives and livelihoods as well as the cost of providing these services (FEWS, 2000). FEWS NET has a variety of strategies to monitor food price variations, although these vary from region to region, and to integrate remote sensing information into these observations for improved price prediction and monitoring. This chapter will focus on prices, price monitoring and how FEWS NET will begin to use remote sensing in the monitoring process.

12.1 Monitoring for Early Warning

FEWS NET has developed food market systems to regularly monitor changes in the price of food in order to understand variations in food access in the context of food security. The structure and performance of food markets are central to the normal flow of food from field to table. In contrast to FEWS NET’s normal focus on household-level dynamics as the unit of its food security monitoring and assessment, market price analysis examines the performance of key components in the larger food marketing system (e.g. retailers, wholesalers, transporters, the market policy environment, infrastructure, financial markets, etc.), and their roles in assuring food security through providing access. The system identifies factors that affect the market’s retail functions at the national or regional, or macro-economic levels, and examines factors such as import/export policies, internal trade and movements of food, infrastructure issues, financial environment, etc. It can identify indicators that could be monitored to identify earlier than has previously been possible potential causes of the system’s failure. It can also assist in identifying market-specific remedial interventions that might be implemented when food insecurity threatens an area, and the market system’s failure appears imminent.

In the past five years planning and preparation for crises, particularly in regions that experience problems frequently, has increased in importance (Buchanan-Smith et al., 1995). Clearly anticipation of future problems makes for better integration with humanitarian aid sources that require lengthy negotiation, early purchasing, mobilization, and shipping of food aid (Choularton, 2005). The necessary precision of the information needed for planning and forecasts of possible future food insecurity is far lower than that required to estimate current food aid needs. Recent research has enabled the projection of vegetation index dynamics up to four months into the future (Funk et al., 2006) that could be incorporated into operational analyses of food security. FEWS NET is working to develop methods that apply the projections to planning for future food aid to enable the estimation of spatial locations and severity of future problems in regions at risk.