(5) Agroforestry

Improves soil fertility and provides livestock fodder

Figure 5: Agroforestry

(6) Changing crop types

Planting drought resistant crops such as millet, sorghum, cassava and pigeon peas

Figure 6: Millet and Sorghum

(7) Increased use of manure/ fertilizer

Combined use of manure and fertilizers supplies adequate nutrients hence an increase in crop yields and economic gains

Figure 7: Crop A has manure and fertilizer while crop B has none of the two

(8) Water harvesting

A water pan helps in harvesting water during the rainy period for use in the dry period

Figure 8: A water pan used as an adaptation mechanism by small holder farmers in Kitui and Tharaka

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Adaptation Mechanisms to Curb the Impacts of Climate (rainfall and temperature) Variability

A Pamphlet for use by Extension Personnel and Farmers in Tharaka and Kitui Central Sub-Counties

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Why adapt to climate variability?

•Smallholder farmers in Tharaka and Kitui suffer the adverse effects of climate variability, especially variations in rainfall and temperature

•This has had a negative impact on agricultural production and is attributed to the fact that most of their agriculture is rain-fed

•There is therefore need for adaptation as a fundamental and necessary response to the threats posed by climate variability

•Adaptation refers to all adjustments that reduce the vulnerability of farmers to conditions caused by climate variability

•Smallholder farmers in these areas have characteristically adopted adaptation/coping mechanisms to help in reducing the overall vulnerability to climate variability shocks

Evidence of rainfall and temperature variability

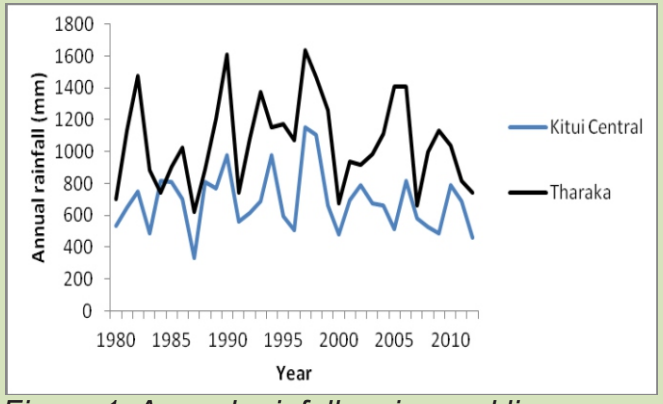

Figure 1: Annual rainfall series and linear trends for Tharaka and Kitui from 1980 to 2012

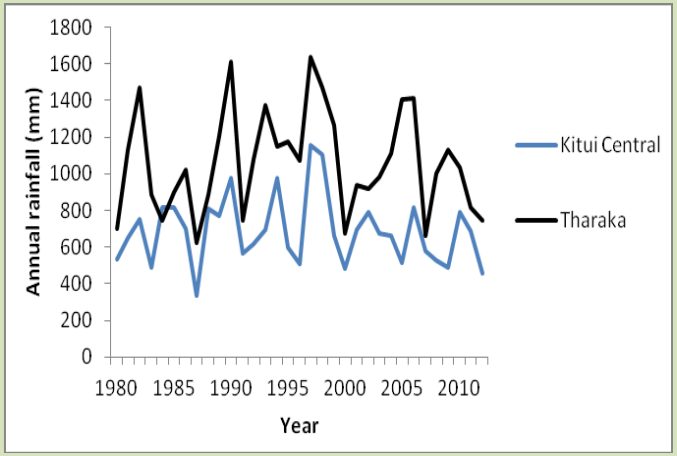

Figure 2: Mean annual temperature series and linear trend for Tharaka and Kitui from 1980 to 2012

Adaptation mechanisms used by Smallholder farmers in Tharaka and Kitui in the order of preference

1) Storing food for future use

The abundance crop harvested in the current season is stored for use during the lean period when climatic conditions are not favorable for crop growth.

Figure 3: A wooden granary for food storage

(2) Change of planting dates

Perfect timing of planting dates should be keenly observed by smallholder farmers as it is a key factor which strongly affects crop production in rainfed agriculture

(3) Changing of crop varieties

Farmers are encouraged to plant short maturing period crop varieties e.g. Katumani. This ensures that crops utilize the limited soil water from the rainfall.

(4) Crop rotation

Crop rotation is planting of different crops on the same piece of land in alternating seasons

Figure 4: Crop rotation

The system ensures that the crop planted in the current season benefits from the residual effect of the previous season's crop (e.g. by conserving moisture), thus reducing the risk of total crop failure when the climatic conditions are not favorable.