This research work was conducted between March 2008 (before start of long rains) and August 2008 (the season for harvesting maize), in Sauri Millennium Village, sub location of Yala division, Siaya district, Kenya. The general objective of this study was the adoption of legume fallows in Sauri millennium village with specific objectives; (i) To study the current status of legume fallows in Sauri millennium village (ii) To investigate the leguminous tree species for high fuelwood production, (iii) to find out the role of leguminous tree species for the improvement of soil fertility and food production in the study area, and (iv) To assess rudimentary economic implications on households from the use of legume fallows. The methodology used was a field survey based on stratified random sampling on households with, and without legume fallows. The size of the sample frame was based on the Millennium villages project households (three hundred (300) households), out of which ninety (90) households were selected for sampling. Structured questionnaire combined with observation and existing documentation were used to gather data for objectives i, ii and iii, while soil tests, fuelwood quantification and maize yield estimates were done to gather data for objective iv. Social variables were analyzed by use of SPSS package, and t-test used to compare average costs and average savings from fuelwood. Soil spectral analysis was done and calibration models developed from existing Sauri soil spectra and used to make predictions for the new soil samples, and principle component analysis (PCA) model developed to compare the distribution of the two sets of soil spectra within the same spectral space. Analysis of variance (ANOVA) tests were used to compare statistical differences between treatments i.e. means of treatments for soil attributes and means of maize yield. The results showed that, soil fertility and fuelwood production were the motivating reasons for adopting legume fallows. *Tephrosia candida* is the most recommended for fuelwood and together with *Mucuna pruriens* and *Tephrosia vogelli* showed better soil attributes. Mixed intercropping with *Tephrosia candida* produced 2.2 tonnes per hectare of fuelwood compared to *Crotalaria paulina* 0.8 tonnes per hectare. All fallowed treatments produced high maize yield up to 5.5 tonnes per hectare compared to non fallowed at 4.6 tonnes per hectare and the controls at 3.6 tonnes per hectare. In conclusion the study has shown that, combining legume fallows with crops has enabled farmers to spend less to buy fuelwood from market, while producing high crop yields on their farms. This has generally improved the livelihood of the rural community. This study recommends, a thorough economic analysis of the intervention, cation, introduction of other leguminous tree species, provision of credit facilities to farmer, and the promotion of agricultural productivity which is among the key strategies in Sauri, in order to ensure sufficient fuelwood and food security in the area.