Declining land productivity is a major problem facing smallholder farmers in central Kenya. This decline is caused by low soil fertility caused by continuous cultivation without adequate addition of external nutrients. Two experiments were established during the 2004 short rains in two distinct agro-ecological areas (Mucwa and Mukuuni - sub humid & Machang'a - semi arid) in the central highlands of Kenya with an aim of enhancing soil productivity. The 1St experiment evaluated biomass transfer systems in Machang'a and Mucwa (two sites, one with fertile soils and the other with less fertile soils). Effects of organic sources (tithonia, lantana, mucuna, calliandra and manure) and combinations with mineral N fertilizer on maize yield, soil chemical properties, economics returns, soil mineral N, N uptake and fertilizer N equivalencies were determined. The 2nd experiment was an intercrop established in Mukuuni and Machang'a to determine the contribution of legumes (bean, cowpea and groundnut), plant spacing (conventional and MBILI) and P fertilizer on overall productivity of the intercropping system. Data was subjected to ANOVA and means separated using LSD ($P < 0.05$). Sole manure, sole tithonia and sole calliandra generally recorded the highest maize grain yields in Machang'a, Mucwa poor and Mucwa good sites, respectively. Generally the maize grain yields were lower in the treatments with fertilizer alone compared to the treatments with organics across the three sites in the four seasons due to the poorly distributed rainfall. The maize grain yields were higher in the sole organics compared to the integrations (organic+mineral fertilizer) in Mucwa good and poor sites, however in Machang'a, the sole organic had higher yields during the short rain seasons while the integrations recorded higher yields during the long rain seasons. There was a general decline in soil chemical properties over the seasons, even with the seasonal input application in all sites. Manure was superior in terms of improving soil chemical properties, for instance, it recorded an increase in soil pH, magnesium, potassium, calcium and nitrogen in all sites. The economic returns in all sites were low, with negative net benefits, and benefit cost ratio (BCR), which were in most cases less than one. The bulk of mineral-N found in the soil was in the form of nitrate-N in all sites, however in Machang'a the amount of ammonium-N was relatively high due to the drier condition of the soils in that site. In seasons when rainfall was well distributed, the N uptake was relatively high with most of the mineral N being taken up during 0-12 weeks after planting (WAP). High fertilizer N equivalencies of manure, calliandra, tithonia and mucuna were reported in all sites, suggesting that the organics have beneficial roles other than the addition of soil N. In the intercrop experiment, neither legumes nor maize responded to P application in Mukuuni while legume yield was increased by an average of 40% and maize yields more than doubled with P application in Machang'a. In both sites, legume yields tended to be higher when planted at the conventional intercrop, irrespective of legume species or P application; though not consistently significant in all seasons. Maize yields were significantly higher with conventional spacing when intercropped with groundnut, while in MBILI spacing, highest yields were observed for maize intercropped with beans. Generally net benefits, BCR and return to labour were highest when P fertilizer was not applied in both the MBILI and conventional intercrops in Machang'a and Mukuuni. In Machang'a, there were no economic advantages of MBILI over the conventional intercrop, while in Mukuuni MBILI intercrop had more economic benefits than the conventional intercrop especially in the maize/bean intercrop. The N equivalencies were very low both in the MBILI and conventional intercrops, actually in most cases the N equivalencies were negative. The role of organics was well displayed in the study area, which is prone to poor distributed rainfall, therefore further research should be carried out to explore issues of soil moisture conservation.