Soil management can significantly influence crop production under rainfed farming systems in semiarid areas. The central highlands of Kenya, which produces about 20% of the country's maize, cover both areas with high and low potential for crop production because of rainfall amounts and reliability. To increase crop yields, and reduce production risks, better use of available rainfall is required. The objective of the study was to evaluate the effect of soil surface management strategies with or without subsoiling and their interaction on maize productivity under erratic rainfall conditions. The trial followed a 2 × 3 split-plot design replicated thrice in randomized complete blocks. The main factors were; subsoiling and no-subsoiling while the sub factors were three soil surface modification methods; mulching, cover crop (cowpeas) and bare (control). Seasonal soil-moisture, phenological stages' durations, grain and biomass yields were key parameters. Analysis of Variance was used for data analysis and the differences between treatment means were examined using least square difference at 5% level of significance. The trial results showed that, relative to cover crop without subsoiling treatment interaction, subsoiling led to 200 and 228% increase in maize grain yields during the short rains season of 2009 (SR09) and long rains season of 2010 (LR10) respectively (significance p=0.05). The grain performance was inversely related to the soil moisture content at 30 cm depth. Subsoiling in interaction with cover crop treatment showed consistently low soil moisture content throughout the two seasons while mulching, irrespective of with or without subsoiling, was consistently high throughout the two seasons. The low soil moisture content in the No-subsoiling treatment was probably due to inaccessibility of roots to the deeper horizons of the soil profile. The inverse relationship especially after subsoiling was due to enhanced root penetration and soil water uptake that led to healthier and leafier crops hence higher water uptake through transpiration leading to depressed soil moisture content. The study highlighted the importance of subsoiling and soil surface modification as key farm management practices that have direct impact on maize productivity under erratic rainfall conditions.