

# **Soil chemical properties, sunflower growth and yields as affected by double digging, mulch and compost in central Kenya**

Miriti, J.M.; Thomas, D.B.; Gachene, C.K.K.

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## **Abstract**

Double digging as a form of deep tillage and the utilisation of compost and mulch for improved crop production in the densely populated areas of Kenya is rapidly gaining attention the Kenya Institute of Organic Farming (KIOF, 1994). The aim of double digging is to loosen the deep soil layers for intensive crop production. Compost is aimed at supplying essential plant nutrients and enhancing soil physical properties through addition of organic matter (FAO, 1977; Pfirter et al., 1981). Organic matter has beneficial effects on soil fertility because it increases nutrient storage capacities (Tisdale et al., 1985; Woomer et al., 1995), Mulch modulates soil diurnal temperature, reduces evaporative soil water loss and improves infiltration (Russell, 1988). All these have positive influences on crop growth. These management systems are being applied to Nitisols which have a generally good workability (GAO-LTNECO, 1988). However, concerns have been raised as to whether double digging is actually beneficial. There is little information on the effects of tillage systems in combination with compost and mulch application on soil chemical properties of Nitisols and crop growth. The objective of this study, therefore, was to determine the effects of double digging, compost and mulch on soil chemical properties of a humic Nitisol and growth characteristics of sunflower.