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Effect of organic manure application on apple productivity and chemical composition of leaves, fruits under sandy calcareous soil conditions

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Field trials were conducted in Baghdad village about 10 km south of Ammrifah, Alexin textured calcareous soils in this area (30% CaCO₃) to study the effect of organic manure application on apple productivity and chemical composition of leaves, fruits and soil properties under sandy calcareous soil conditions. The yields of randomly selected trees were assessed from the compost and FYM treated areas of the plantation. The results of the first season indicated that the number of fruit treated with compost was increased by 79% compared with FYM and although fruit weight was slightly smaller, the overall yield from compost was greater from the compost treated trees (69% increases). In the second season the number of fruit was 21% greater from the compost treated trees, although this was not statistically significant ($P=0.093$). However, mean fruit weight and yield Feddan were significantly improved by compost compared with FYM (22% and 38% respectively). This yield benefit from compost is similar to the previous year (40%) and yields were 26% greater overall for both treatments reflecting increasing production through tree growth and the residual effects of the manure treatments. Apple leaves which sampled from the compost and FYM treated trees and analysed for nutrients and trace elements showed significant concentrations of all elements and were greater in leaf from the FYM treated trees. On contrast, such concentrations were lower in the case of compost for P, K and Cu presumably due to the better growth of the composted trees effectively which diluted tissue concentrations. Leaf contents of N, P, Fe, Mn and Zn were within the normal ranges for optimum growth, although only just in the case of Mn and Zn. Copper was deficient in both treatments and K was deficient with compost but not FYM, the latter presumably due to the greater K content of FYM compared with compost. The results of the chemical analysis of fruit samples from compost and FYM treated trees showed that no significant differences were detected between the two treatments although the direction of the increases in concentration was not consistent. Soil samples showed that the major factor affecting soil properties was the very high pH (8.24) which will restrict the availability of trace elements. Soil salinity of 2.2 dS m⁻¹ is also marginal for apple production.

Biography

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