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Effects of organic fertilisation on sweet orange bearing trees

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In a study realised over a five year period (2001-2006) on orange bearing trees [Citrus sinensis (L.) Osbeck] cv. 'Valencia late', grafted on sour orange (C. aurantium L.), four fertiliser treatments were applied: citrus by-products compost (CB), poultry manure (PM), livestock waste compost (LW) and mineral fertiliser (MF), as control. The trees, with the exception of MF treatment, were organically grown since 1994 in the experimental farm of CRA-ACM in Lentini, Sicily, and received the same N input every year.

The research objectives were to evaluate the effect of long term repeated organic fertilisers application on i) soil fertility; ii) citrus bearing trees nutritional status by means of leaf analysis and iii) yield and fruit quality, determining parameters currently utilized to evaluate sweet orange production either for fresh consumption and processing.

The CB treatment showed significantly higher values of Corg in soil than MF treatment (about 30%). Corg in PM and LW treatments was higher than MF treatment (13% and 20%, respectively), but these differences were not statistically significant either from the control treatment nor from the soil fertilised with CB. Similar trend was showed by the humic and fulvic C being the values of the CB treatment significantly higher than the control. PM and LW treatments had intermediate values, without statistical significance.

The long term addition to soil of a quality compost (CB) with high C/N ratio increased the level of nutrients wich usually show low availability for citrus plants (P, Fe, Zn, Mn), as demonstrated by leaf analysis.

No significant difference was noticed as far as yield was concerned, whereas CB treatment enhanced some fruit quality parameters.