EUROPEAN PROJECT WASTEREUSE (LIFE 10 ENV/GR/594)

Best Practices for Agricultural Waste Treatment and Reuse in the Mediterranean Countries

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Organic wastes as alternative to inorganic fertilizers for a more sustainable agriculture

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LIFE 10 ENV/GR/594
Environment Policy & Governance

WASTEREUSE Objectives:

- Evaluation of innovative and traditional tecniques for organic waste (OW) treatment
- Establishment of the best management practices for OW application to the main market crops
- Protection of soil quality by the use of cultivation practices based on OW addition, environmentally aceptable.
- Reduction of C foot-print through OW recycling and minimizing the use of inorganic fertilizers.

Organic wastes (OW) apart from improving soils characteristics may slowly release nutrients available to plants by mineralization. Their use as fertilizers alone or in combination with mineral fertilizers (MF) may be a suitable option to reduce the use of MF and the environmental pollution risks derived from their use and fabrication.

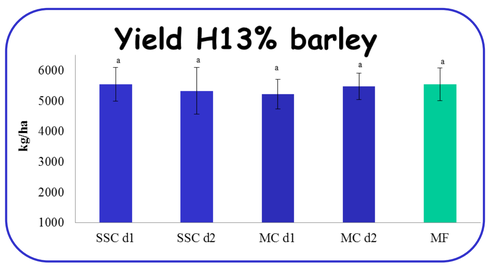
In this work, performed within the WASTEREUSE Project, two composts have been used as organic fertilizer in barley and wheat cultivation in order to evaluate their effect on crop yieldd an soil quality in comparison with the use of traditional MF

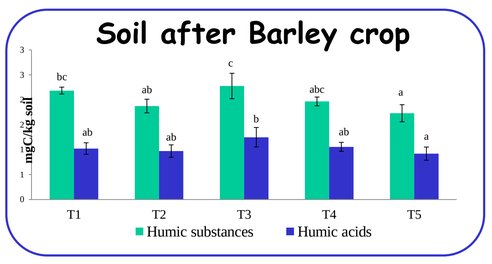
Treatments (4 Blocks)

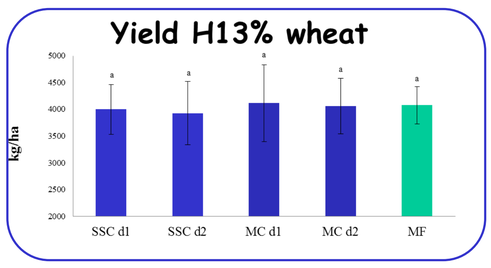
- T1: 25 t/ha of sewage sludge compost (SS) before sowing
- T2: 14 t/ha of SS before sowing + 45 kg N/ha NAC27 (barley) or 60 kg N/ha (wheat)
- T3: 38 t/ha of compost from sheep and goat manure (CM)
- T4: 21 t/ha of CM before sowing + 45 kg N/ha (barley) or 60 kg N/ha (wheat)
- T5; 350 kg/ha of a complex N-P-K (8-24-8) before showing + 90 kg N/ha (barley) or120 kg N/ha (wheat) applied in two different physiological stages of plant growth: tillering and first node formation (half dose each time).

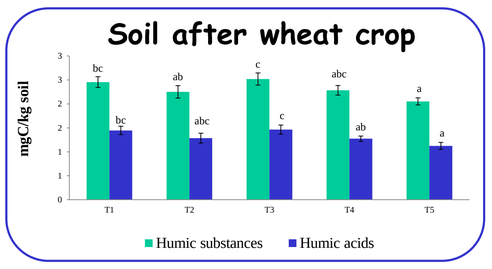
Results

Effects on Crop Yields



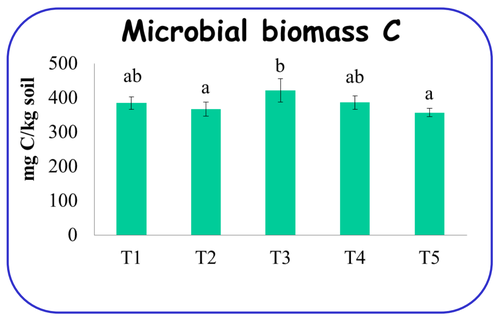


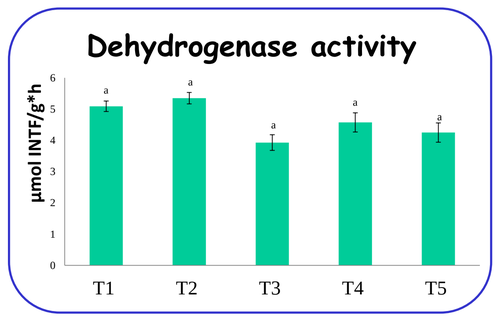




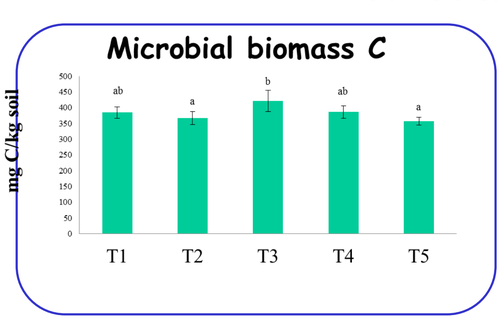
Micro-Biological Properties

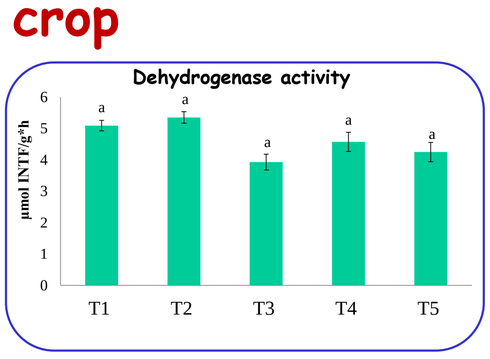
Barley crop





Wheat crop





Conclusions:

a) Added at suitable rate, OW composts added alone or in combination with inorganic N fertilization, can be a good alternative to inorganic fertilization for cereal cultivation.

b) Apart from improving yield, composts improve soil microbiological characteristics, whilst giving similar grain yield and quality than conventional inorganic fertilization for cereal.

c) Inorganic fertilizers can be total or partially sustituted (depending on compost dose) by organic amendments with the environmental befit derived from this fact