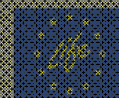


CSIC



Organic wastes as fertilizers for a more sustainable agriculture in lettuce cultivation

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LIFE 10 ENV/GR/594
Environment Policy & Governance



Objective

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 successive lettuce crops were carried out in order to evaluate the effect of OW on crop yield and soil quality in comparison with the use of traditional MF

Treatments (4 Blocks)

1. Conventional mineral fertilization (Hoagland's solution): H100
2. 50% of the conventional mineral fertilization: H50
3. 20% of the conventional mineral fertilization: H20
4. Compost from sheep and goat manure (1.6 g N/plant): MC
5. Compost from sewage sludge+vegetal pruning (1.6 g N/plant): SSC
6. MC + H50
7. MC + H20
8. SSC + H50
9. SSC + H20

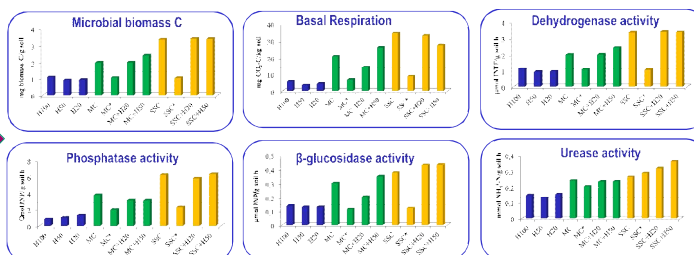


WASTEREUSE Objectives:

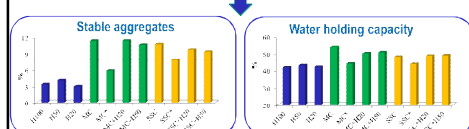
- Evaluation of innovative and traditional techniques for organic waste (OW) treatment
- Establishment of the best management practices for OW application to the main market crops
- Protection of soil quality by the use of cultivation practices based on OW addition, environmentally acceptable.
- Reduction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

Results

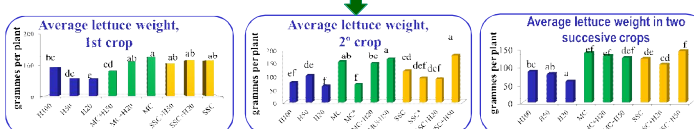
Micro-Biological Properties



Soil Physical Properties



Effects on Crop Yields



Conclusions:

- Composts, when used at adequate dose meet all lettuce plant nutrient requirements, leading to lettuce yields similar or even higher than those obtained with inorganic fertilization.
- Apart from improving lettuce growth, composts improve soil physical and microbiological characteristics, amended soils showing higher stable aggregates and microbial activity than inorganically treated soils after two successive lettuce crops.
- Inorganic fertilizers can be total or partially substituted (depending on compost dose) by organic amendments with the environmental benefit derived from this fact