LIFE + Environment Policy and Governance

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Project: Best practices for agricultural wastes (AW) treatment and reuse in the Mediterranean countries

www.wastereuse.eu

Action 6 - Development of alternative agricultural practices. Demonstration in greenhouse and field experiments (Italy)

Deliverable "Report with cultivation practices applied during the action, followed by technical and economical assessment as well as, qualitative and quantitative comparison between new and traditional cultivation practices (Italy)"

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1. Executive summary

In the frame of the project Wastereuse, Action 6 (*Development of alternative agricultural practices- Demonstration, Italy*) aims to demonstrate the potential agronomic value of different treated and untreated organic wastes, regarding their suitability to promote crop production and quality and the potential effect on soil quality.

Cultivation of different vegetables and aromatic plants (lettuce, rocket, lamb's lettuce, basil, rosemary and cabbage) was implemented in greenhouse and in open field. Some pictures regarding the trials are presented in Annex 1. Experiments were carried out at CERSAA premises (greenhouse and open field) or in a private farm using the selected soil and the wastes according to the results of Action 4 (chemical and phytotoxicity analysis on cress, respectively). Three treatments were carried out: i) soil and selected compost (rates: 5, 10, 20% v/v), ii) soil and zeolite (3% w/w) and iii) soil, selected compost (rates: 5, 10, 20% v/v) and zeolite (3% v/v). An untreated control experiment also run. Four replicates were always included in the trial design. The experiments were carried out in duplicate (during two following years: 2013/2014 and 2014/2015) and data are collected and statistically analysed.

The following parameters were measured and monitored according to the different crops considered:

- effect on biomass production
- selected soil parameters: pH, EC, organic matter content, total N, C/N ratio, available P, exchangeable K, exchangeable Mg, exchangeable Ca, cation exchange capacity (CEC), NO_3^-, NH_4^+, total S, available Fe
- selected parameters of plant biomass (leaf analysis): total N, total P, total K, total Mg, total Ca, total Fe, total Zn, total Mn, dry matter

With regards to the present deliverable biomass production is taken in consideration in order to provide indications about the most suitable combination of selected compost and zeolites that can replace chemical fertilization in terms of suitability to promote crop establishment and growth.

Technical and economic data and qualitative and quantitative comparison between the new and the traditional cultivation practices are also provided.