



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 4 - Development of alternative agricultural practices-Lab experiments (Italy)

Deliverable "New cultivation methods with the use of treated or untreated AW. Effects on soil quality (Italy)"

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Executive summary

In the frame of Action 4 a survey of different soils collected in Italy and in Greece and of wastes coming from different agricultural sectors/process was carried out. Characterization of wastes is described in the deliverable “Characterization of wastes treated by different technologies regarding their suitability for agricultural use and especially for vegetable and ornamentals cultivation under Italian climatic conditions” where an overall suitability of wastes to promote crop production was assessed and, based on this, two of them (composts) were selected for the subsequent trials foreseen by the project. Characterization of soils was carried out through targeted chemical analysis based on the reference Italian regulations that apply to the sector of wastes. 19 kinds of soil were collected and analyzed with regards to 27 chemical parameters in order to get a clear indication about the absence of critical parameters that could have impaired the overall quality of soils when mixed with the selected wastes and, consequently, to negatively affect the growth of the plant species used for the experimentation. Around 500 analyses were carried out in the time span between January and March 2013. According to such analysis it was possible to select two suitable soils, both coming from Liguria Region, that were used in pot trials together with wastes.

Pot trails were set up using the selected composts mixed at two rates with the selected soils; presence/absence in the growing media of zeolite (applied at 2 application rates) and fertilizer was also considered. Evolution of main chemical parameters characterizing the substrate and the leachates was assessed through the analysis of 16 and 11 chemical parameters respectively. More than 5000 analysis were carried out totally on substrates and leachates.

The mixture of natural soils with the two kinds of selected compost (Ammendante Compostato Misto – ACM and Ammendante Compostato Verde – ACV) proved to be suitable for the cultivation of potted plants being able to enrich the substrate with macro and micro elements and therefore promote plant growth but only after a proper development of the root system. Their valuable properties are related also to buffer capacity and the possibility to positively increase organic matter content and CEC of the substrate they are amended with. The addition of zeolite had no clear effect on the composition of substrate when considering each parameter separately, but it can anyway improve the production of plant biomass especially when combined with fertilizer (as it was demonstrated in the deliverable “Guide for open field and greenhouse cultivation of the tested crops - Italy”).