Development of specific agricultural practices with the use of recycled wastes suitable for intensively cultivated Mediterranean areas under degradation risk

aridwaste

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Project objectives

✓ Evaluation of the main agricultural treated wastes (ATW) of different origin.

✓ Development and demonstration of sustainable alternative cultivation practices for the main market and nutrient demanded crops in Mediterranean by recycling nutrients and water from ATW taking also advantage of the beneficial properties of natural zeolites.

✓ Formulation of dissemination scenario for common ATW management and application strategies in Med basin

✓ Integration of appropriate actions and measures that should be adopted at local, regional, national, transnational level.

✓ Development, implementation and wide dissemination of an integrated, recourse based scenario for the protection and improvement of serious degraded cultivated soils in the Mediterranean area.

Project activities

- Evaluation of the application practices of ATW in intensive crops;
- Evaluation of the treated wastes;
- Quality plant response tests;
- Application in the field of ATW and zeolites;
- Use of ATW in Mediterranean region. Development of an integrated scenario for the management of ATW and zeolites in intensive crop production.

Environmental benefits

- ❑ Proper management of organic wastes contributes to the protection of the quality of water and soil by reducing the use of chemical fertilizers thus reducing the leachate and protecting renewable and not renewable resources (soil, water bodies, etc);
- ❑ The use of ATW in intensive crop production favors the balance between soil conservation and food safety;
- ❑ The introduction of the zeolites increases the effectiveness of ATW in terms of nutrient retention and water use efficiency;
- ❑ The development and use of sustainable alternative cultivation practices increases the environmental awareness.


Economic benefits

- Cost reduction in the field of waste management and increase in water and nutrient use efficiency and energy saving;
- Improving crop production efficiency;
- Increased application of treated agriculture wastes as an alternative to chemical fertilizers.
- Enhancing competitiveness products through the simultaneous preservation and improvement of the quality of natural resources and reduction of management costs.


Main findings

- Zeolite and compost derived from agricultural wastes have a role to play even in unfertilized plants. Composts provide nutrients to plants and the addition of zeolite contributes to additional biomass production. The positive effects of zeolite (clinoptilolite) on biomass and on nutrient status of plant and soils appear when it is mainly combined with compost or reduced doses of fertilizer. However in some cases addition of zeolite determine a higher biomass production in comparison to those treatments where only compost was applied. The possible mechanism is by improving the CEC (Cation Exchange Capacity) especially in the light textured soils;
- Addition of zeolite to the source of N can improve the nitrogen use efficiency. Such aspect can be of crucial important in areas which are classified as “areas vulnerable to nitrates” where a specific legislation applies in order to limit nitrate contamination of superficial and deep water bodies. The use of zeolites as additives of growing media normally adopted for pot cultivation can help preserving the quality of water bodies limiting the negative effect deriving from a continuous nitrate-based fertilization normally still applied through sprinkler irrigation;
- Soil microbial activity is favoured by zeolite application;
- Some compost have shown suppressiveness against certain soilborne pathogens and therefore they can be considered as a tool among others for an integrated approach for the control of plant pathogens