

# Sustainable fertilisation of an intensive horticultural basin - IT

## 1. Policy Objective & Theme

- SUSTAINABLE USE OF RESOURCES: Preserving coastal environment (its functioning and integrity) to share space
- SUSTAINABLE USE OF RESOURCES: Sound use of resources and promotion of less resource intensive processes/products

## 2. Key Approaches

- Participation
- Socio-economic
- Technical

## 3. Experiences that can be exchanged

The system of sustainable fertilisation management could be replicated in any intensive agriculture coastal areas of Europe.

## 4. Overview of the case

Green wastes produced in the coastal territory of Maccarese (Province of Rome) can be used in a sustainable way for the production of high-quality compost and the fertilisation of the horticultural fields of the area. This reduces agricultural nitrogen inputs and eutrophication of coastal waters.

## 5. Context and Objectives

### a) Context

The initiative took place in Maccarese-Torrimpietra, a basin of 8043 ha., partially in the Natural State Reserve of the Roman littoral, about 30 km from Rome. It is one of the principal horticultural growing areas of the region. The site is an area of intensive horticulture, and, as a result, produces much vegetable waste bio-mass; 2.9 tons of biomass produced per hectare or 23,031 tons per year in total. This causes environmental problems such as high levels of nitrogen components seeping into soil, surface and ground waters leading to severe eutrophication problems of the coastal waters.

### b) Objectives

To create a local sustainable management system for green waste bio-masses through compost recycling.

## 6. Implementation of the ICZM Approach (i.e. management, tools, resources)

### a) Management

ARSIAL - Agenzia regionale per lo Sviluppo e l'Innovazione dell'Agricoltura del Lazio is the Regional Agency of Lazio for Development and Innovation in Agriculture. It is an administratively autonomous research Institution.

## b) ICZM tools

The initiative introduced composting in a local plant using best available techniques in order to produce high-quality organic fertiliser. Green waste was transformed at a composting plant in Maccarese. The plant was built with maximum attention for the environment, with outgoing air filter and fermentation sludge recycling systems. The plant can treat up to 88 tons/day of green biomass. The fermentation basin has a capacity of 2500 tons and the process takes two months for the complete transformation of waste in compost. The plant produces only quality compost using selected collection waste.

Through the surveying activities, the compost was optimally applied to the same farms that produced the green wastes, thereby replacing traditional chemical fertiliser. This compost was exclusively utilised on selected fields and horticultural products obtained from them were evaluated, packed and sold utilising a specific trade label called "fertiLIFE". The productive fields have become part of a stable information source consisting of instructional posters and other simple exhibition tools that were created near the composting plant.

The initiative also succeeded in introducing an information management structure for the management of waste bio-mass, re-distribution of compost and supply of information. It improved the process of transferring recycled bio-mass and the possible local storage before moving to the composting plant.

Monitoring was carried out before and after the application of compost to the demonstration fields contributing to the increased knowledge of organic fertilisation techniques. A thorough analysis of the situation of green waste producers and potential compost users was conducted and results recorded in a specifically created database. Field tests were conducted on over 30 ha. at four farms and on a variety of crops. Soil and water analyses were carried out in all fields before and after a three-year period. A general increase of organic matter in the soil thanks to the use of compost was recorded although it was concluded that a complete substitution of synthetic fertilisers with compost was not feasible. Horticulture products obtained during the field tests were marketed in a local supermarket. A full cost-benefit analysis and the environmental impact was conducted.

## 7. Cost and resources

The total budget was €1,071,454 of which there was a Life contribution of €532,817.

## 8. Effectiveness (i.e. were the foreseen goals/objectives of the work reached?)

The final cost benefit analysis stressed the competitive fitness of this green resources management model and evaluated the possibility to double it in other European areas characterised by intensive agriculture production with high Nature values. Compost fertilisation increases organic content and aerobic microbes in the soil. It also helps to reduce CO<sub>2</sub> emissions into the atmosphere as no green waste is burnt. The use of synthetic chemical fertilisers (N, P, K) is also reduced. The net reduction in CO<sub>2</sub> emissions per year corresponds to 980 million t/year.

## 9. Success and Fail factors

Organisation of guided visits to the composting plant and the farms where the tests were carried out contributed to the increased awareness of the general public.

## 10. Unforeseen outcomes

The composting plant was awarded a quality label by the CIC (Italian Composting Association). Jobs were created through the building of the composting facilities.

## 11. Prepared by

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## 12. Verified by

It has not been possible to verify this case.

## 13. Sources

- LIFE02 ENV/IT/000089 Final Report: Layman's Report



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