



Sustainable Management of Pistachio Wastes



Proposals from LIFE AgroStrat project



<http://www.agrostrat.gr>

**“Sustainable Strategies for the improvement of seriously
degraded agricultural areas:
The example of *Pistachia vera* L”.**

LIFE11 ENV/GR/951

Wastes from pistachio nuts processing are very rich in organic matter and nutrients. However, they also contain significant amounts of polyphenols and therefore,

they cannot be discharged non-treated on soil

IMPORTANT INFORMATION: Before application of wastes and organic materials on soil, the authorized competent authority must be informed and provide the appropriate permission

WASTE MANAGEMENT

**After dehulling wastes
Should be collected in tanks
of appropriate dimensions**



**Wastes are left to
precipitate and separate in
solid and liquid phases.
Simple constructions may
be used for the separation**

Wastewater

Mixing with rainwater at a minimum ratio of 1:5 and use for irrigation. Prior use for irrigation, wastewater must be analyzed for the chemical and biological parameters defined by the national legislative framework

Or

Discharge of wastewater in well protected ponds. Wastewater is left to evaporate and the remaining sludge is used as feedstock material for composting together with solid dehulling waste

**Ponds should be shallow to
facilitate evaporation
(max depth 1.5-2.0 m)**



Solid Waste

Composting and use in Agriculture

Composting of solid wastes is an easy, economical and environmentally friendly treatment process that ensures also economic benefits

Mixture Preparation

- 10 parts of solid pistachio waste (after dehulling)
- 5 parts of well digested manure
- 1 part straw
- 1 part zeolite (i.e. clinoptilolite, can be found in market)



Procedure

- Apply the materials in layers, one above the other, alternately and prepare a pile or a windrow
- Good mixing and wetting – Maximum high of pile/windrow 1.5m
- Cover the mixture with protective composting textile
- Aerate the mixture often by turning (for 2-3 months)
- Keep mixture temperature below 65°C and moisture between 45 and 60%. Wett the mixture periodically
- Frequent temperature and moisture monitoring
- During maturity phase (the last 2 months) the compost must be kept at a protected area
- Chemical analysis of the ready compost-definition of application rate





Composting by pistachio producers in Aegina island, Greece



Compost application on soil increases organic matter, provides soil with essential nutrients, decreases the risk for soil degradation and protects soils against desertification



The composts produced in Aegina island were of very good quality and satisfied the European Standards for application on soil

Composts' composition:

- Organic matter 28 – 34%
- Nitrogen 3 – 4%
- Potassium 1.0 – 1.6% (as K_2O)
- Phosphorus 0,5 – 0,8% (as P_2O_5)

From the presentation of M.K. Doula, P. Kouloumbis, K. Elaiopoulos entitled: "Turning wastes into valuable materials-Valorization of pistachio wastes in agricultural sector" in the International Conference SYMBIOSIS 2014

