

*Action B1: Economical evaluation of the composting procedure*

The economical evaluation of the composting procedure was carried out taking into account all the technical and logistic aspects, and the steps identified to optimize the compost production within the prototype plant at “Prima Luce” site.

In the followings tables are listed the details and costs for different hypothesis of starting matrices (woody structuring materials and fresh crop residues), for the operational and handling actions during the composting procedures and basic control equipments of composting parameters. Particularly, two operational approaches were taken into account to produce “light” compost (low density compost – 8% on dry weight basis of nutritional material) and “heavy” compost (high density compost – 20% dry weight basis of nutritional material) starting from different combination of matrices (nutritional and structuring materials).

Starting Matrices: Structuring woody material (*starter*)

Source	Types of training system and plant distance	Material preparation	Pruning intensity	Quantity m <sup>3</sup> /ha <sup>-1</sup>	Transport	Cost €/m <sup>3</sup>
Olive orchard	“Globe” (5x5m)	Shredded on site	Heavy	16 m <sup>3</sup>	Truck with big bags	23-30
Olive orchard	“Palmetta” (6x5m)	Shredded on site	Heavy	38 m <sup>3</sup>	Truck with bins	35-40
Olive orchard	“Globe”	Shredded on composting site	Heavy	-	Tractor with trailer	13-17
Oak	-	Shredded on site	-	-	Dump truck tipper	15-19
Kiwi fruit orchard	“Pergole” (6x4.5m)	Shredded on site	-	10 m <sup>3</sup>	Truck with bins	30-40
Plum orchard	“Y transverse” (4.5x1.5m)	Shredded on composting site	Orchard explant	-	Truck with spider	16-20



Starting matrices: Fresh crop residues (*nutritional*)

Crop	Dry weight	Transport	Source distance (km)	Cost €/m <sup>3</sup>
Salads	Low	Truck terraces	< 5	2-3.5
Salads	Low	Truck with bins	<5	1.5-2.5
Tomato plants	High	Tipper truck	15	4-7
Fennel	Low	Tractor with trailer	9	0.8-1.5

Operations to obtain “light” compost (low density compost)

“light” compost procedure			
Operation	Cost €	€/m <sup>3</sup>	€/t
Materials mixing	22.0	1.5	2.9
Compost pile preparation	28.0	1.9	3.7
Insufflation	16.5	1.1	2.2
Maintenance	83.0	5.5	11.1
Turning	34.5	2.3	4.6
Water management	0.4	0.0	0.1
Compost sieving	184.1	12.3	24.5
Various	30.0	2.0	4.0
<b>Total</b>	<b>398.6</b>	<b>26.6</b>	<b>53.2</b>

Operations to obtain “heavy” compost (high density compost)

“heavy” compost procedure			
Operation	Cost €	€/m <sup>3</sup>	€/t
Materials mixing	11.0	0.6	0.9
Compost pile preparation	14.0	0.7	1.2
Insufflation	16.5	0.8	1.4
Maintenance	71.0	3.6	5.9
Turning	34.5	1.7	2.9
Water management	0.4	0.0	0.0
Compost sieving	237.7	11.9	19.8
Various	30.0	1.5	2.5
<b>Total</b>	<b>415.1</b>	<b>20.8</b>	<b>34.6</b>



Comparison of “heavy” and “light” procedures (from starting matrices to compost distribution)

<b>Operation</b>	<b>€/m3</b>	<b>€/t</b>
Nutritional material (“light” compost)	1.82	49
Nutritional material (“heavy” compost)	1.82	15
Structuring material (“light” compost)	17	23
Structuring material (“heavy” compost)		14
Procedure (“light” compost)		53
Procedure (“heavy” compost)		35
Compost distribution		30
<b>Total (“light” compost)</b>		<b>154</b>
<b>Total (“heavy” compost)</b>		<b>79</b>

Control management equipment for the realization of the composting procedures

<b>Equipment</b>	<b>Total Cost for the composting site (€)</b>
System for the automatic control of temperature during the composting procedure (probes and software for remote parameters monitoring)	10.000