Lesson 14

Developing investment plans for vermicomposting

Many variables need to be taken into consideration when determining the scale of investment for vermicompost production. Some of them follow:

- Whether it is for commercial or personal farm needs,
- Amount of accessible input organic waste,
- Financial resources owned,
- Environmental and climate conditions,
- Logistics and technical facilities,
- Traditional approach or technology usage preferences,
- Continuity of demand for Vermicomposting.

14.1. Small-Scale Investment

Small farms use pits and bins of various sizes (or IBC tanks) to meet their worm compost needs. These systems, which do not require advanced mechanization, make sustainability possible for small agricultural enterprises with low investment costs. In this section, the requirements for annual 5 tons of vermicomposting production with IBC tanks are reported (Table 8).

Table 8. **Investment budget for small-scale vermicomposting facility.**

Equipment&Material	Quantity	Unit Price	Total Price (Euro)
IBC Tank	10	40	400
Transport IBC	1	200	200
Gravel (150 kg)	1	150	150
Sand (100 kg)	1	50	50
Wood for lids	10	25	250
Pallets	20	3	60
PVC Pipes (3 meter)	10	5	50
Manure (kg) (farm waste)	4.000	0	0
Irrigation pipes (3 meter)	2	5	10
Earhworms (E. fetida) (kg)	10	90	900
Sprinklers	50	0,4	20
Haystacks	4	25	100
Thermometer	1	84	84
Hygrometer	1	106	106
		Total Budget	**2.380**

14.2. Large Scale Investment

This section will provide an overview of the investment requirements and costs for a large-scale vermicomposting plant (Table 9). People who are considering investing in this field can increase or decrease the technical equipment needed depending on the production scale, mechanization preference, amount of solid waste, and human resources. Windrow, raised bed and continuous flow (flow through) systems are commonly used techniques in large-scale vermicompost production.

The presented facility will have a production capacity of 720 tons/year of solid vermicomposting (Table 10). Creating a process with a continuous flow

system in the facility was simulated. The most important advantages of this system are that it enables the fertilizer to be supplied continuously at the desired time and also saves time by performing the sifting process. The return of investment is 2.1 years. The internal return rate of the investment is 41%.

Table 9. **Machinery and equipment required for worm compost production in continuous flow system.**

Material/equipment	Qty/unit price	Total Price (Euro)
Earthworm	500.000	5.000
Continuous Flow System	5	54.000
Heat Treatment Furnace	1	8.000
Fertilizer Mill / Crusher	1	4.800
Vibrating Fertilizer Screening Machine	1	1.900
Fertilizer Packaging Machine	1	9.100
Pellet Machine	1	6.900
Forklift	1	31.650
Office Furnishing	1	3.200
	Total	**124.550**

Table 10. **Investment cost (Large scale vermicomposting facility)**

No	Quantity	Price (Euro)	Total
1	Preliminary Work Expenses	4.405	It is envisaged as 3% of the total construction cost.
2	Engineering and Project Expenses	3.126	It is envisaged as 2% of the total construction cost.
3	Land and Landscaping	2.936	It is the cost required for the excavation of the area where the facility will be established and the transportation of the excavation by trucks. It was determined as 3% of the construction cost.
4	Construction Work Expenses	146.840	The total closed area is 800 m2.
5	Main Facility Machinery and Equipment Expenses	124.550	It is the cost of machinery and equipment and furnishing, the details of which are given in Table.
6	Vehicles, General Expenses	20.000	The facility will need 1 forklift to transport and store the products produced by the business.
7	Working Capital Need	25.000	Invested period working capital requirement
Investment Amount		**326.857**	