

# Compost production from Palm Leaves

Mays T. Al Sawalha

1 Mahmoud Hammad



# Why to compost palm leaves

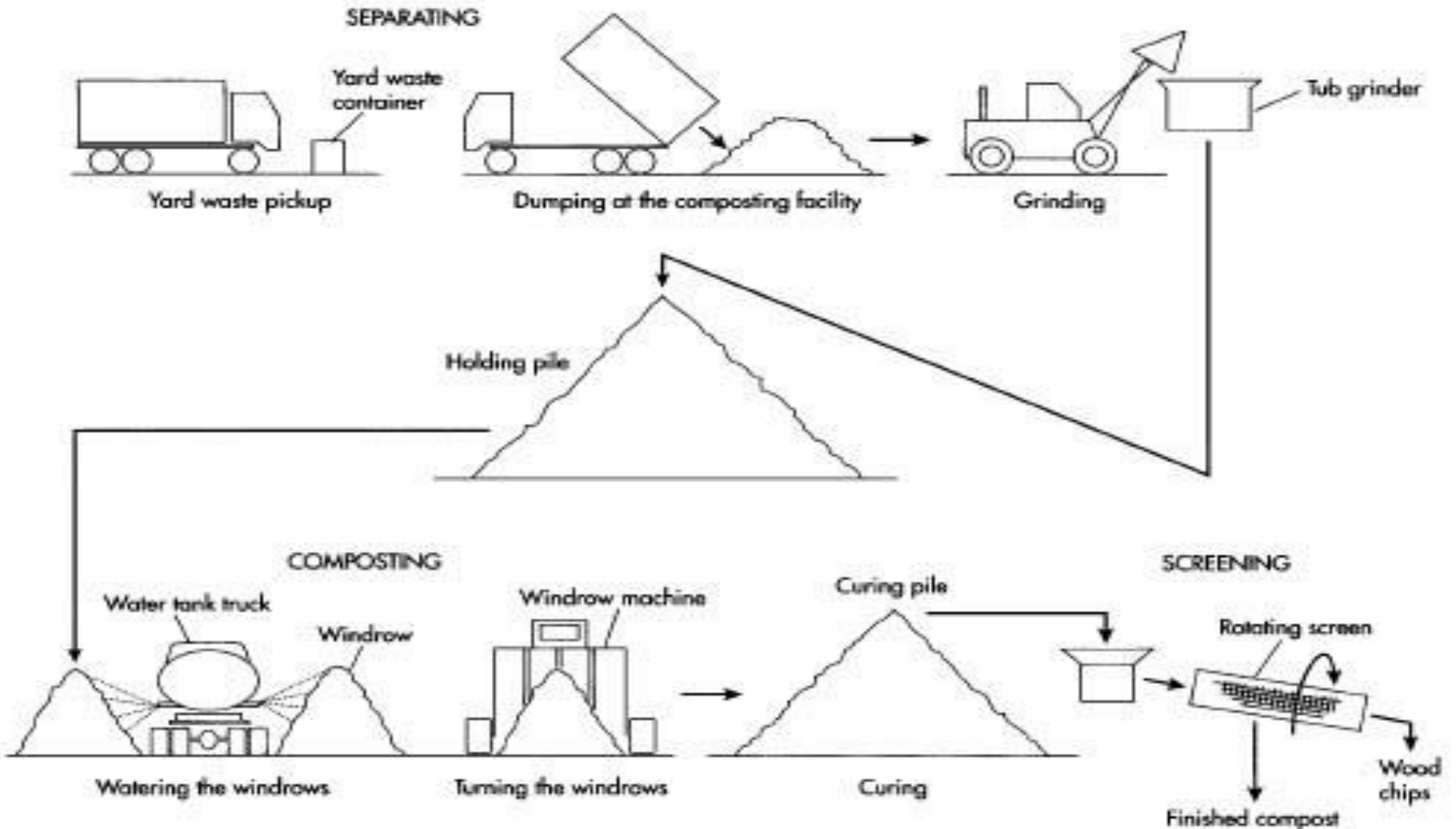
- Palm farms are growing rapidly in Jordan
- Each palm tree produces 100Kg/year leaves as waste
- High content of carbon, nitrogen and other nutrients.



# Features and Benefits

- Nutrient availability
- Supplies Micro-Organisms
- Improves structure of roots
- Reduce dependency on chemical fertilizers
- Quality results in a short time

# How to Manufacture...





# Market Assumptions

Parameter	Assumptions
Capacity	900 Ton / yr
Work time/ Production time	6 days/week, 8 hours, 1 shift
Selling prices	180 JD/ Ton
Place of Production	Jordan Valley/ Jordan
Product	Organic Compost

# Materials needed per 1 ton of leaves

Materials	Amount
Water	0.5m <sup>3</sup>
Rock	120 kg
Biological activator	400g
Nitrogen fertilizer	15kg
Phosphate fertilizer	10kg

# The depreciation rates

Asset	Depreciation rate in years	Depreciation rate
vehicles	5	20%
machines	10	10%
furniture	10	10%
informatics	4	25%
buildings	20	5%



# Investment Calculations :Buildings

Description	Amounts of investment in JD	Depr. /Year	Depreciation JD
Land of 3 donum	30000	0	0
Container office room	2000	5 %	100
Container storage room	2000	5 %	100

# Investment calculations :Machinery

Description	Amounts of investment in JD	Depr. /Year	Depreciation JD
<b>Tractor</b>	9285.7	10 %	928.57
<b>Tractor cabinet</b>	1714.2	10 %	171.43
<b>Cutting machine</b>	3571.4	10 %	357.14
<b>Machine for mixing</b>	16428.5	10 %	1642.86
<b>sum</b>	31000		3100

# Investment calculations: Processing per 1 ton

Materials	Quantity	Cost per unit (JD)	Depreciation JD
Trees leaves Waste	2 m3	2.50	5.00
Water	0.5 m3	1.20	0.60
Special crushed stones	120 kg	0.04	4.95
Biological activator	0.4 kg	1.57	0.63
Nitrogen fertilizer	15kg	0.05	0.82
Phosphate fertilizer	10kg	0.05	0.45
Package of 25 kg volume	40 pcs	0.05	2
Energy	72.43 liter	0.515	37.30
		Sum	51.75

# Calculations of labors costs

Personal in cost centre	Number	Personnel direct costs/day/labor	Personnel direct costs per working day	Personnel direct costs per ton produced (2.885 tons/day)
Project manager	1	23	23	7.97
Driver	1	10	10	3.47
Cutting machine labors	2	9	18	6.24
Packing labors	3	9	27	9.36
sum of labor cost daily JD	---	----	78	27.04

# Investment Calculation: Off-sites

Description	Amount of investment in JD	Dep. in Year	Depreciation
Hand tools	4000	10	400
Transportation costs	10000	10	1000
On site health insurance license	30000	10	3000
Sum	44000	---	4400

# Calculation of the total investment and depreciation costs

Investment goods	Investment expenditures	Depreciation in %	Depreciation costs
Land of 3 donum	30000	0	0
Container office room	2000	5	100
Container storage room	2000	5	100
Machines	31000	10	3100
Unexpected costs	20000	0	0
Offsite costs	44000	10	4400
Circulating capital	10000	0	0
<b>Total investment</b>	<b>139000</b>	<b>Total depreciation costs</b>	<b>7700</b>

# How much to get as a loan

Total investments needed

139000 JD

- Assume to have 50 % of the needed investment as a loan
- Then loan from Bank is : 69500 JD with assumed 8 % interest rate

# Calculation of the total consumption costs/ton

Investment Goods	Cost JD
Process cost	51.75
Labor Cost	27.04
Total cost/ ton ( material, labor and energy)	78.79



# Calculation of financing costs: Interest paid on debt

Year	Balance of debt	Interest rate(%)	Interest Costs Paid p.a.	Repayment / Paying back loan p.a.
1	69500	8	5560	6950
2	62550	8	5004	6950
3	55600	8	4448	6950
4	48650	8	3892	6950
5	41700	8	3336	6950
6	34750	8	2780	6950
7	27800	8	2224	6950
8	20850	8	1668	6950
9	13900	8	1112	6950
10	6950	8	556	6950

# Self costs per ton of compost

Capacity : 900 ton/year

	Year/ton	1.Year	2.Year	3.Year	4.Year	5.Year	6.Year	7.Year	8.Year	9.year	10.year
<b>Utilization of capacity</b>	---	70%	80%	90%	100%	100%	100%	100%	100%	100%	100%
<b>Quantity in tons</b>	---	630	720	810	900	900	900	900	900	900	900
<b>Costs</b>	costs of 1 ton	Cost/ year	Cost/ year	Cost/ year	Cost/ year	Cost/ year	Cost/ year	Cost/ year	Cost/ year	Cost/ year	Cost/ year
<b>Depreciation Cost</b>	8.56	7700	7700	7700	7700	7700	7700	7700	7700	7700	7700
<b>Financing cost</b>	6.18	5560	5004	4448	3892	3336	2780	2224	1668	1112	556
<b>Labor cost</b>	27.04	24332.7	24332.7	24332.7	24332.7	24332.7	24332.7	24332.7	24332.7	24332.7	24332.7
<b>Process cost</b>	51.75	32604.2	37261.9	41919.7	46577.4	46577.4	46577.4	46577.4	46577.4	46577.4	46577.4
<b>Sum of costs</b>	---	70196.9	74298.7	78400.4	82502.2	81946.2	81390.2	80834.2	80278.2	79722.2	79166.2
<b>Cost/ ton</b>	93.5	111.4	103.1	96.7	91.6	91.0	90.4	89.8	89.2	88.5	87.9

# Cash Flow Calculations

	1.Year	2.Year	3.Year	4.Year	5.Year	6.Year	7.Year	8.Year	9.year	10.year
<b>Turnover Revenue</b>	113400	129600	145800	162000	162000	162000	162000	162000	162000	162000
<b>Depreciation costs</b>	7700	7700	7700	7700	7700	7700	7700	7700	7700	7700
<b>Labor cost</b>	24332.76	24332.76	24332.76	24332.76	24332.76	24332.76	24332.76	24332.76	24332.76	24332.76
<b>process cost</b>	32604.23	37261.97	41919.72	46577.47	46577.47	46577.47	46577.47	46577.47	46577.47	46577.47
<b>Financing cost</b>	5560	5004	4448	3892	3336	2780	2224	1668	1112	556
<b>Lost carried forward</b>	0	0	0	0	0	0	0	0	0	0
<b>Profit before tax</b>	43203.01	55301.27	67399.52	79497.77	80053.77	80609.77	81165.77	81721.77	82277.77	82833.77
<b>Taxes (40%)</b>	17281.21	22120.51	26959.81	31799.11	32021.51	32243.91	32466.31	32688.71	32911.11	33133.51
<b>Profit after taxes</b>	25921.81	33180.76	40439.71	47698.66	48032.26	48365.86	48699.46	49033.06	49366.66	49700.26
<b>cash flow</b>	33621.81	40880.76	48139.71	55398.66	55732.26	56065.86	56399.46	56733.06	57066.66	57400.26
<b>Repayment credit</b>	6950.00	6950.00	6950.00	6950.00	6950.00	6950.00	6950.00	6950.00	6950.00	6950.00
<b>Dividend</b>	26671.81	33930.76	41189.71	48448.66	48782.26	49115.86	49449.46	49783.06	50116.66	50450.26

# Conclusion

- Profit after tax in the first year : 25921.81 JD
- Benefit to cost Ratio (before taxes): 1.62 – 2.05
- Profit to initial investment cost : 18.65% -- 35.76%
- Good Market is near (Jordan Valley)
- Competitive price, normal fertilizer price is 200-300 JD/ton
- Competitive price allows to survive under fuel cost rise
- Environment friendly.

شكراً جزيلاً

Vielen Dank

Thank you