



JATROPHA HANDBOOK

2D EDITION

JUNE 2009

APPENDIX TO CHAPTER 2 (OF 6)

Plantation Establishment and Management



Table 1 - withdrawal of nutrients of one ton of dry seed of Jatropha compared with oil seed crops.

Table 18		Per MT of product comparison of nutrient composition approximation			
Parameter		Oil seed rape	Sunflower	Ground nuts	Jatropha
		Seeds	Seeds	Pods	dry seeds
Production	kg/ha/yr	1000	1000	1000	1000
N	kg	93	37	55	33
P2O5	kg	37	25	14	4
K2O	kg	100	110	23	27
Ca	kg	0			7
Mg	kg	11	20	11	5
S	kg	26	0	8	2

Source: first three crops Plant nutrition for food security, FAO chapter 8

Table 2 - Yields in case of: Optimal water supply (rainfall 1200 - 1500 mm)

Soil Fertility	Bio-energy	Dry Seeds (kg/ha/yr)	Wet Fruit Shells (kg/ha/yr)	Oil (kg/ha/yr)	Presscake (kg/ha/yr)	Power Output (kWh/ha/yr)
High	yield (kg)	6000	18000	1200	4800	n.a.
	biogas (m3)	n.a.	600	n.a.	2400	n.a.
	electricity (kWh)	n.a.	1200	4998	4800	10998
Medium	yield (kg)	2500	7500	500	2000	n.a.
	biogas (m3)	n.a.	250	n.a.	1000	n.a.
	electricity (kWh)	n.a.	500	2083	2000	4583
Low	yield (kg)	750	2250	150	600	n.a.
	biogas (m3)	n.a.	75	n.a.	300	n.a.
	electricity (kWh)	n.a.	150	625	600	1375



Table 3 - Yields in case of Normal water supply (rainfall 700-1200 mm or 1500 - 2500 mm).

Soil Fertility	Bio-energy	Dry Seeds (kg/ha/yr)	Wet Fruit Shells (kg/ha/yr)	Oil (kg/ha/yr)	Presscake (kg/ha/yr)	Power Output (kWh/ha/yr)
High	yield (kg)	3500	10500	700	2800	n.a.
	biogas (m3)	n.a.	350	n.a.	1400	n.a.
	electricity (kWh)	n.a.	700	2916	2800	6416
Medium	yield (kg)	1500	4500	300	1200	n.a.
	biogas (m3)	n.a.	150	n.a.	600	n.a.
	electricity (kWh)	n.a.	300	1250	1200	2750
Low	yield (kg)	500	1500	100	400	n.a.
	biogas (m3)	n.a.	50	n.a.	200	n.a.
	electricity (kWh)	n.a.	100	417	400	917

Table 4 - in case of sub-optimal water supply (rainfall 500 - 700 mm or >2500mm)

Soil Fertility	Bio-energy	Dry Seeds (kg/ha/yr)	Wet Fruit Shells (kg/ha/yr)	Oil (kg/ha/yr)	Presscake (kg/ha/yr)	Power Output (kWh/ha/yr)
High	yield (kg)	1500	4500	300	1200	n.a.
	biogas (m3)	n.a.	150	n.a.	600	n.a.
	electricity (kWh)	n.a.	300	1250	1200	2750
Medium	yield (kg)	750	2250	150	600	n.a.
	biogas (m3)	n.a.	75	n.a.	300	n.a.
	electricity (kWh)	n.a.	150	625	600	1375
Low	yield (kg)	250	750	50	200	n.a.
	biogas (m3)	n.a.	25	n.a.	100	n.a.
	electricity (kWh)	n.a.	50	208	200	458



Tabel 5 - Pest and Diseases in *Jatropha curcas*

Name	Damage and symptoms	Source
<i>Aphthona</i> spp. (golden flea beetle)	leaf damage, larvae damage roots	[1] & [2]
<i>Aphthona dilutipes</i> Jacoby (yellow flea beetle)	severe leaf & root damage, die off	[1] & [2]
<i>Phytophthora</i> spp., <i>Pythium</i> spp., <i>Fusarium</i> spp., etc.	damping off, root rot	[3]
<i>Fusarium moniliforme</i>	leaf spots	[4]
<i>Helminthosporium tetramera</i>	leaf spots	[5]
<i>Pestalotiopsis paraguarensis</i>	leaf spots	[5]
<i>Pestalotiopsis versicolor</i>	leaf spots	[6]
<i>Cercospora jatrophae-curces</i>	leaf spots	[7]
<i>Julus</i> sp. (millipede)	total loss of seedlings	[3]
<i>Oedaleus senegalensis</i> (locust)	leaves, seedlings	[3]
<i>Lepidopterae</i> larvae	galleries in leaves	[3]
<i>Pinnaspis strachani</i> (cushion scale)	die-back of branches	[8]
<i>Ferrisia virgata</i> (woolly aphid)	die-back of branches	[8]
<i>Calidea dregei</i> (blue bug)	sucking on fruits, premature fruit abortion and malformed seeds	[8]
<i>Nezara viridula</i> (green stink bug)	sucking on fruits, premature fruit abortion and malformed seeds	[8]
<i>Spodoptera litura</i>	larval feeding on leaves	[9]
<i>Indarbela</i> spp.	bark damage	[10]
<i>Clitocybe tabescens</i>	root rot	[10]
<i>Colletotrichum gloeosporioides</i>	leaf spot	[10]
<i>Phakopsora jatrophaicola</i>	rust	[10]
<i>Macrophomina phaseolina</i>	collar rot	[11] & [4]
<i>Rhizoctonia bataticola</i>	collar rot	[11]
<i>Pachycoris klugii</i> Burmeister (Scutelleridae)	sucking on fruits, premature fruit abortion and malformed seeds	[12]
<i>Leptoglossus zonatus</i> (Coreidae)	sucking on fruits, premature fruit abortion and malformed seeds	[12]
<i>Achaea janata</i>		[13]
<i>Stomphastis thraustica</i> (blister miner)	leaf damage	[13]