







Costs of Production Work Package 7

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Objectives

- Economic assessment of the whole production chain from establishment, maintenance through to harvest and delivery
- Compare Kenaf to conventional crops in the south EU region



Sources of information

- Data from published sources
- Data from large scale fields within the project.



Input costs

- The cost of all the inputs
- Irrigation not included at this stage



Cost inputs - published data

Location	S. Spain	N Spain	Mississi ppi	Georgia	Texas
Ground preparation	71	71	58	24	66
Seed and sowing	151	151	43	161	57
Fertilization	82	56	133	137	66
Herbicide	32	48	13	34	12
Harvesting	162	109	196	153	
Other costs					16
TOTAL	€498	€435	€443	€509	€217 [*]

*Excludes harvesting



Cost inputs - field data (as grown)

Location	Orestada	Thesselonika	INIA	CETA
Ground preparation	255	255	111	200
Seed and sowing	98	98	76	86
Fertilization	215	215	135	0
Herbicide	54	54	22	50
Harvesting	100	100	72	250
TOTAL	€722	€722	€416	€586



Seed

- Within the project
- Seed cost
 - Seed rate ranges from 5.5-20 kg/ha
 - . Seed cost €3-8 /kg
 - Current US price €5-10 /kg
- Sowing
 - ranges from €25-55 /ha



Fertilizer

- Not always applied
- Nitrogen
 - At sowing range 32-38 kg/ha
 - Top dressing 86-92 kg/ha
- Phosphate
 - At sowing range 53-60 kg/ha
- Potassium (K)
 - At sowing range 53-60 kg/ha



Fertilizer (cost)

- . €128-155
- Application cost
 - . €60



Herbicide

- Herbicides and mechanical weeding were used
 - Herbicide cost ranges from €7-19
 - Mechanical weeding €15-50



Harvesting

. Range from €72-250



Irrigation

- Wide range of costs
- Two parts to the cost
 - Capital costs
 - pump, pipes, application
 - Operating costs
 - Abstraction, running costs, labour



Cost inputs - published data with irrigation

Location	S. Spain	N Spain	Mississi	Georgia	Texas
Ground preparation	71	71	58	24	66
Seed and sowing	151	151	43	161	57
Fertilization	82	56	133	137	66
Herbicide	32	48	13	34	12
Irrigation	159	54	7	72	45
Harvesting	162	109	196	153	
Other costs					16
TOTAL	€657	€489	€450	€581	€262*



Cost inputs - field data (as grown)

Location	Orestada	Thesselonika	INIA	CETA
Ground preparation	255	255	111	200
Seed and sowing	98	98	76	86
Fertilization	215	215	135	0
Herbicide	54	54	22	50
Irrigation	200	150	510	0
Harvesting	100	100	72	250
TOTAL	€922	€872	€926	€586



Irrigation

- Total costs
 - . €150-510



Cost benefits - irrigation

	Yield (air dry 10% mc) tonnes/ha	Costs /ha	Gross Margin/ha
Irrigated	16.8	€405	€207
Not irrigated	13.45	€321	€169



Production costs

- What it costs to grow the crop
- Input costs and the cost of application



Generalised Production costs





Production costs – published data



Production costs – published data





What the expected returns could be from Kenaf



Rest of the world

- High quality product
- Many uses

BUT

- No ready Kenaf market
- Grown on contract for small markets
- Market needs to develop



World production of Kenaf

Source: FAO, 2005





Expected price f	rom Kenaf
Market	Income €/air dry tonne
Wood pulp	50
Bedding	45
Newsprint	36
USA price	60



Income





Gross margins

Income minus production costs



Gross margins - published data

Source:	Costs €/ha	Income €/ha	GM/ ha	Costs €/tonne	Income €/tonne	GM/ tonne
Kalder & Hodges (1998)	691	943	254	36	50	14
Rochelle <i>et al</i> (2000)	449	864	409	24	45	21
Scott & Taylor (1990) irrigated	405	612	207	24	36	12
Scott & Taylor (1990) not irrigated	321	490	169	24	36	12



Gross margins - field data

	Costs €/ha	Income €/ha	GM/ ha	Costs €/tonne	Income €/tonne	GM/ tonne
Orestiada Greece	922	720	-202	77	60	-17
Thessalonika	872	840	-32	62	60	-2
INIA	926	1080	154	51	60	9
CETA	586	660	74	53	60	7



Sensitivity to yield and price





Comparisons with other crops



Comparisons with other crops

- Gross margins presented without support payments
- Kenaf is average project gross margin



Comparative gross margins Italy





Comparative gross margins France





Comparative gross margins Spain





Comparative gross margins Greece





Conclusions

- High yields of 18 t/ha and above may be economically viable for Kenaf on large farms
- Moderate yields of 14 t/ha will be economically viable for Kenaf if the product price is €60/odt.
- Irrigation has a high cost



Data required

- Need to determine irrigation costs and yield benefits (WP2 and WP3)
- Transport costs and distances (WP4,5,6)
- Labour costs (WP2,4,5,6)

