



ECONOMIC VIABILITY OF ENERGY CROPS IN THE EU

THE POINT OF VIEW OF THE FARMER

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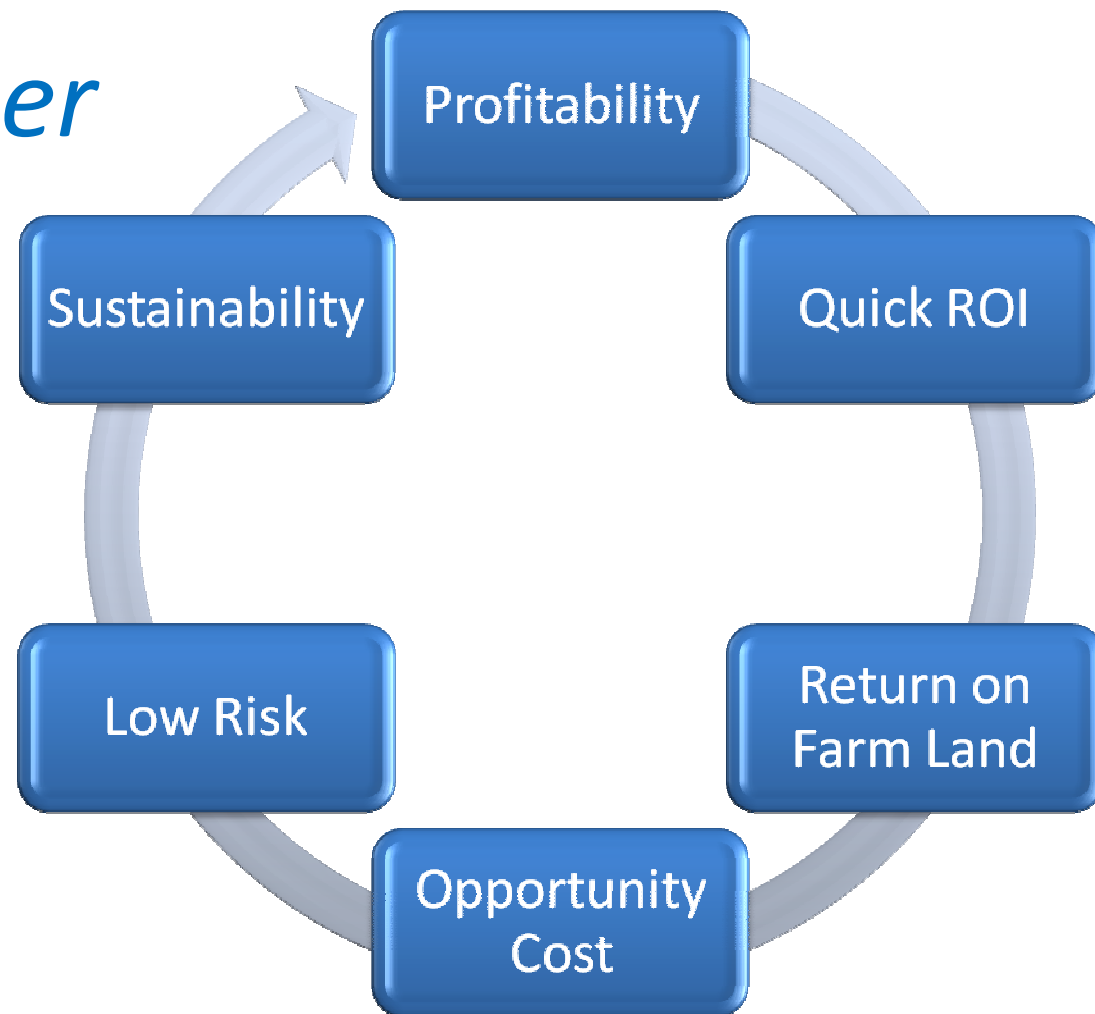
Economic viability of crops

Achieved if the return on investment realised is competitive with other job or investment opportunities which are open to the farmer at the present time and in the near future.

- *Economic benefit*
- *Sustained into the future*

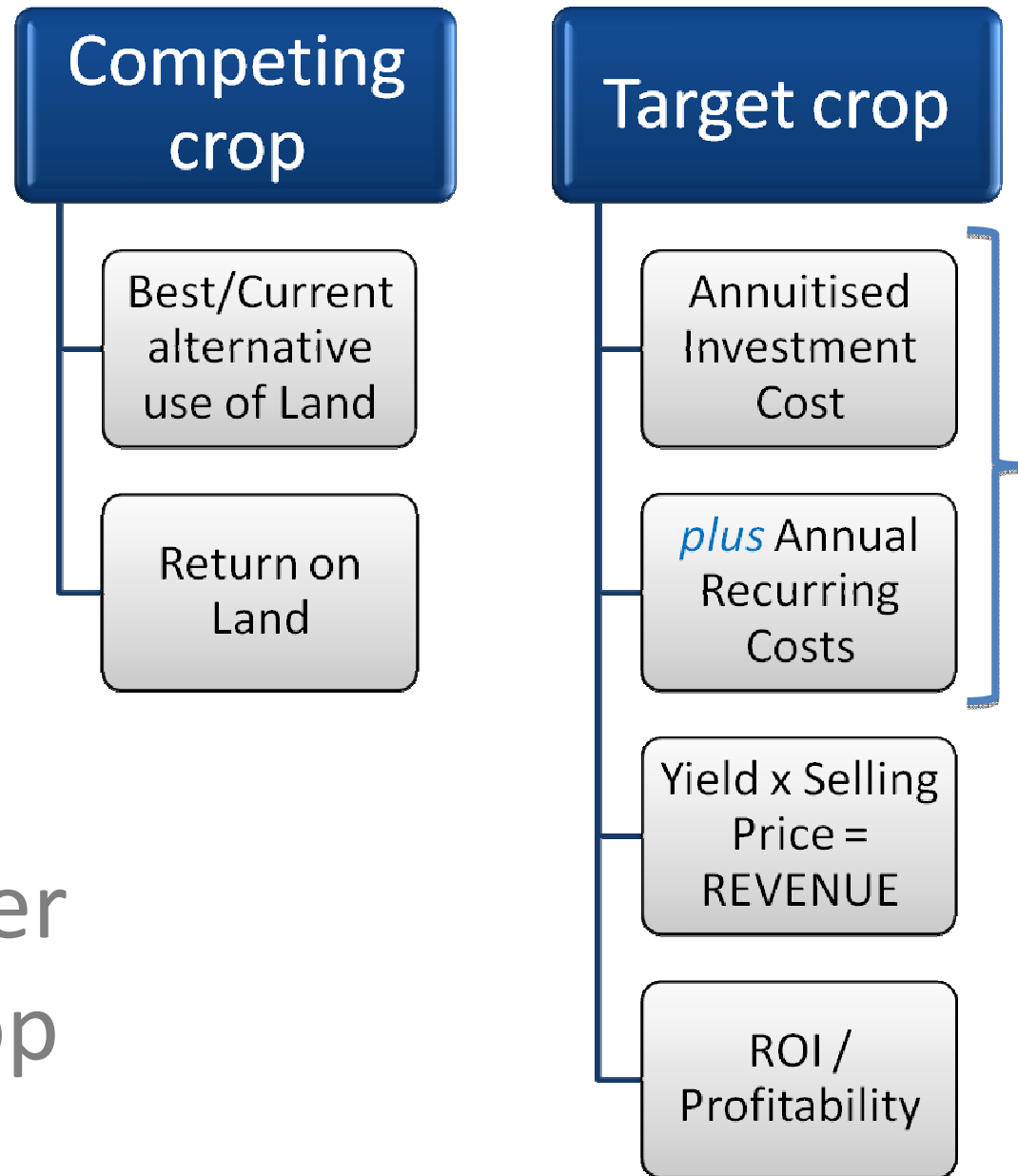


The point of view of the *farmer*



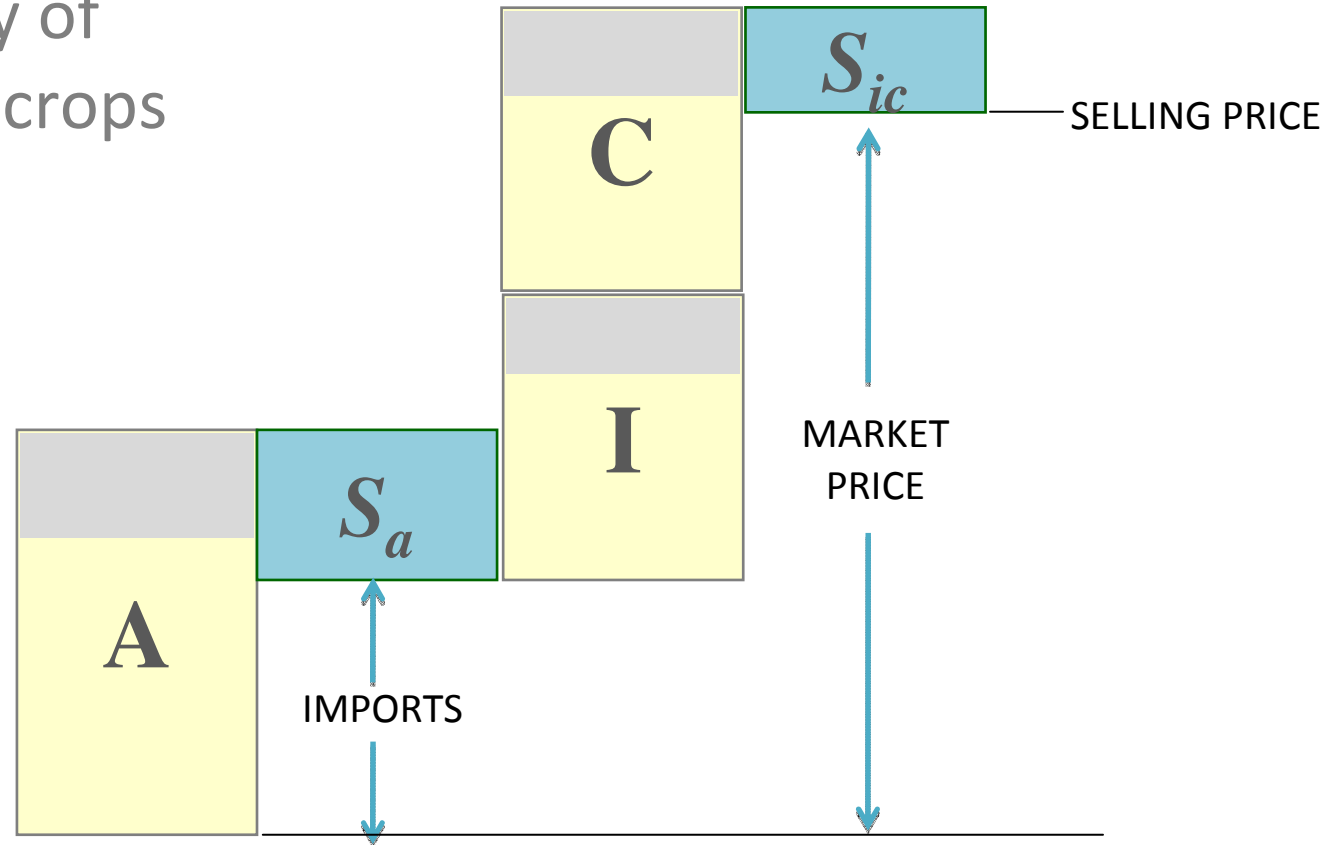


Financial Viability of target Crop assumes superiority over competing crop





Accounting: Viability of energy crops





Economic Viability of Energy Crops

- Energy crops are in general uneconomic without state support
- Rapeseed (DE) needs tax reliefs and/or duties on imports from competitors
- Miscanthus (UK) needs DEFRA grant, (40% on installation costs)



Important points in Econ. Analysis of RAPESEED

Starting in 2004, the German government exempted biofuels from taxes in a bid to reduce CO2 emissions—and introduced a raft of subsidies that sparked a rapid expansion of the biodiesel industry, the biggest in the world. Boosted by high oil prices, biodiesel sales in Germany rose to 2.8 million tons in 2006, accounting for almost 5 percent of the country's total transport fuel sales.

HBR

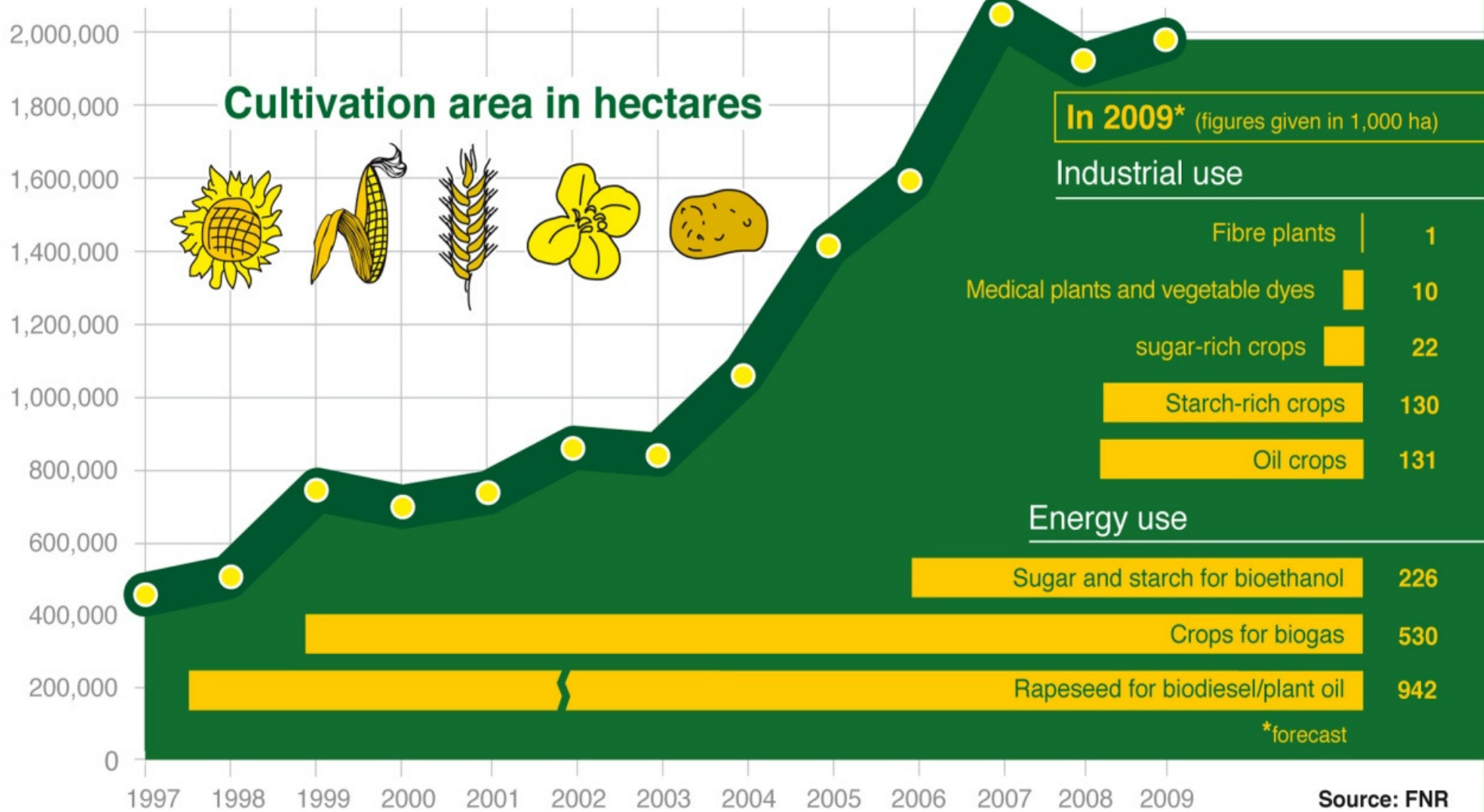
- 2004
 - Biofuel tax relief
 - Capacity built up
- 2006-7
 - Sales peak at 2.8 m tonnes pa
 - Production hits 2.9 m tonnes
- 2008
 - Biodiesel taxation @ 9 ¢/l
 - Production drops to 2.6 m tonnes
- 2010
 - Biodiesel taxation @ 18 ¢/l
 - Production drops to 2.2 m tonnes
 - Capacity 5 m tonnes pa !!!



Cultivation of renewable resources in Germany

Increases in cultivation area between 1997 and 2009

17% of arable land



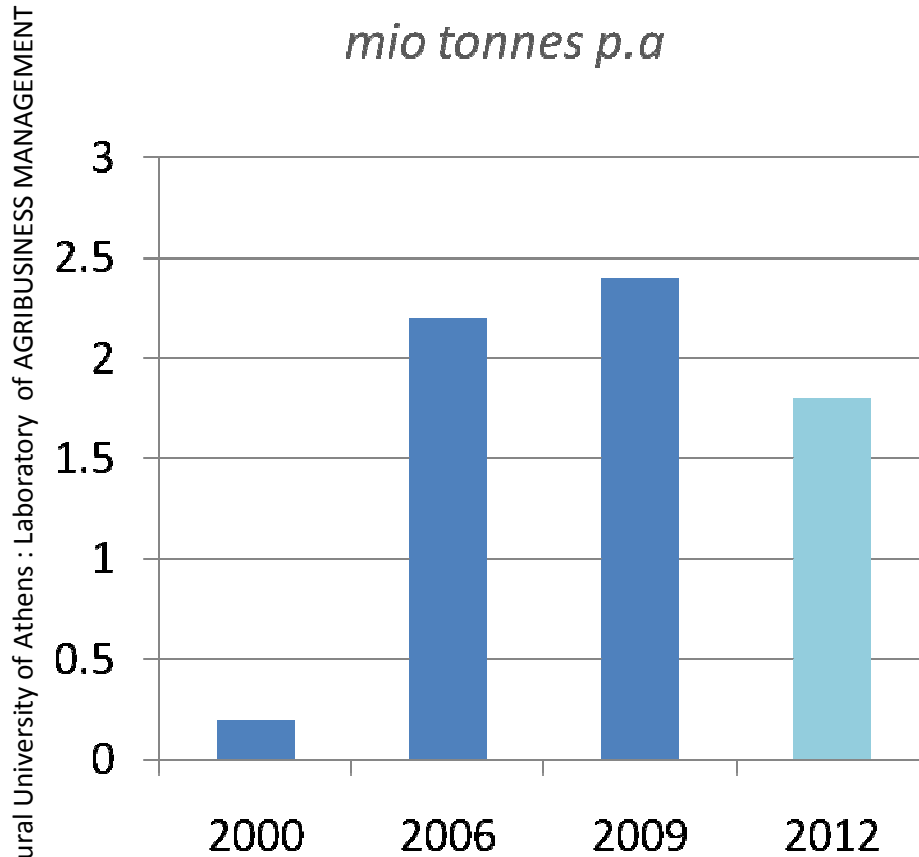
Source: FNR



Rapeseed Cultivation in Germany

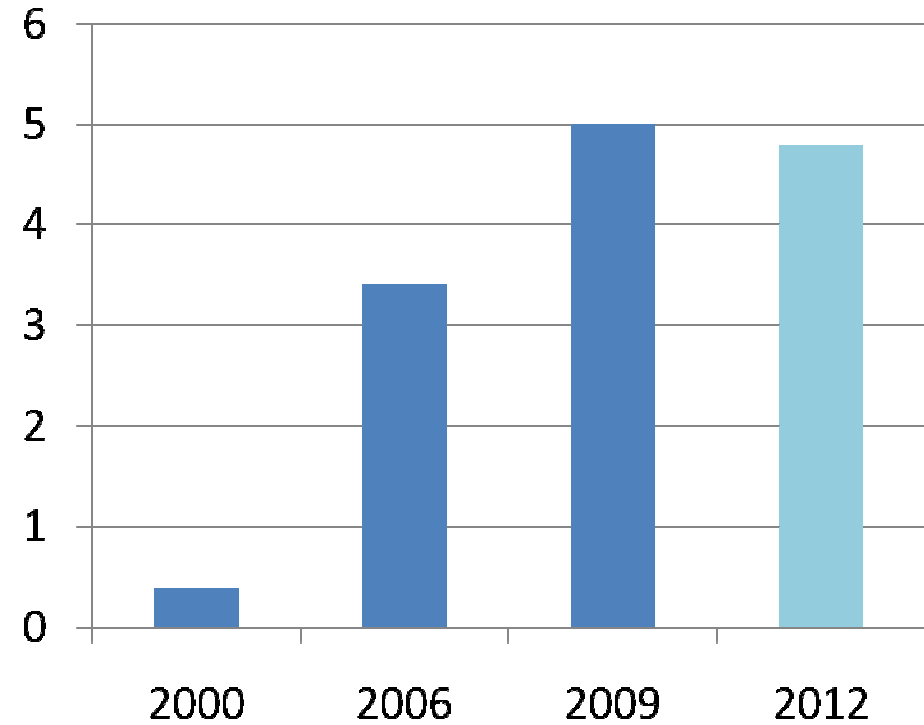
BIODIESEL PRODUCTION

mio tonnes p.a



BIODIESEL CAPACITY BUILDUP

mio tonnes p.a.



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Biodiesel Production Champions

- Germany loses top position in 2010
 - After many years of leadership in biodiesel production, Germany is now behind the USA and Argentina, who is developing into a world exporter.

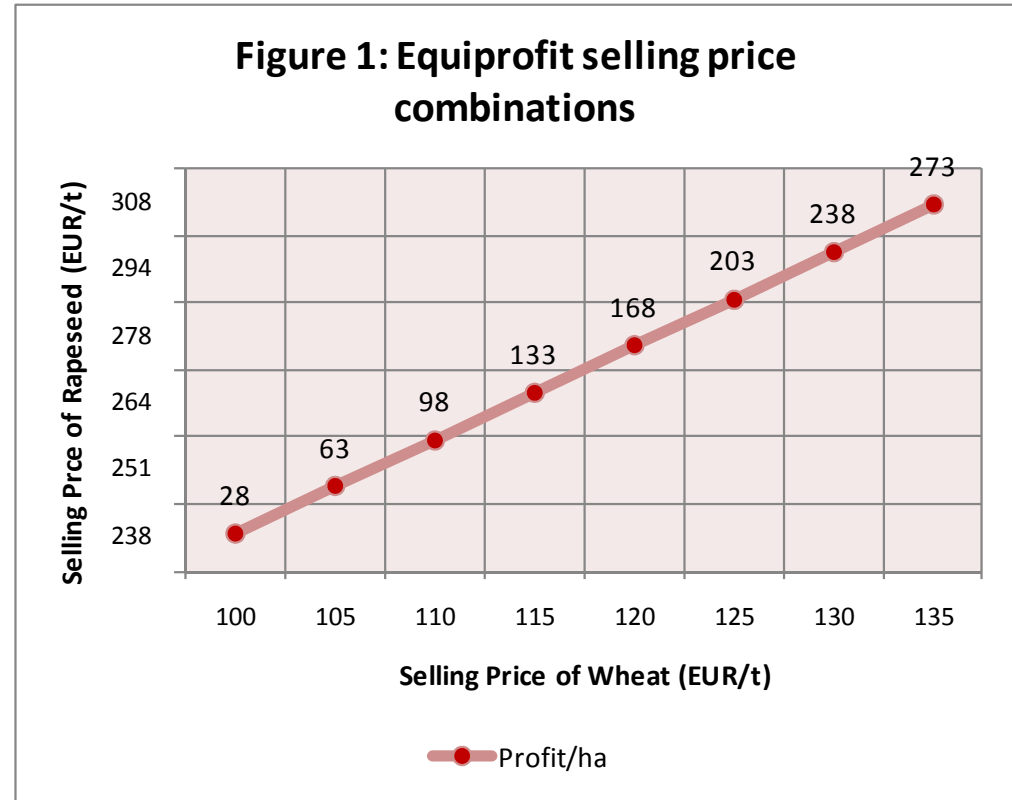
<i>ktonnes</i>	2010	2009
USA	2,500	1,870
ARGENTINA	2,300	1,300
GERMANY	2,200	2,400
FRANCE	2,100	2,000



Rapeseed rotates with cereals. It will be cultivated only if it returns the same profitability

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RAPESEED GERMANY	TOTAL	WHEAT
<i>Land Rent</i>	<i>197.00</i>	<i>197</i>
<i>Fertilisation</i>	<i>270.77</i>	<i>150</i>
<i>Harvesting</i>	<i>95.16</i>	<i>80</i>
<i>Sowing</i>	<i>64.62</i>	<i>55</i>
<i>Spraying</i>	<i>26.16</i>	<i>40</i>
<i>Tillage</i>	<i>149.75</i>	<i>150</i>
TOTAL	803.46	672
TOTAL (€/tonne)	229.56	96
<i>Selling price (€/t)</i>	<i>270.00</i>	<i>110</i>
<i>Profit (€/t)</i>	<i>40.44</i>	<i>14</i>
<i>Profit (€/ha)</i>	<i>141.54</i>	<i>98</i>
<i>Yield t/ha</i>	<i>3,5</i>	<i>7</i>





Economic Viability of Energy Crops in the EU

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Rapeseed yield (t/ha)= 3.5

Wheat yield (t/ha) = 7

RAPeseed	<i>Raw</i>						WHEAT
GERMANY	<i>Energy</i>	<i>Labour</i>	<i>Land</i>	<i>Machinery</i>	<i>Materials</i>	TOTAL	
Land Rent			197.00			197.00	197
Fertilisation	8.24	12.03		15.80	234.70	270.77	150
Harvesting	44.28	17.50		33.38		95.16	80
Sowing	5.17	4.38		10.07	45.00	64.62	55
Spraying	3.69	5.47		7.00	10.00	26.16	40
Tillage	87.33	31.73		30.69		149.75	150
TOTAL	148.71	71.11	197.00	96.94	289.70	803.46	672
TOTAL (€/tonne)	42.49	20.32	56.29	27.70	82.77	229.56	96
Selling price (€/t)						270.00	110
Profit (€/t)						40.44	14
Profit (€/ha)						141.54	98



Subsidy loss – End of season?

"More pure biodiesel would require a new network of petrol stations to be built and for car engines to be modified, and that doesn't make economic sense.

We would like to see the second generation biofuels developed as soon as possible."

Tobias

Dunow,

Spokesperson for the German Environment Ministry



Energy Balance Efficiency

- **By the end of 2010**
 - Biofuels must achieve a 35% reduction in GHG
 - **RAPESEED meets the target**
- **From 2017 though** it is expected that the EU will require a 50% energy balance efficiency
 - **RAPESEED does not meet this higher target!**



Miscanthus UK: Facts sheet

- About 6,000 ha
- *Yields*: From 10 to 25 tonnes /ha
- Sale price 50 – 60 eur/t
- Establishment cost up to 2000 eur
- Establishment Subsidy (DEFRA) up to 800 eur



Cost analysis of miscanthus cultivation

<i>Average Yield (t/ha): 14</i>		<i>Price (EUR): 50</i>
	€/ha	Ann. Eq. 15yrs
Total establishment	1682.50	221.20
<i>minus Grant</i>	673.00	88.48
Net Investment Cost	1009.50	132.72
Recurring Costs	€/ha	Ann. Eq. 15yrs
<i>Fertilization</i>	109.35	109.35
<i>Harvesting</i>	161.05	161.05
<i>Land Rent</i>	175.80	175.80
Total (recurring)	446.20	446.20
<i>Total cost before grant (€/ha)</i>		667.40
<i>Total cost net of grant (€/ha)</i>		578.92
<i>Total cost before grant (€/t)</i>		47.67
<i>Total cost net of grant (€/t)</i>		41.35



MISCANTHUS - UK

Average Yield (t/ha): 14

Sale price (EUR): 50

Establishment Costs	€/ha	Ann. Eq. 10yrs	Ann. Eq. 15yrs
<i>Tillage</i>	166.13	27.04	21.84
<i>Planting</i>	1162.25	189.15	152.81
<i>Fertilization</i>	136.42	22.20	17.94
<i>Spraying</i>	41.90	6.82	5.51
<i>Land Rent</i>	175.80	28.61	23.11
Total establishment	1682.50	273.82	221.20
<i>minus Grant</i>	673.00	109.53	88.48
Net Investment Cost	1009.50	164.29	132.72

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<i>Land Rent</i>	175.80	175.80	175.80
Total (recurring)	446.20	446.20	446.20

Total cost before grant (€/ha) 720.02 667.40

Total cost net of grant (€/ha) 610.49 578.92

Total cost before grant (€/t) 51.43 47.67

Total cost net of grant (€/t) 43.61 41.35



Miscanthus in the UK can be a viable option

- High establishment cost and maturity in the 4th year
- Grant is around 800 EUR = 80 eur/yr
- It takes about 5 years to break even
- If initial investment is spread in 15 years, there is a margin of about 250 eur/yr

