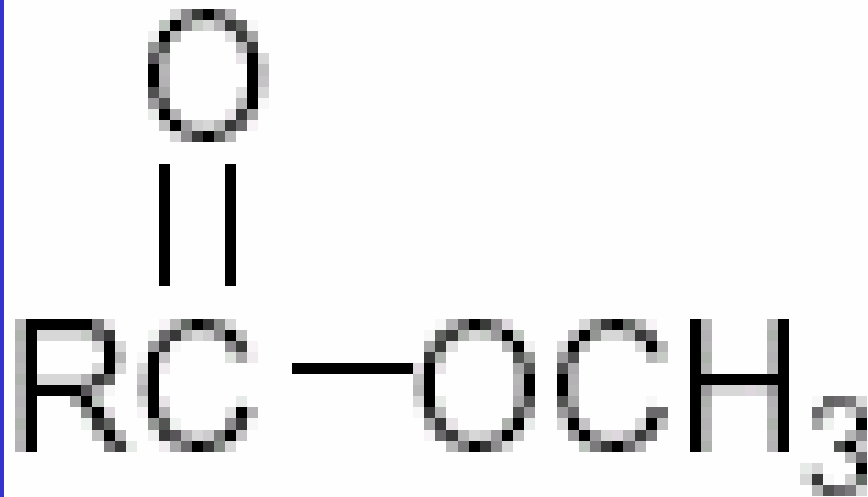


Impact of biodiesel growth

Eric Johnson

Atlantic Consulting

What is biodiesel?



Why is biodiesel popular?



Biodiesel is growing!

European biodiesel production/consumption (kilotonnes)

	1992	1995	1998	1999	2000	2001	2003	2010
EU Total	35	330	435	475	775	1,380	1,935	6,000-8,000

Lots of land required

	2000	2001	2003	2010
EU Biodiesel consumption <i>million tonnes</i>	0.775	1.38	1.935	7.0
Land use^[1] <i>million hectares</i>	0.705	1.256	1.761	6.374

^[1] To grow rapeseed.

Against diesel, less GHG

Source	Reduction in greenhouse gases (CO ₂ equivalents)
CSIRO [Beer et al 2000]	Diesel scored 20-30 points, biodiesel 5 points
ETSU [ETSU 1996]	-180 g/km
REET [Wang 1999]	-100 g/mile
IFEU, Bochum [Reinhardt and Jungk 2002]	-2.303 kg/kg fuel
IFEU, Bochum, without glycerine credits [Reinhardt and Jungk 2002]	-0.898 kg/kg fuel
NREL [NREL 1998]	-497 g CO ₂ /bhp-h

Limits to EU rapeseed production

	2000	2001	2003	2010	Maximum possible
EU Biodiesel consumption, tonnes	775,000	1,380,000	1,935,000	7,000,000	
EU land use for biodiesel rapeseed, hectares	705,700	1,256,601	1,761,973	6,374,061	21,000,000
Rapeseed production, Germany, tonnes	3,590,000	4,160,000	4,000,000	8,119,928	7,440,000
Rapeseed land use for biodiesel only, Germany, hectares	212,958	425,917	724,058	2,619,331	2,400,000

Saturated glycerine markets

Biodiesel growth impacts on glycerine, World and EU-15

	1983	1998	2000	2003	2010
EU Biodiesel consumption tonnes			775,000	1,935,000	7,000,000
Byproduct glycerine from biodiesel, tonnes			77,500	193,500	700,000
Actual EU Glycerin production, tonnes	205,000	219,000	233,000	307,000	
Actual world glycerine demand, tonnes		452,804	494,328	547,424	673,263