

LCA case study in Argentina: Including impacts from freshwater use for rapeseed production in arid zones

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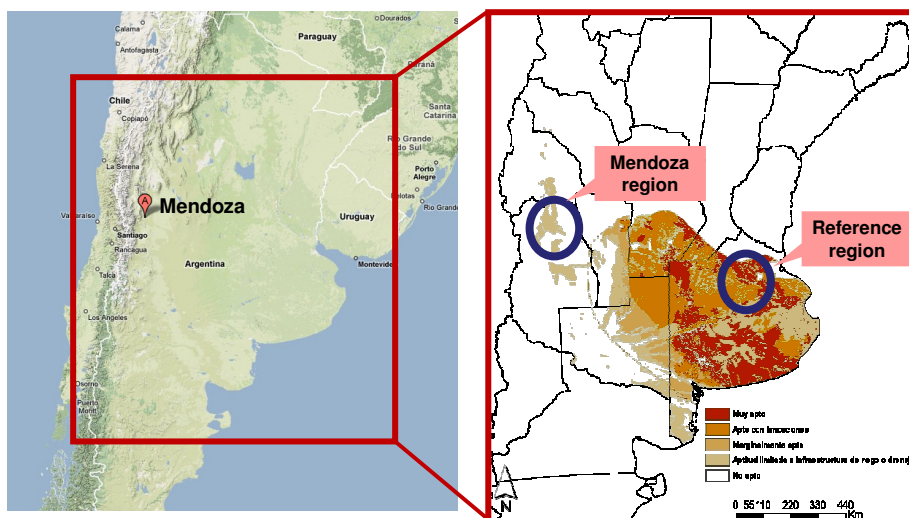
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Landscape around Mendoza

1

Suitability for winter rapeseed



2

Inventory

- Reference systems: Swiss and German production (*ecoinvent 2.0*)
- Field survey and local expert judgments in the two regions
- Land use in Argentina
 - Reference state for land conversion
 - Yields (highly variable) at 6% moisture
 - Harvest efficiency
- Differences in inventories:
 - mainly water use in arid zones
 - to some extent in fertilizer application

Inventory: yields & land use

	Yield [kg/ha]	Transformation from arable [m ²]	Transformation from meadow & pasture [m ²]	Transformation from meadow, intensive [m ²]	Occupation [m ² a]
Argentina	2700	3.70	-	-	2.16

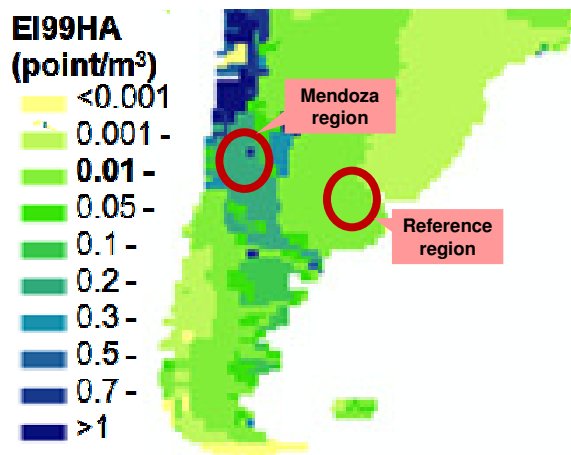
Inventory: Water use

- Results from field research station near Mendoza

	times	m ³ /ha	m ³ /kg rape seed
Soil preparation	1	3'000	1.11
Irrigation	River (water net)	5	3'750
	Groundwater (well)	1	750
Total		7'500	2.78

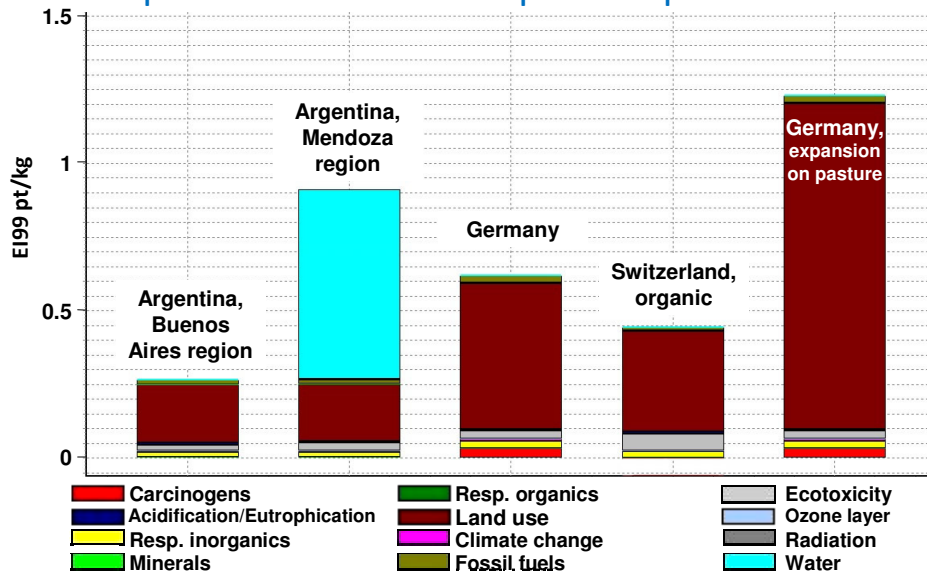
- Calculated water consumption: **1.39 m³/kg**
 - Irrigation efficiency of 50%
 - Corresponds to expert judgments

Impact assessment of water consumption

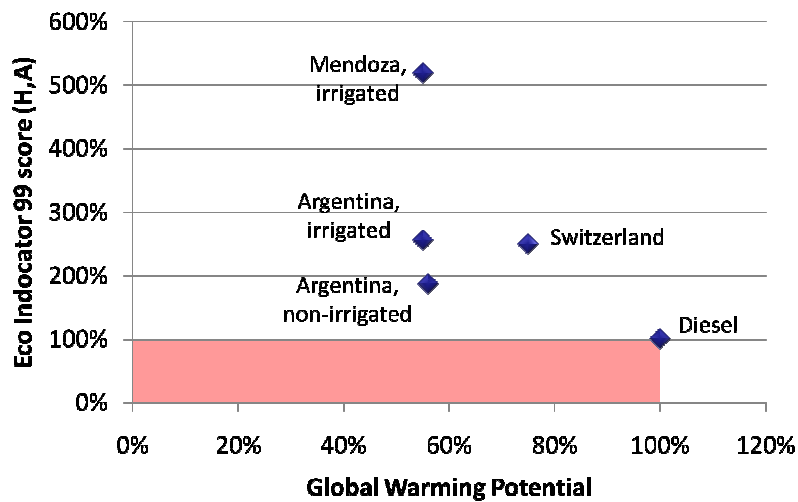


- comprehensive method of water-use impacts according to Eco-indicator 99
 - Damage to resources, ecosystem quality and human health
 - Regionalization

Impact assessment of rape seed production



Rapeseed-based methyl ester



Insights

- Problematic water consumption in arid regions
- Impacts on ecosystem quality are of major concern
 - Land use & water use
- Relevance of regionalization
 - Uncertainties need to be consistently assessed

**Thanks for your
attention!**

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