



Environmental & Integrated assessment of Complex Systems Conference 30th Nov. to 2nd Dec. 2011 France, Montpellier

Simplified Methodologies for Agriculture

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Outline

- Complexity of LCA and Agriculture
- Life Cycle Inventory Decisions
- Life Cycle Impact Assessment
- Conclusions













Proposal: To develop a database Proposal: To express results as a range Proposal: To promote research







Complexity of LCA and Agriculture

Could it be possible to simplify?

- LCA: complex tool
- LCI: hundreds of flows
- LCIA: 10-20 Midpoints Interim Endpoints

Agriculture different functions: food, feed, energy, ornamental, orchard Allocation of co-products Site dependence Variability inherent Uncertainty in Fertilizers and Pesticides Emission models



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Complexity of LCA and Agriculture

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Disadvantages

Risk to miss: important information transparency thoroughness.

Advantages

Saving time and resources More applicability Diffusion EPD and ecolabels





Generalitat de Catalunva

Complexity of LCA and Agriculture

INVENTORY
Energy
Tillage
Fertilizers
Pesticides
Materials
Buildings and infrastructures
Transport
Equipment
Substrates
Machinery
Wastes



Abiotic Resources Acidification **Biodiversity Climate Change Ecotoxicity Eutrophication Human Toxicity** lonizing radiation Land Use **Ozone Depletion** Photochemical Oxid **Respiratory Inorganics/PM**

Water consumption

ENDPOINTS

MIDPOINTS

LCI Decision



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Energy	Sec. Per
Tillage	
Fertilizers	TO
Pesticides	
Materials	00
Buildings and	
infrastructures	SS CI
Transport	n n
Equipment	
Substrates	
Machinery	



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LCI Decision



Inventories should be simplified

Simplification levels

"Black box"Total energy consumptionTractor hoursN, P, K fertilizersGeneric Pesticides

vs energy per processes vs specific machinery vs specific fertilizers vs specific active ingredients









LCI Decision











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DA	AB	ASE



Category

Main contributing substances

Abiotic depletion	Coal, hard Gas, natural Oil grudo	
Acidification	Ammonia Nitrogen oxides Sulphur dioxide	
Eutrophication	Ammonia Nitrogen oxides Phosphate	
Global warming	Carbon dioxide fossil Dinitrogen monoxide Methane	
Toxicity	Pesticides Heavy metals	sostenipilitat i Prevenció Ambiental.







Simplified Methodologies for Agriculture

Thank you for your attention Comments are welcome

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