



CODIS 2008

SUBSTITUTION OF PEAT WITH COMPOST IN GROWTH MEDIA PREPARATION – LCA COMPARISON

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Facts about peat

- Accumulation of organic vegetation matter
- Form in anoxic, waterlogged, acidic, sterile conditions
- Peatlands are mainly in the northern hemisphere
- In 1999, 100 millions m³ peat produced worldwide (2/3 to energy, 1/3 to horticulture)
- Potential contribution to Global Warming during peatlands excavation:
 - Disturbance of the natural respiration
 - Release of the carbon (peatlands contain 1/3 of carbon stored in world's soils)
- LCA on peat to energy, no LCA on horticultural peat



Facts about compost

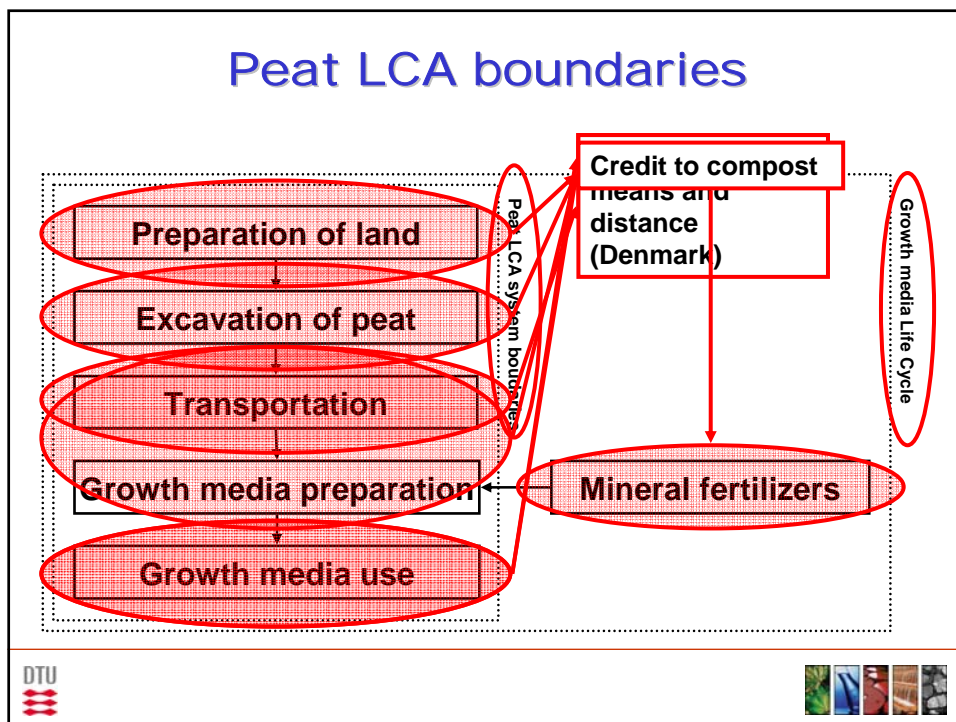
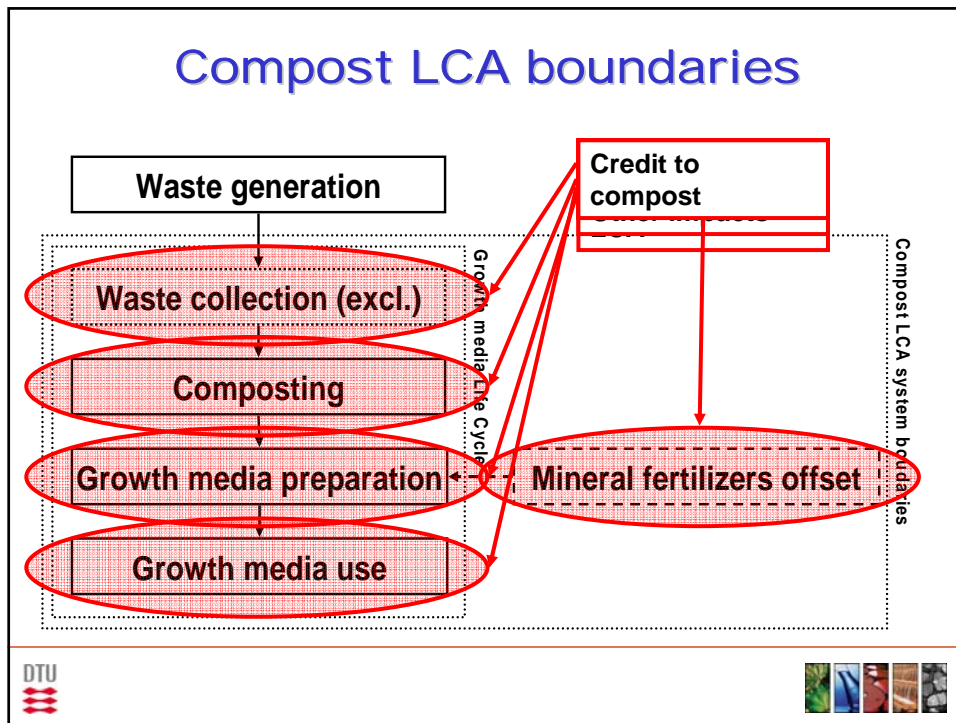
- Already widely used (EU: 70-80% in agriculture, 20-30% in gardening)
- Advantages:
 - Carbon neutral
 - Locally produced
 - Contains nutrients (N, P, K)
- Disadvantages:
 - Higher heavy metals content than peat
 - Potential for nutrients leaching
 - Ammonia evaporation



Functional Unit

- "Utilization of an equivalent volume of compost and peat for growth media preparation"
- 1 ton of compost vs. 285 kg of Danish average peat
- EASEWASTE used for LC comparison
- 100 years time horizon
- Carbon sequestration in soil



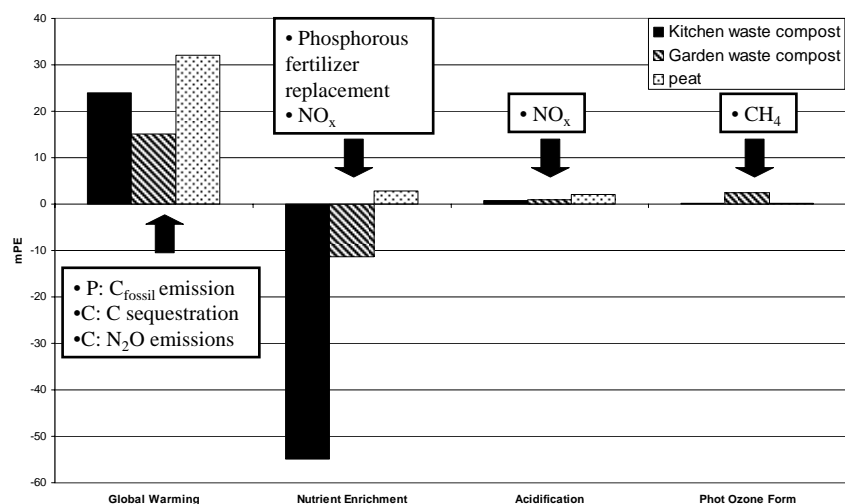


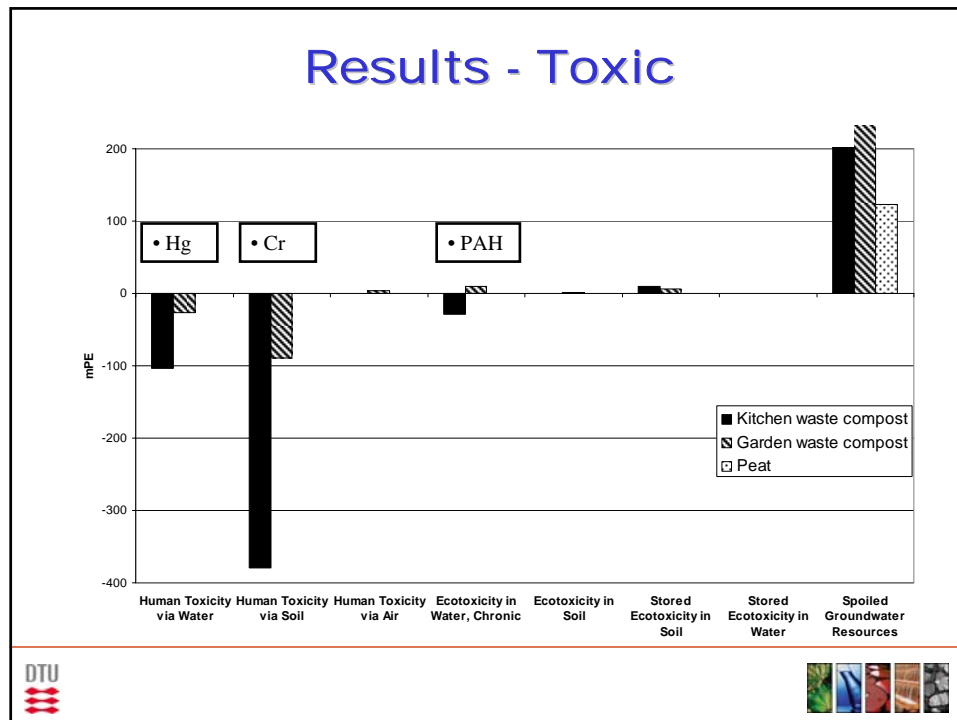
Leaching tests

- Chemical and physical characterization of compost
- Standard tests (24 hours rotation time)
- L/S ratio = 10
- Replicates and different samples: similar results
- Heavy metals: Peat 3-20 times less than compost (except for NPOC)
- Anions: compost 10 times higher than peat
- NPOC: similar
- Ph: Compost = 8 , Peat = 4
- Conductivity: Compost 10 times higher than peat



Results - Non toxic





- ### Conclusions
- Potential benefits of using compost
 - Global warming (potential for improvements)
 - Eutrophication (better management of fertilizers)
 - Acidification (less pollutants)
 - Benefits for toxicity (mineral fertilizers)
 - Potential impacts
 - More heavy metals -> more leaching (Ph has to be considered)
 - More heavy metals -> accumulation (limitable with proper waste management)
 - Salinity: potentially harmful (over application)
- DTU

Acnoledgements

- Maria and Karin for the lab work
- Solum A/S, RGS90 and Århus Affaldscenter for compost
- Bord Na Mona (IE), Vapo (FN) for peat samples

