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Quality characterization of bio-solids from separated animal slurry

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Animal slurry separation



- Separation of animal slurry into a liquid and a dry matter rich fraction
 - Present about 50 operating units in DK, processing about 3-4% of all slurry
- Liquid fraction
 - Rich in inorganic N – used as highly effective N fertilizer on farm land
- **Bio-solid fraction**
 - Rich in organic matter, P and organic N - currently used in biogas plants or as fertilizer on farmland



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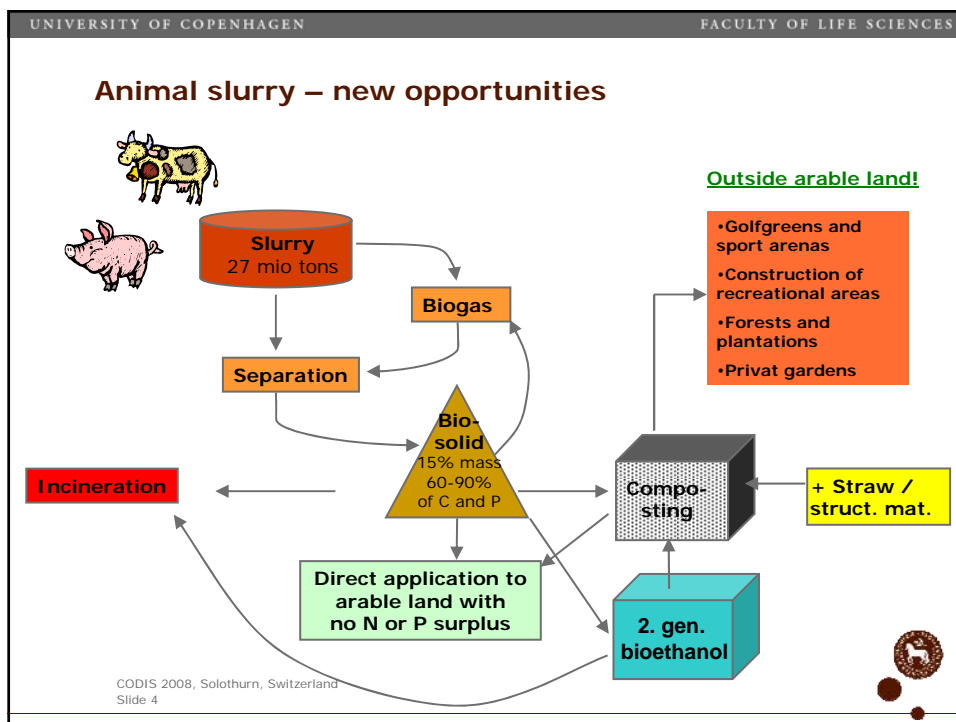
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Motivation for separating animal slurry

- Highly concentrated livestock production - amongst the highest in Europe
- Political demand for implementation of environmentally friendly technologies
- Facilitates transportation of nutrients over longer distances

Source: FAO - AGA Food and Agriculture Organization of the United Nations
http://www.fao.org/ganetour


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Variability of bio-solids 1

- Why investigate variability?
 - Recommendation for utilization strategy of bio-solids
- Variability among bio-solids can be due to
 - Type of separation plants
 - Animal type – and feeding strategy
 - Storage conditions – cover and storage time




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Variability of bio-solids 2

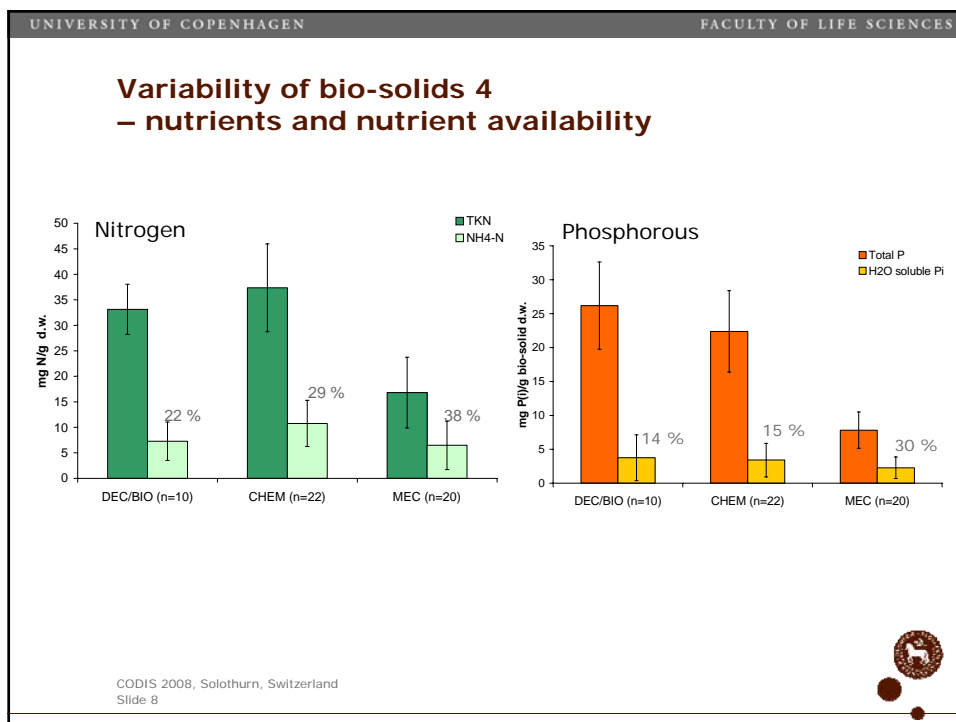
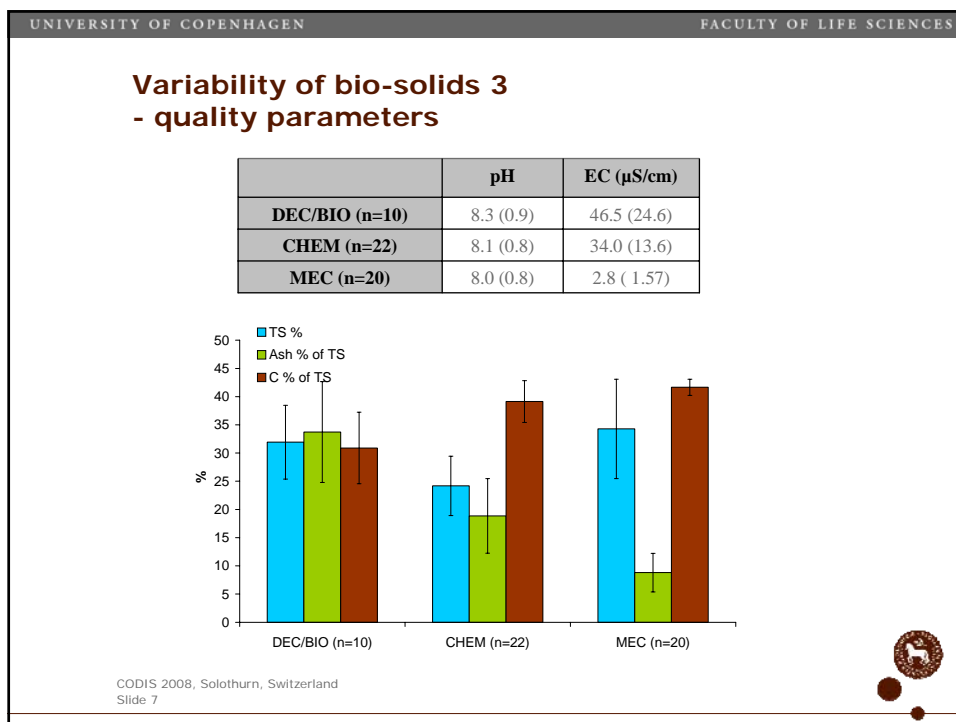


DEC/BIO Decanter centrifuge separated slurry – mostly samples from biogas treatment plants receiving mixed swine and dairy slurry

CHEM Chemically separated slurry with artificial polymers followed by mechanically separation

MEC Mechanically separated slurry – sieving or screw press system



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Composting of bio-solids

-Are all bio-solids suitable for composting?

- Composting of all types of all bio-solid types is possible
 - dependent on the wanted product – stabilization or high quality compost

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Composting bio-solids

-Are all bio-solids suitable for composting?

- Equal supply of N and P
 - up-concentration of P
- Control of ammonia emissions
 - dependent on initial ammonia content
- High quality fertilizer products?
 - marketing

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Process	N/P Ratio
DEC/BIO	~0.8
CHEM	~1.5
MEC	~3.2