Strategies and Reuse Initiatives in Finland
Circular Economy in Agriculture

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Content of presentation

• Sustainability overview to Agriculture in EU/Finland
• Actual Policy Situation - Financing Tools Available
• Innovative Experimental Programme
3 phases for better nutrient circulation

Birth of sideproducts
- production efficiency
- sideproduct quality

Control on the fields
- humus/nutrients
- techniques used

Circulation back to fields
- from water-systems
- from the air
5 Biggest Sustainability Defects of Agriculture in Finland/EU

1. Dependency from oil (N-fertilizers, drying, tractor fuel, heating)
2. Self-sufficiency rate of protein crops in EU too low, only about 15 % => great nutrient flow coming in abroad
3. Decline of soil humus, about 25 % loss during the last 30 years
4. Decoupling of animal production from plant production to different regions => surplus of manure in certain areas
5. increase of meat consumption (3-fold in 60 years)
Role of Agriculture in nutrient leakage

• Total leakage from Finland forms 10 % of the whole nutrient load to the Baltic sea.
• Agriculture still biggest source: year 2002 around 40 % (50 000 tn/v) of N and 60 % (2300 tn/v) of P comes from agriculture
  • ⇔ 25 kg N/ha/v ja 1 kg P/ha/v
• Among the countries around the Baltic sea, nutrient load per capita was biggest in Finland. Counted per field area, Finland was second biggest after Sweden
• Conclusion: Big land area, small field area, few people or something to improve in farming methods?
Nitrogen cycle in Finland

Nitrogen into agriculture 100

Losses from field 58

YIELD 70 Plant products 13

FOOD 27 (13 + 14)

FEED 57 + 7

Animal products 14

Plant products 13

To the fields 35 + 93 = 128

Imported feed 7

Animal productio n

Manure to the fields 35

Manure from fields 15

MANURE 50

Nutrient circulation – a strategic choice

Country brand report 2010

Finland to be model country for nutrient recycling

Government programme 2015->
- Efficiency goals even for 2025

Making use of agricultural nutrients
Making use of agricultural nutrients 2016-18

• The Ministry of Agriculture and Forestry has financed a 3 year project “Making Use of Agricultural Nutrients” to be carried out by Luke.

• One of the government key projects

• The aim of the project is to secure that 50 % of the nutrients in manure and sewage sludge are in effective use in sensitive areas by 2025.
Manure is the most valuable fertilizer

- In Finland 20 million tons of manure is produced annually containing 17.5 million kg phosphorus.

- Manure produced in Finnish animal farms would be sufficient to cover plant phosphorus needs at national level.

Sewage sludge

- Contains approximately 2.8 milj kg of P
- Heavy-metals or pathogens not a problem. Organic harmful substances researched a lot, but all environmental effects still not known.
- Phosphorus usually too strictly bound to aluminium or ferro-compounds. Usability for plants can be low
- Sewage sludge nowadays good for the soil structure due to high content of organic material.
- New technology now being innovated, where harmful substances can be decreased, but phosphorus more soluble
Strategic priorities of the Government programme 2016-2018

1. Employment and competitiveness, EUR 170 million
2. Knowledge and education, EUR 300 million
3. Well-being and health care, EUR 130 million
4. Bioeconomy and clean technologies, EUR 300 million
5. Digitalisation, experimentation and deregulation (procedures), EUR 100 million
Bioeconomy and clean technologies, EUR 300 million
Breakthrough of a circular economy

Breakthrough of a circular economy, getting waters into good condition, tot 34 milj €

- 2016: tot 12 milj €
- 2017: tot 11 milj €
- 2018: tot 11 milj €

Experimental programme 2016-2018
tot 12,4 milj €

Making use of Agricultural nutrients 2016-2018
tot 1,2 milj €, Nutrient recycling programme

Sewage pilots 2016-2018

Horse manure programme 2016-2018

Sea protection and water management programme

MAKING USE OF AGRICULTURAL NUTRIENTS
“Dragon’s den” for nutrient recycling experiments

- financing for 2016-2018
- 12.4 milj. € in total
- innovative solutions, technical trials, ie:
  - separation/hygienisation/
    filtration/biogas
  - spreading solutions
  - combining new products
  - logistic and information change
  - easier use of products
Thank you!

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