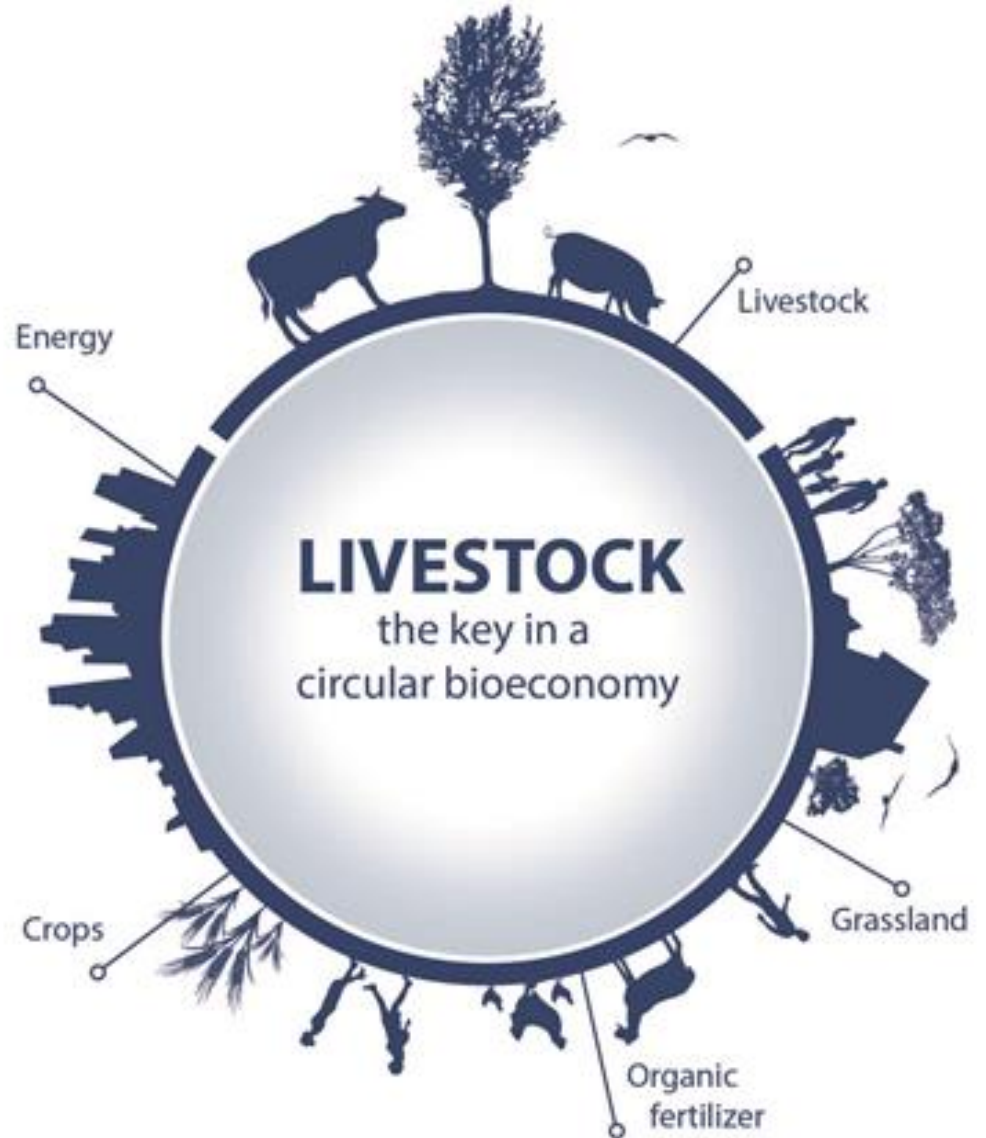


Jean-Louis Peyraud

Animal Task Force

INRA



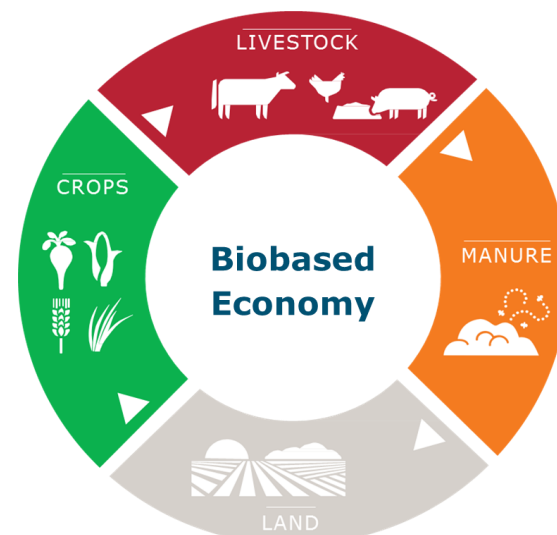
jean-louis.peyraud@inra.fr

European Bioeconomy

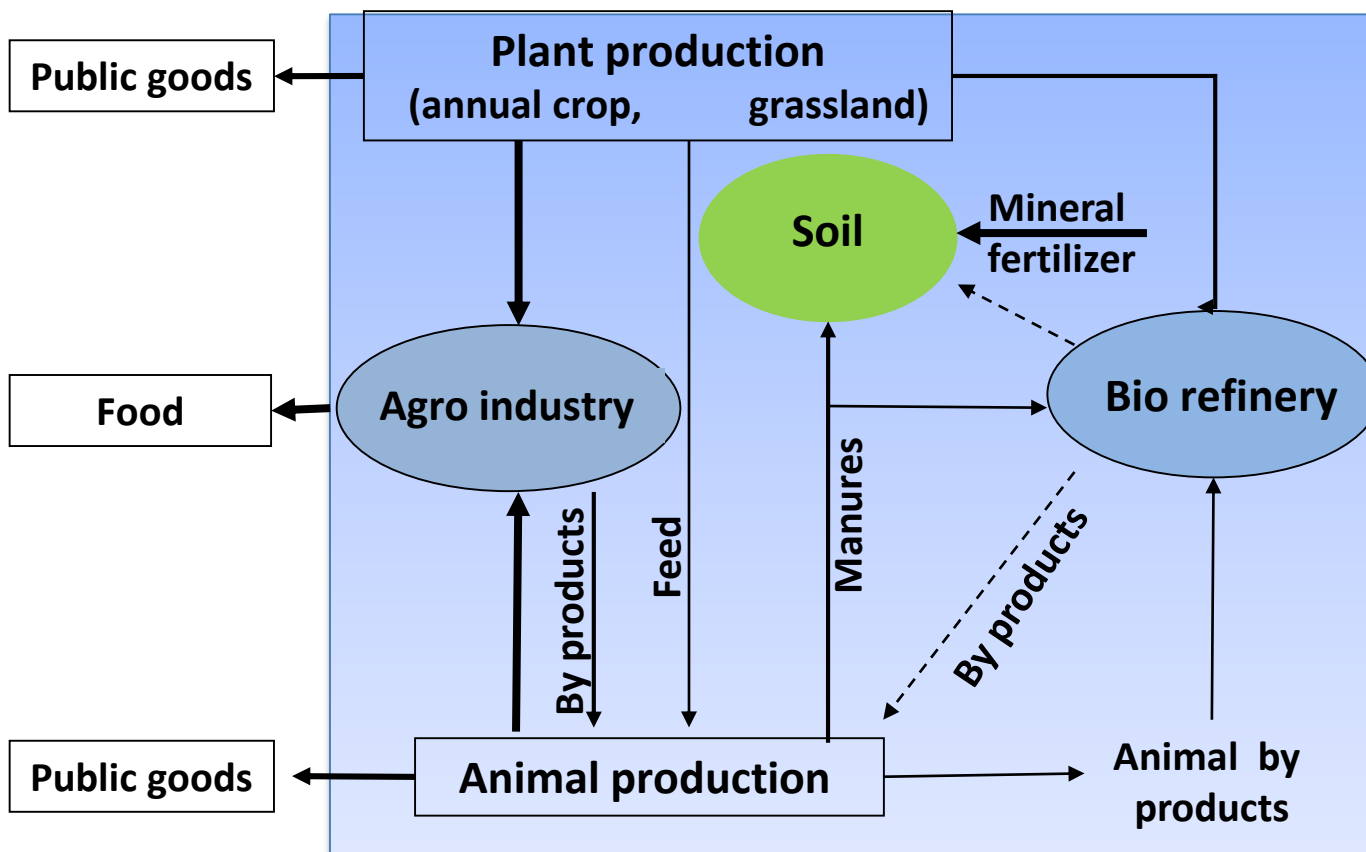
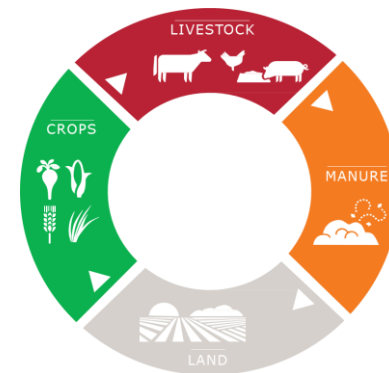
BIOECONOMY UTRECHT 2016



- Bioeconomy should contribute to
 - food security
 - efficient use of biomass
 - resource use efficiency
 - Cop 21 objectives
 - sound use of scarce land
 - soil fertility
 - revitalisation of rural area



Perfect fit of livestock farming in the circular bio-economy



Bio energy
Bio based products
Materials,
Enzymes,...
Cosmetics

*Integration in
a global
agro-Ecosystem*

Livestock farming contributes to global food security

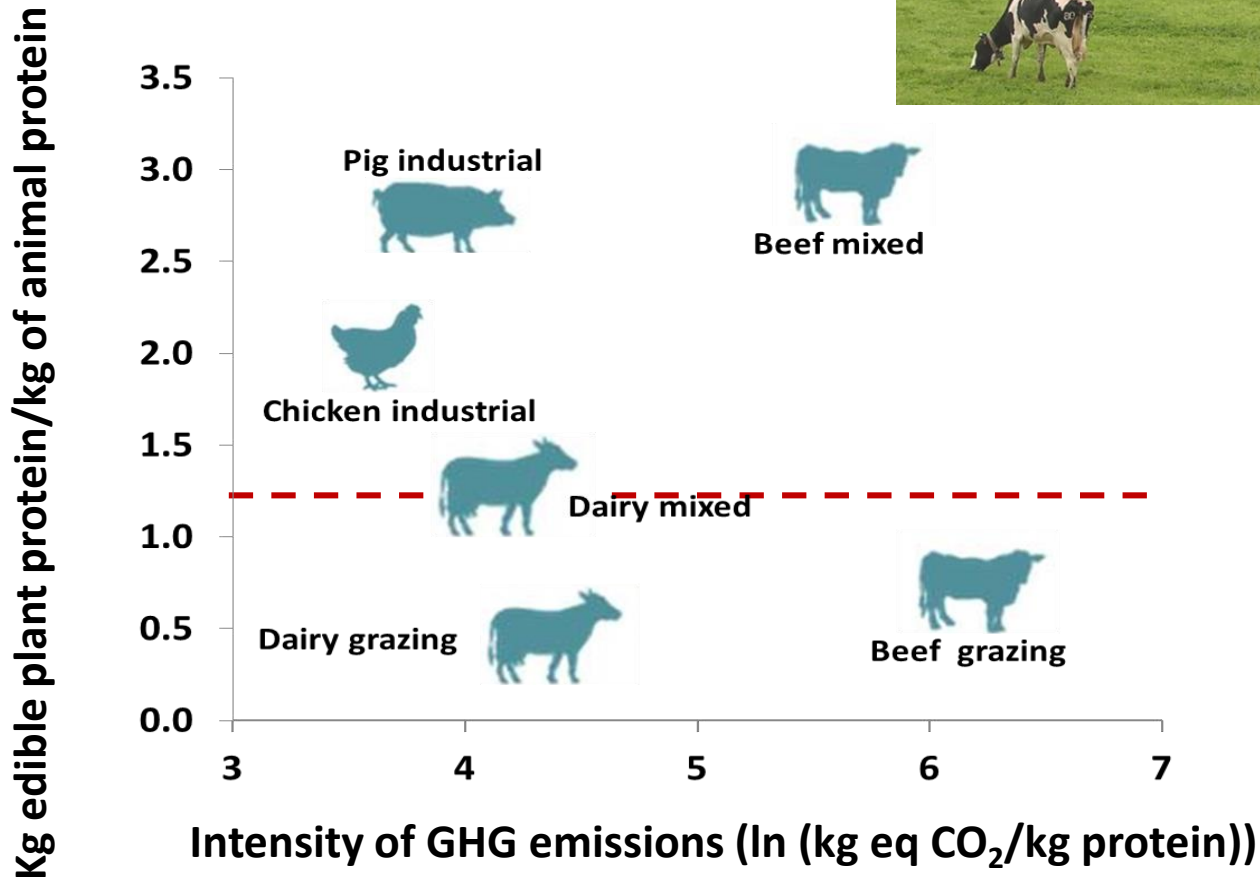
Micro nutrients



- High nutritional quality of animal proteins
 - We need larger amounts (20 to 25%) of crop proteins than animal proteins to meet our requirements in essential amino acids
- Micro nutrients
 - Iron (heminic)
 - Ca, Vit B12, specific Fatty acids (ruminic acid, omega-3)

Livestock farming contributes to global food security

Using non edible proteins

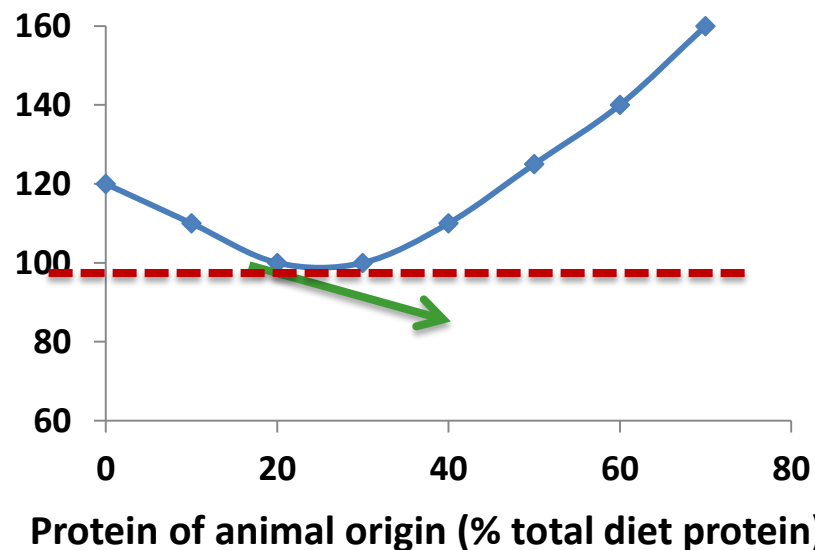


Livestock farming contributes to a more efficient agriculture *Protein production*



- Maximising production of human edible proteins per ha of land
 - Agro-ecosystem using almost all biomass produced
 - Improving synergies between crop and livestock sectors considering local contexts

Relative Area of land required to feed the population



(Van Kernebeck et al., 2014)

Livestock farming contributes to a more efficient agriculture Marginal land



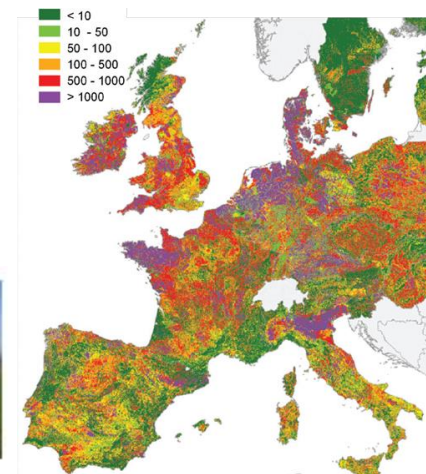
- Using of (marginal) land not able to produce plant products for human:
 - Permanent Grasslands = 73 M ha (40% Eu Agricultural Area)
 - Serving related ecosystem services: biodiversity, landscape, habitats, cultural heritage....



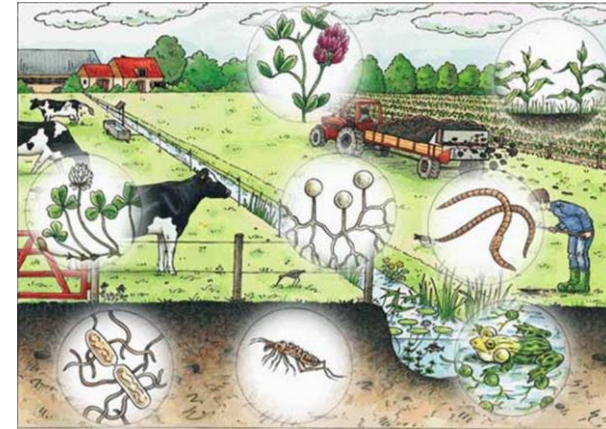
Livestock farming regulates ecological cycles More with manure



- Livestock manure is a source of N, P, K for crops
- In intensive livestock production systems
 - Need to turn a problem into a commodity
 - A win-win strategy : less dependency on imports (P and energy) and less harmful emissions
- Implementation of best technologies
 - Closing the loops – mixed farming systems
 - Manure refinement: Extraction of high value ingredients, minerals and Energy



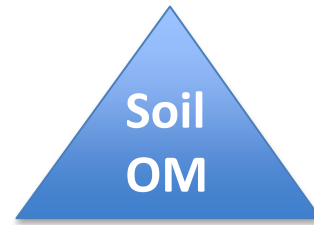
Livestock farming regulates ecological cycles Soil Organic Matter



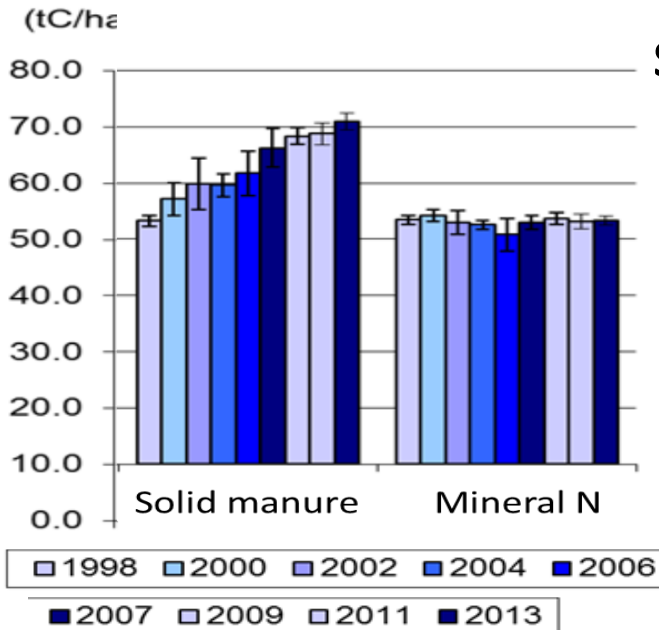
Manure
Grassland



Chemical fertility



More biomass,
less chemical inputs,
more soil C
sequestration

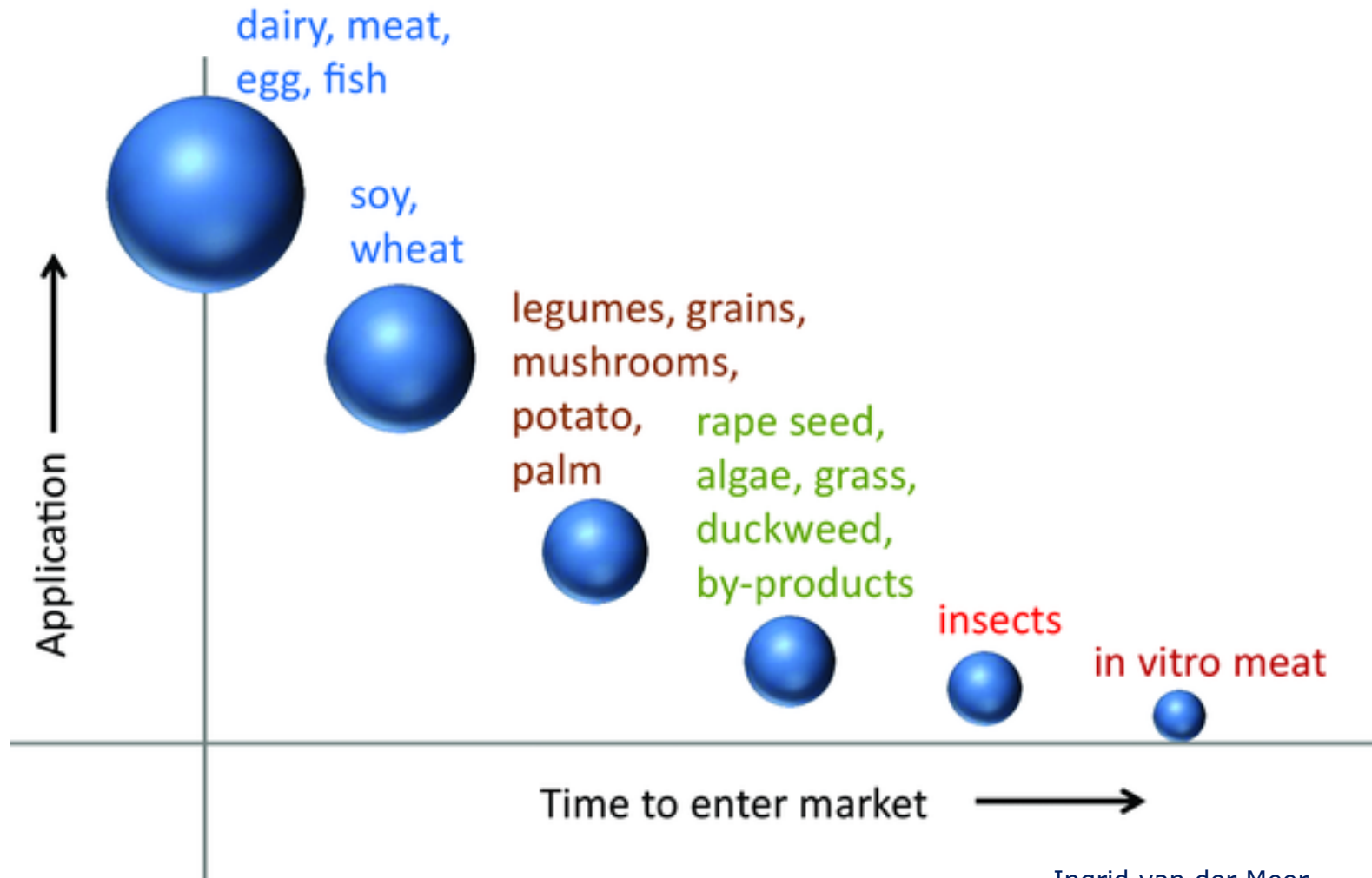


Structural
stability

Biological fertility
Microbial and fauna
biomass



Are novel foods an alternative to livestock ?



Conclusive remarks

- **Livestock production is essential in an agriculture which serves a circular bio-based economy**
 - Converts raw biomass in products with high nutritional value
 - Contributes to biomass cycling and serves the agro-ecosystem
- **Avenues to enhance the role of animal production in a circular bio-based economy**
 - Development of integrated agroecosystem approach (crops – livestock synergies) and new technologies
 - Development of public policies and market signals to stimulate, promote and support innovations
 - Research & Innovation, investment, governance



