

# Use of Side-streams in Agriculture

- soil improvers and recycled fertilizers

Nutrient recycling and carbon sequestration into agricultural soils is vigorously evolving part of bioeconomy. Luke's long-term experience on plant nutrition, organic fertilizers and soil improvers provide rock-hard platform to study and develop new solutions for your side or waste streams.

## Luke offers:

Solid analytical framework to characterize recycled fertilizer products in terms of nutrient composition, availability and fertilizer value, as well as absence of undesirable properties and contaminants

- Laboratory analysis
- Green house experiments
- Field scale experiments with high competence and reliability



## Our services in recycled nutrients and fertilizers:

- Unique research set-up (rainfall simulation test) to study side streams' efficacy as soil improving materials
- Previously studied materials include e.g. gypsum, structural lime, paper mill sludge
- Incubation tests to assess N and P availability
- Soil physics laboratory to assess effects of soil improvers on soil structure
- Pot and field experiments
- Long-term data allows comparison of new products to existing ones



## Why to cooperate with Luke?

- Vast scientific competence on plant nutrition, soil physical quality and agricultural water protection
- Experience in biomass use in agriculture - from manures to waste streams
- Strong background data and expertise in research set up
- Knowledge on related regulations, legislation and value chain development

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*Luke provides expert services and solutions in the area of circular economy and bio economy. Our core competence is valorization of biomass waste and side-streams for high value products. Optimization of nutrient cycles as a part of the entire valorization chain plays an essential role as well.*

*Our services encompass environmentally sound refining, fractionation and extraction technologies for valorization of biomass as well as protein recovery and processing into high value products. For food and forest industry we offer comprehensive value-added utilization of by-products. Assessment of biomass potential availability and assessment of sustainability are also examples of our high-quality services.*

