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LCA applied to residual organic fertilizing materials - An overview of emission inventory data at the spreading operation

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Implication of the application of a residual organic fertilizing material in LCA

Inventory issues at the spreading operation in LCA case studies

air emissions: N, C



C sequestration
Trace metals

run-off and leakage: N, P

Literature review

- LCA case studies of residual organic fertilizing materials (digestate, compost) including spreading
- Details on land spreading emissions

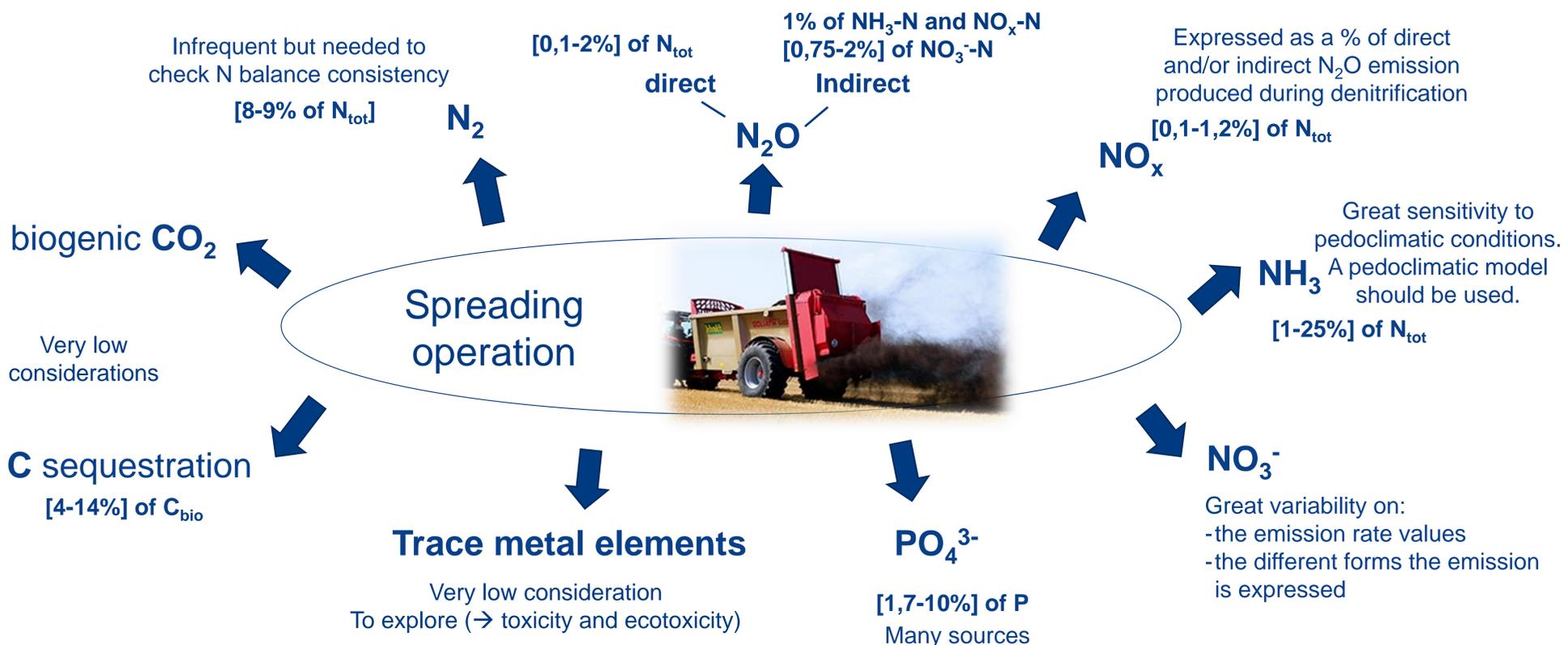


N, P, C and trace metal emissions
C sequestration

- How are these emissions expressed at the spreading operation?
- What are the units used?
- Which emission rates?

Emissions linked to the application of residual organic fertilizing materials

Consensual value ranges from IPCC



Influence of the spreading emissions on LCA results in the case studies

Main contributions

- NH₃ → acidification
- NH₃ and nitrate → eutrophication

Other less often detected contributions

- N₂O → climate change
- phosphate → eutrophication
- NO_x → particulate matter formation

Learnings from the LCA literature review

- N₂O, NH₃, NO₃⁻, PO₄³⁻ emissions more often considered than NO_x, N₂, C, trace metal elements in the case studies.
- When possible, proposition of value ranges for P-based and N-based emissions. When not possible, variability has been highlighted.
- Infrequent consideration of carbon fate and trace metals in LCA case studies.
- A heavy impact of the inventory emissions on results → recommendation for LCA practitioners to pay particular attention to the inventory emissions.

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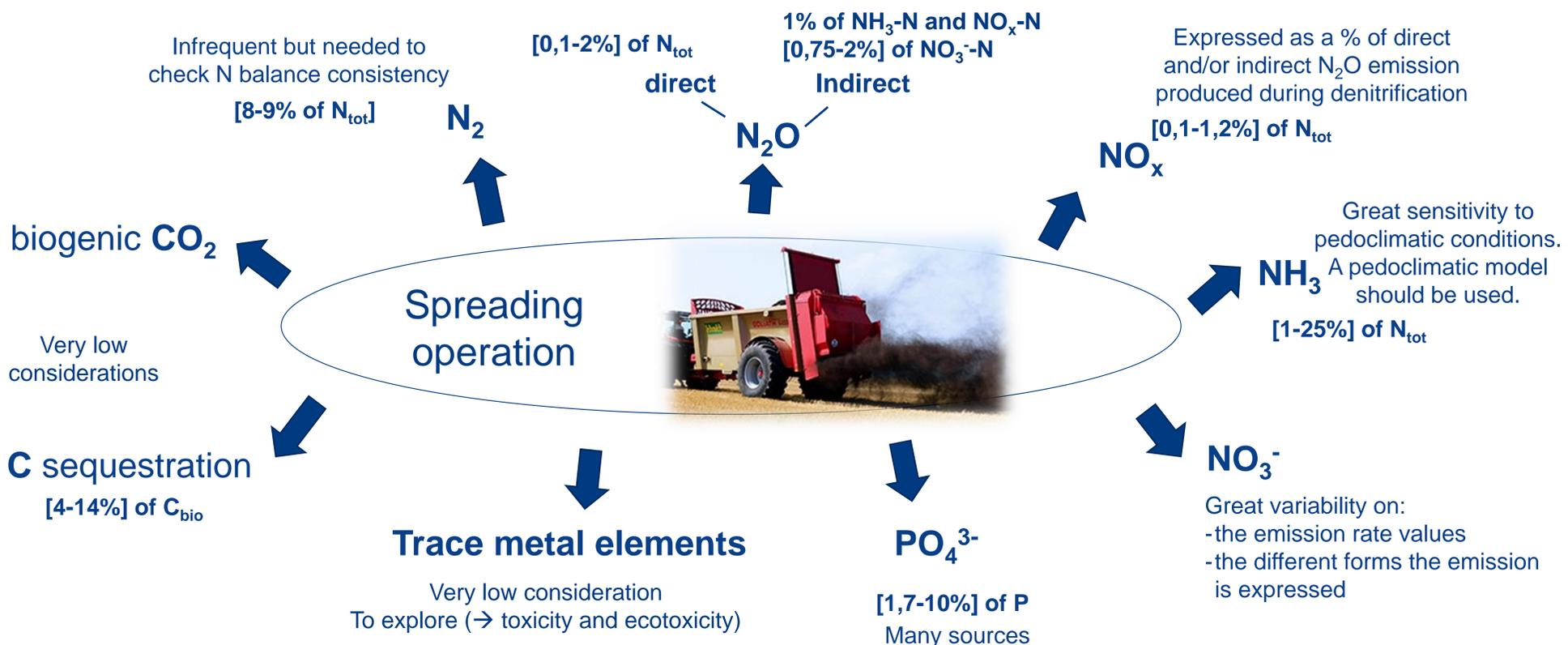


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