Utilization and losses of nitrogen and phosphorus from field applied slurry separation products

Adviser Torkild Birkmose, DAAS,

senior scientist Peter Sørensen, DIAS

and senior scientist Gitte Holton Rubæk, DIAS

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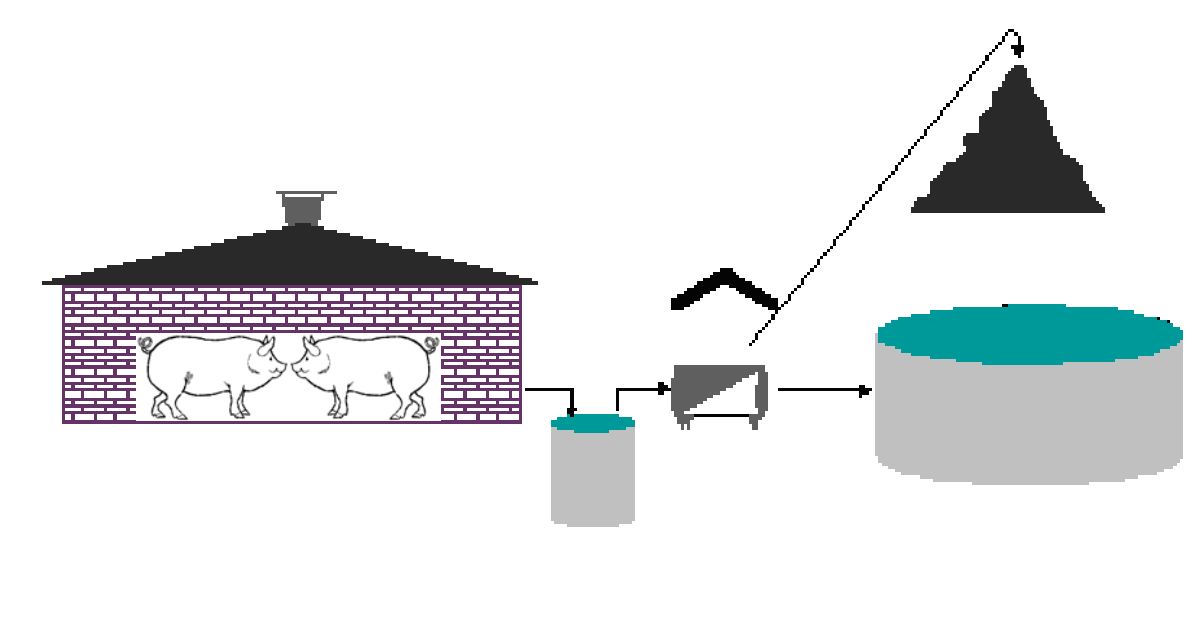
What is slurry separation?



15 % solid fraction (SOL)

85 % liquid fraction (LIQ)

Decanter centrifuge

Solid fraction, SOL

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Liquid fraction, LIQ

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Why separate slurry?

- Improved nutrient utilization – especially phosphorus
- Reducing costs of handling slurry (storing, transport and spreading)
- Reducing odour from storing and spreading slurry
- Ease adoption to environmental legislation
- Ease environmental approval

What have we done in the project?

SOL and LIQ: N-utilization in field trials, DAAS

SOL: N-leaching in lysimeters, DIAS

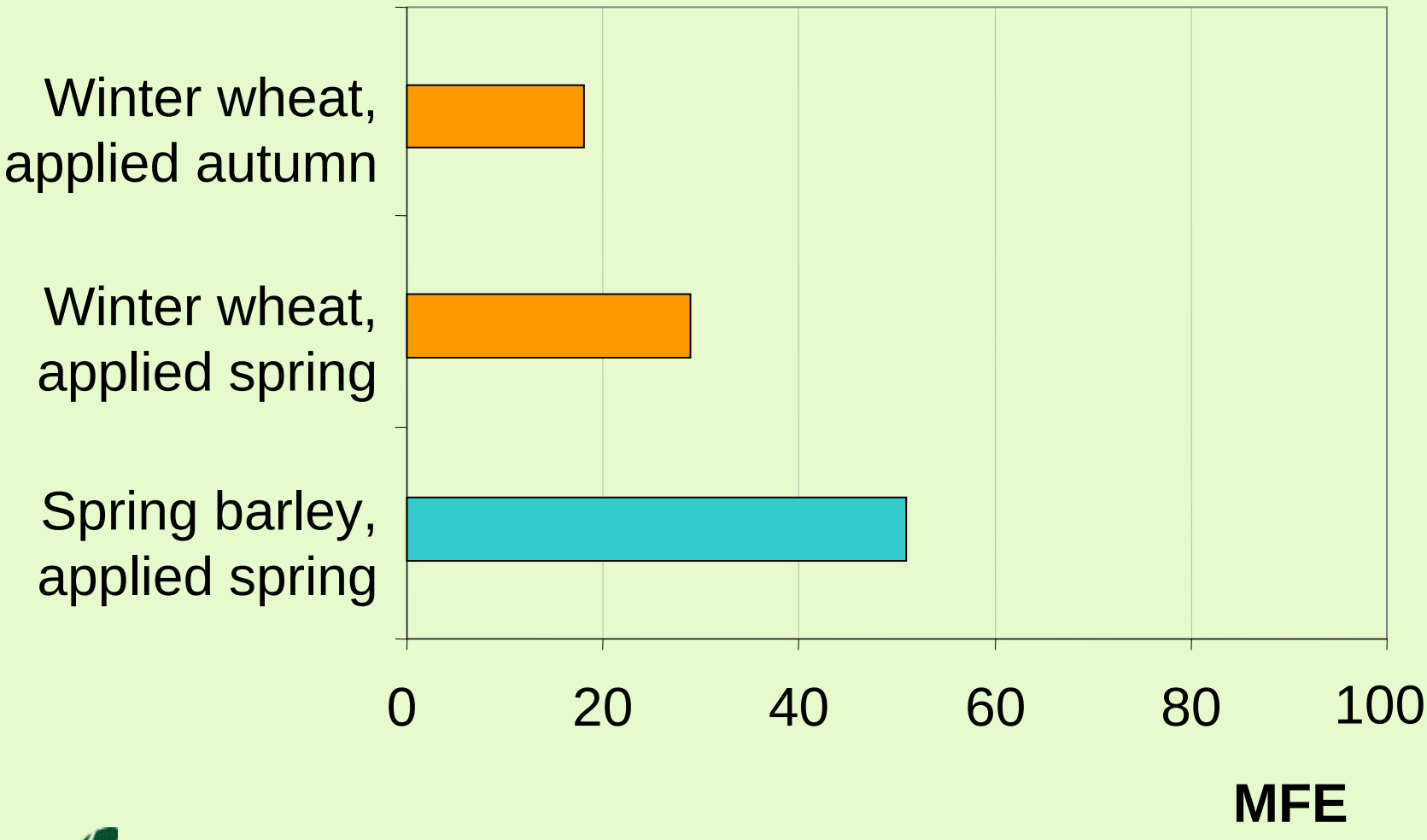
SOL: P-leaching in laboratory, DIAS

Utilization of nitrogen in crops, MFE

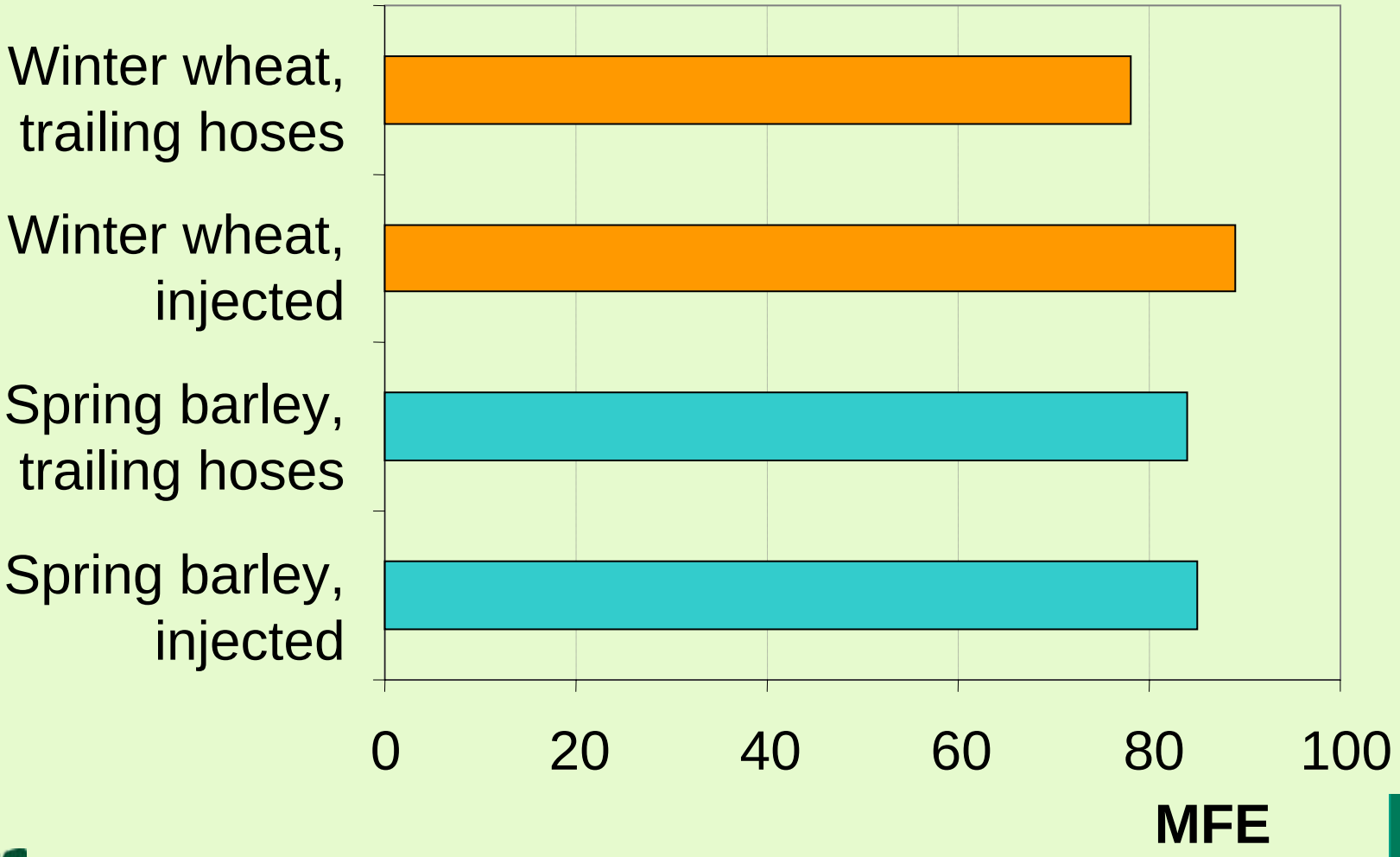
Method:

- **Measured in field trials that include plots with increasing amounts of mineral fertilizer N.**
- **Mineral Fertilizer Equivalent (MFE) is defined as the amount of nitrogen in mineral fertilizer that will result in the same nitrogen yield as 100 kg of total-nitrogen in manure product.**

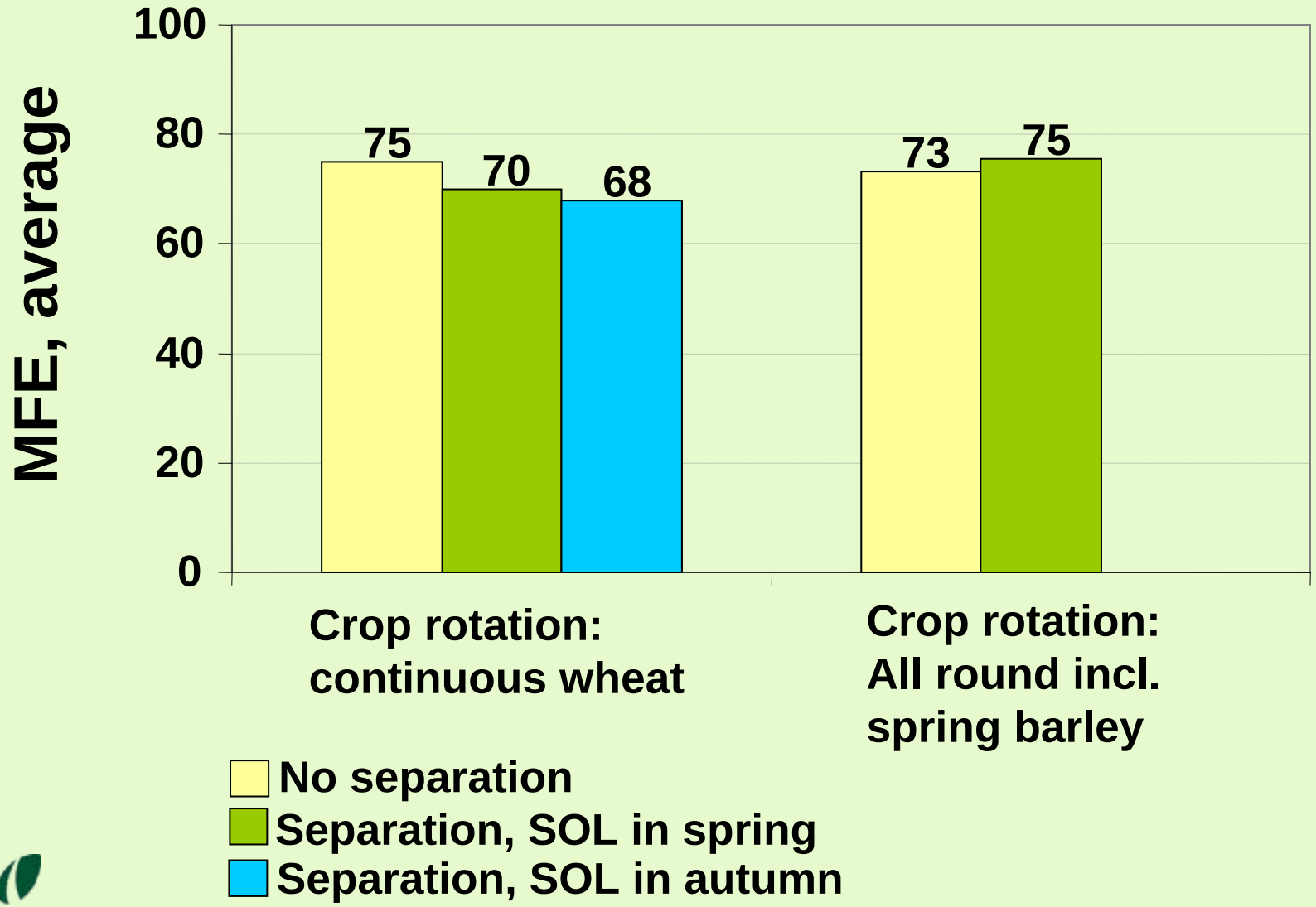
Utilization of nitrogen in solid fraction



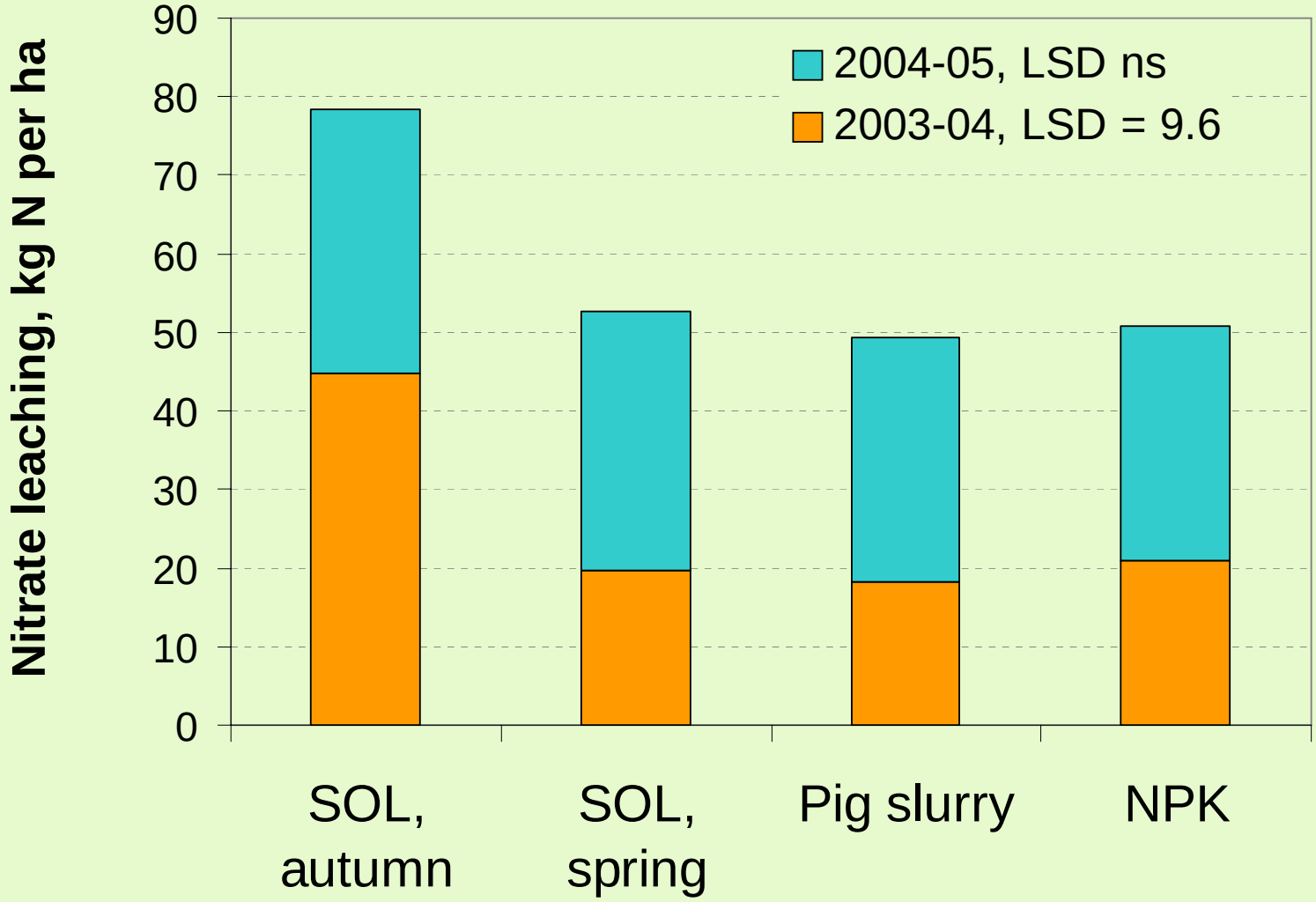
Utilization of nitrogen in liquid fraction



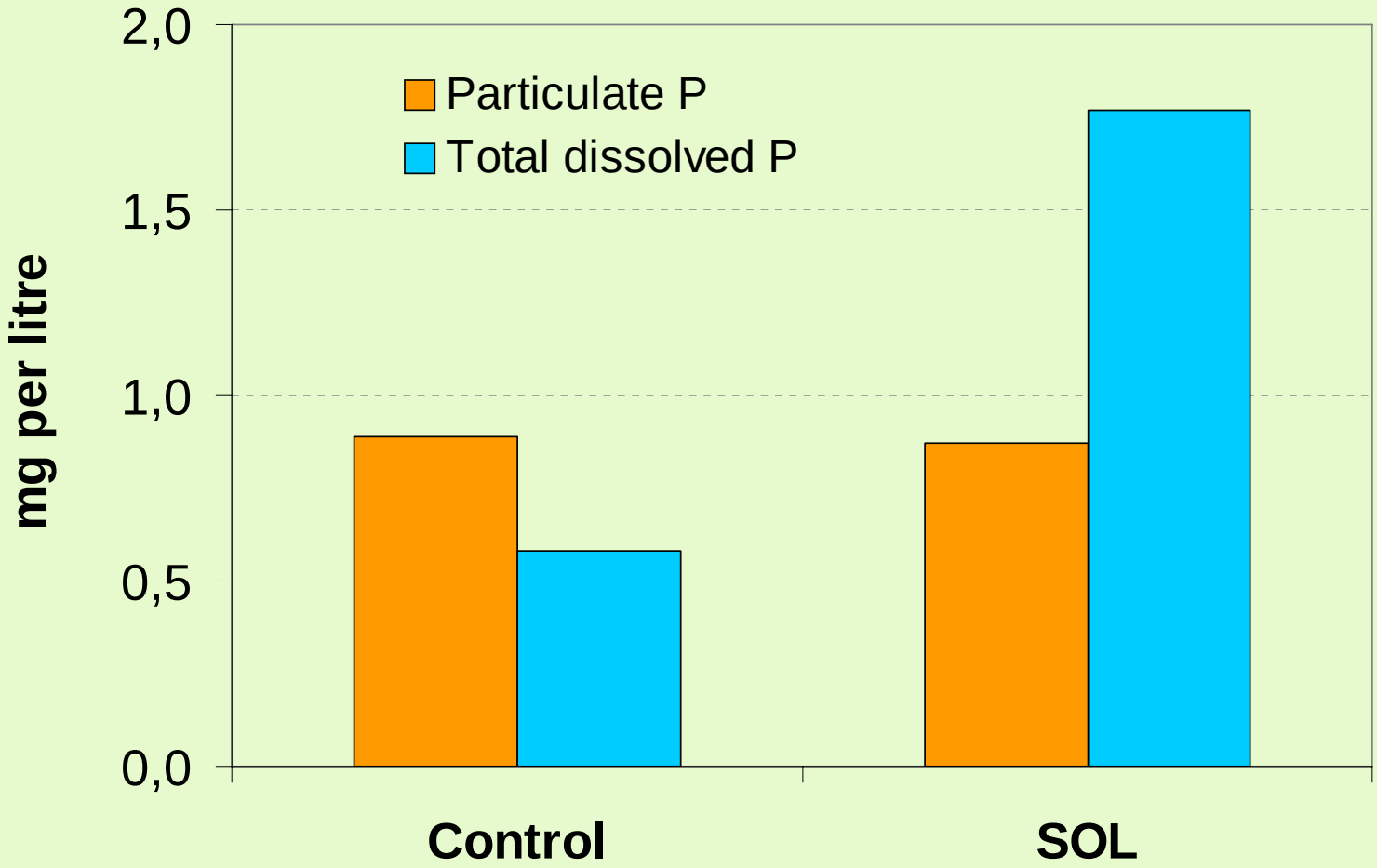
Utilization of nitrogen in total



Leaching of nitrate from applied SOL



Concentration of phosphorus in leaching water after application of SOL



Conclusions

- High MFE of liquid fraction in any crop
- Low MFE in solid fraction, if autumn applied – higher if spring applied
- Risk of nitrate leaching from autumn applied solid fraction
- Risk of increased phosphorus leaching after application of solid fraction followed by heavy rain fall