Impacts of farming practices that can reduce the use of fertilisers

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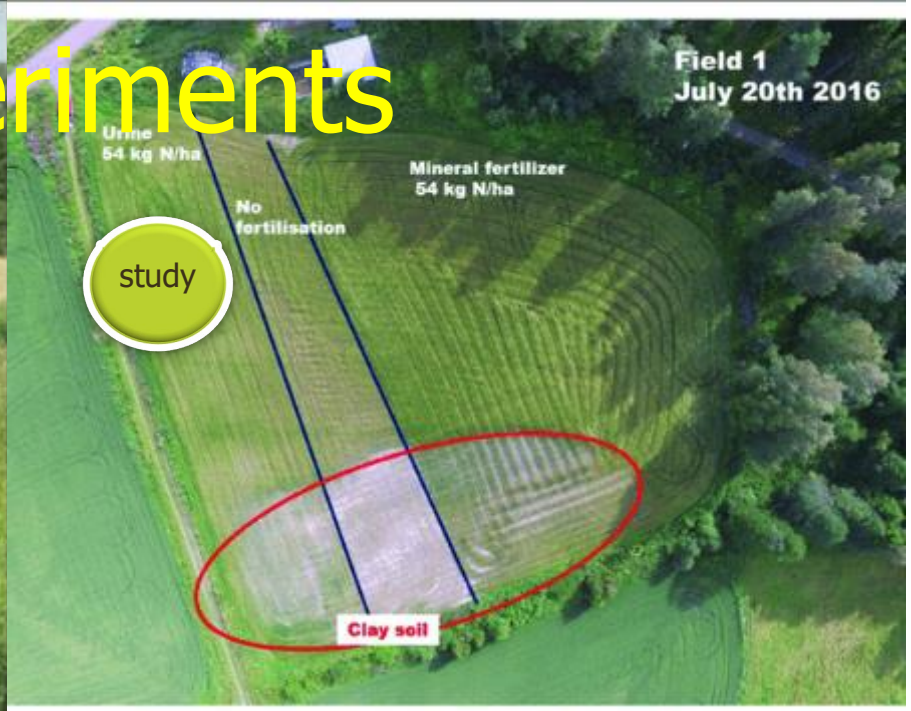
Farm to Fork Strategy

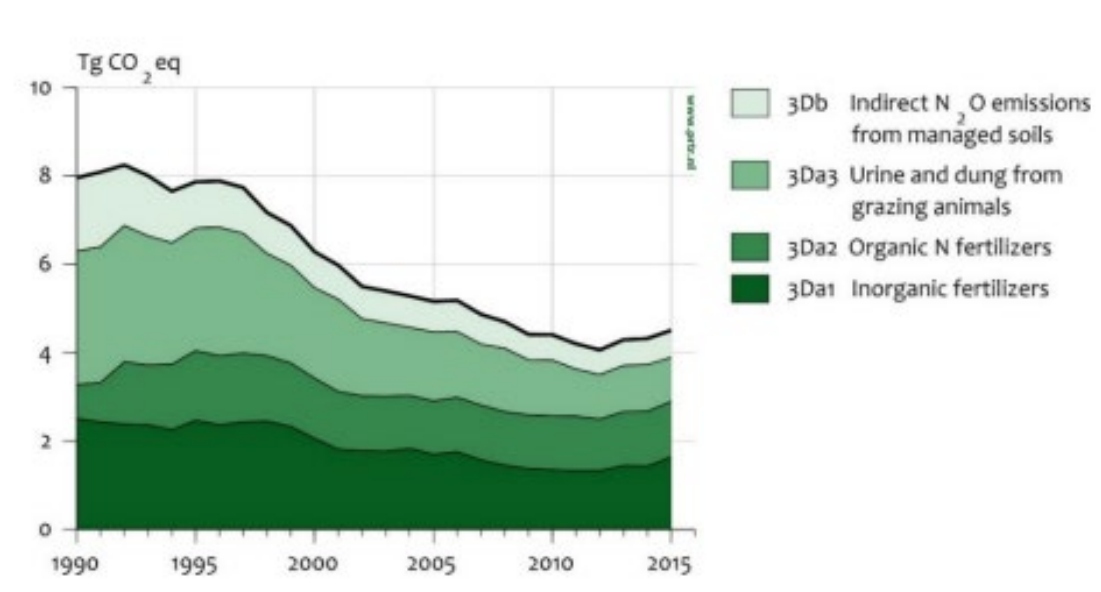
2030 targets

The **excess of nutrients** in the environment is a major source of air, soil and water pollution, negatively impacting biodiversity and climate. The Commission will act to

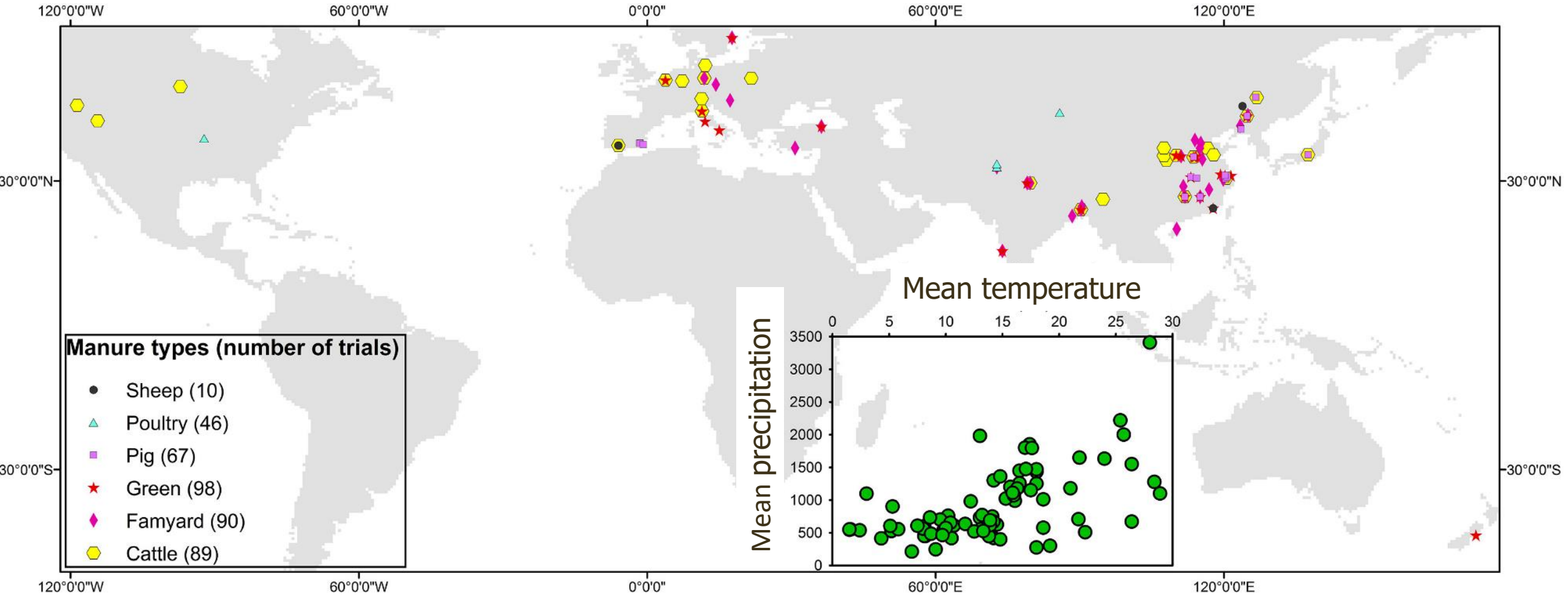
- **reduce nutrient losses by at least 50%**, while ensuring no deterioration on soil fertility
- **reduce fertilizer use by at least 20%**

Evidence from many experiments





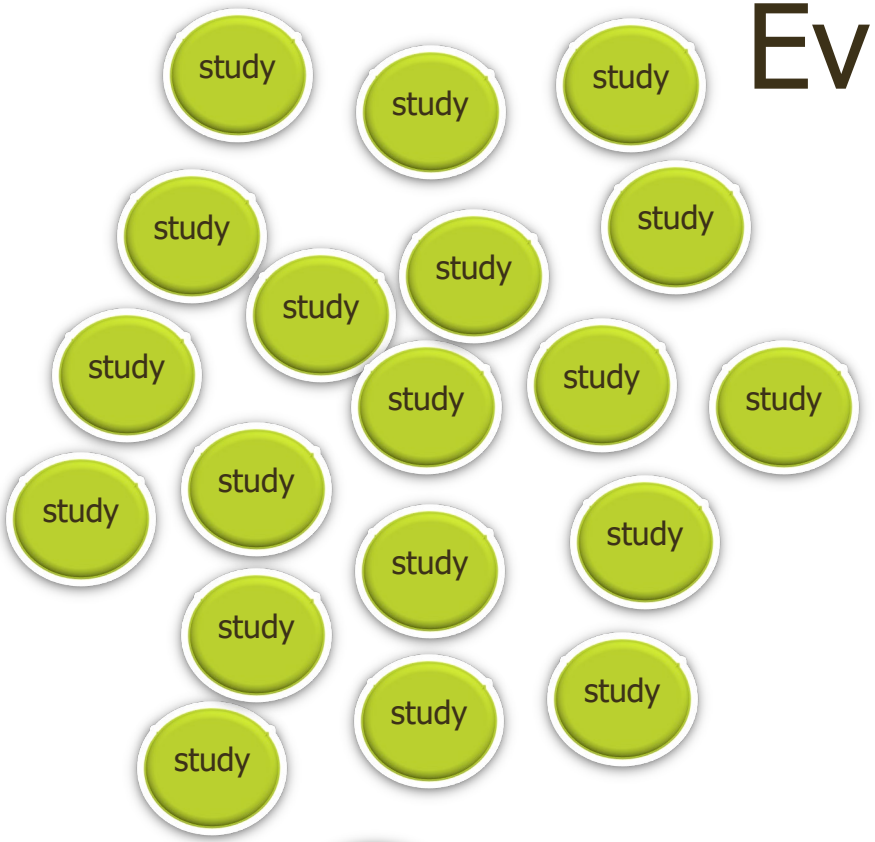
Evidence from many countries



Liu et al (2020) Impact of manure on soil biochemical properties: A global synthesis

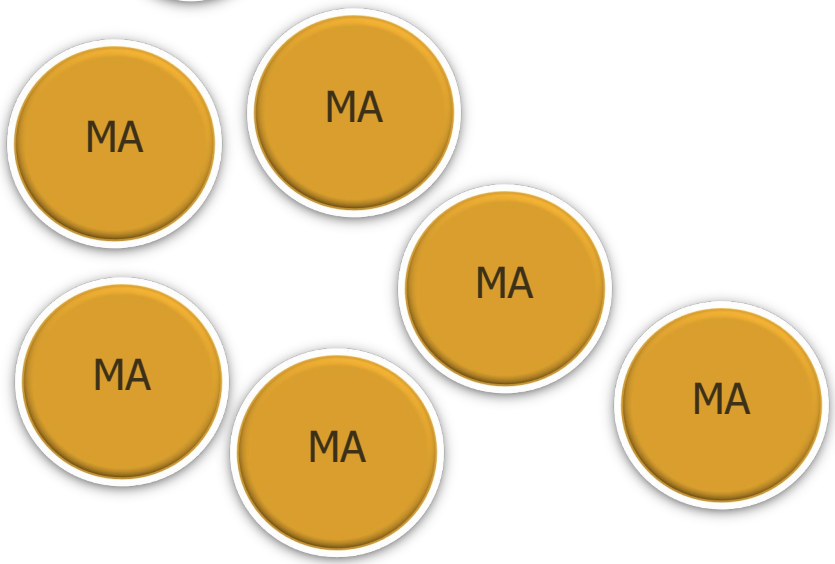
Evidence comes from…

New meta-analysis



Meta-Analysis

Review of **existing** meta-analyses



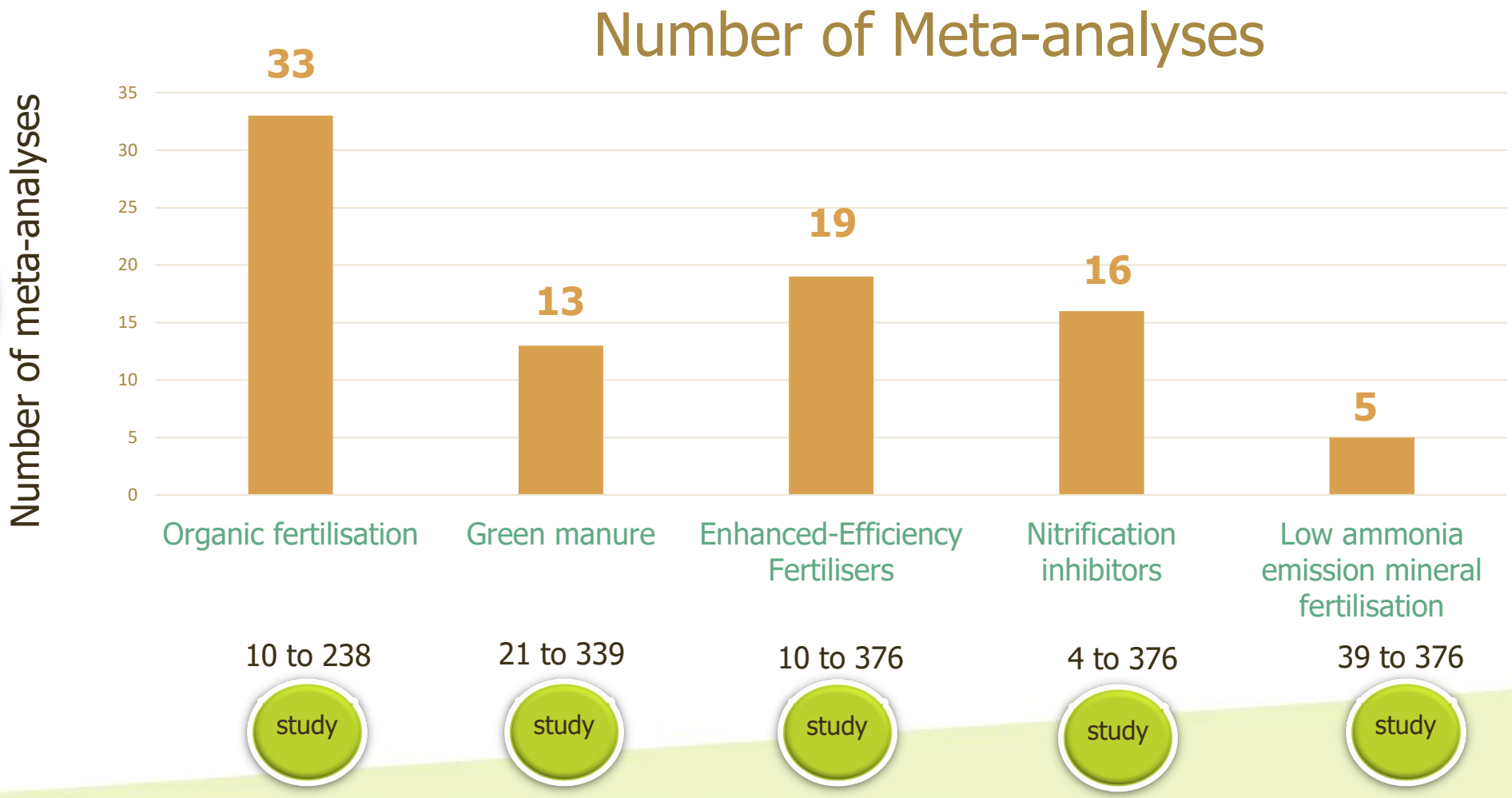
Reviews of meta-analyses

Five fertilisation strategies

- Organic fertilisation
- Green manure
- Enhanced efficiency fertilisers
- Nitrification inhibitors
- Low ammonia emission techniques

Hundreds of experimental studies available

Meta-Analyses



Reviews of 33 meta-analysis

Effects of organic fertilisation

Compared to mineral fertilisation

POSITIVE

- Decreases ammonia emissions
- Decreases nitrogen leaching
- Improves soil biological quality
- Increases soil nutrients
- Increases soil organic carbon

NO EFFECT

- on crop yield

NEGATIVE

- Increases CO_2 emissions

Reviews of 16 meta-analysis

Effects of Nitrification inhibitors (NI)

Compared to N fertilization without NI

POSITIVE

- Decreases NO and N_2O emissions
- Decreases nitrogen leaching
- Increases plant N uptake
- Increases yield

NEGATIVE

- Increases NH_3 emissions

TAKE AWAY MESSAGES

- Sustainable fertilisation practices
  - overall positive effects on Nitrogen use efficiency, soil quality and yield
  - attention to trade-offs with air pollution and greenhouse gas emissions
- Meta-analyses review
  - robust evidence with low risk of bias
  - info on biogeographical and climatic factors that influence the fertilization effects

Thank you for your attention




EIP-AGRI seminar
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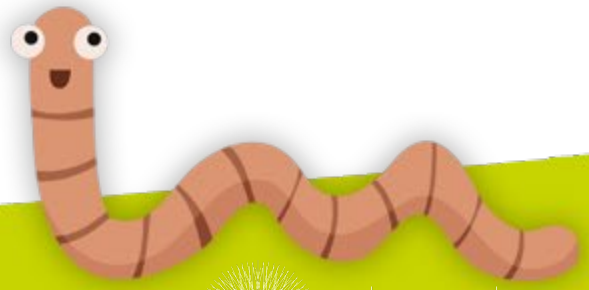
Online – 13-14 April 2021

All information of the seminar is available on
www.eip-agri.eu

On the event webpage
https://ec.europa.eu/eip/agriculture/en/event/eip-agri-seminar-healthy-soils-europe-sustainable



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