NUTRITIVE

Funded by the European Union

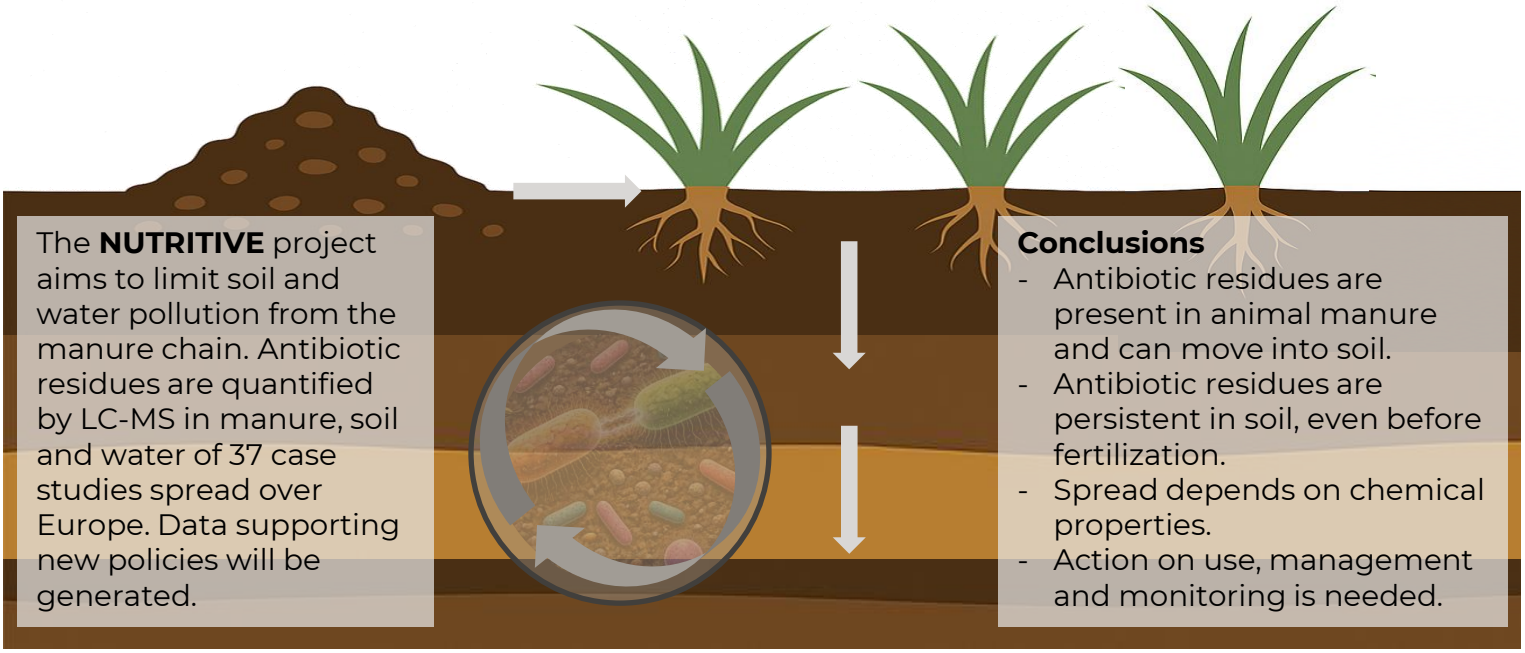
#HorizonEU

www.nutritive.es

Risk of antibiotics transfer to soil

Antibiotics in livestock and the environment

- Livestock are commonly treated with antibiotics to cure disease.
- Animals do not fully metabolize antibiotics; large amounts are excreted in urine and/or feces.
- Raw manure is often used as fertilizer, introducing antibiotic residues into soil.
- Antibiotics can persist in soil and may contaminate surface and groundwater.
- Low levels of antibiotics create selective pressure on bacteria promoting the emergence of antibiotic-resistant bacteria.
- Resistant bacteria can spread to animals and humans, threatening public health.



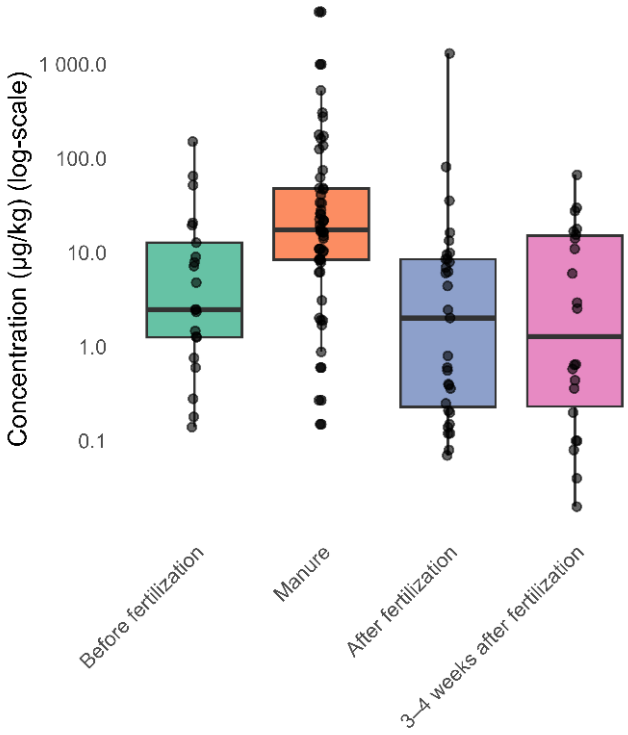
The **NUTRITIVE** project aims to limit soil and water pollution from the manure chain. Antibiotic residues are quantified by LC-MS in manure, soil and water of 37 case studies spread over Europe. Data supporting new policies will be generated.

Conclusions

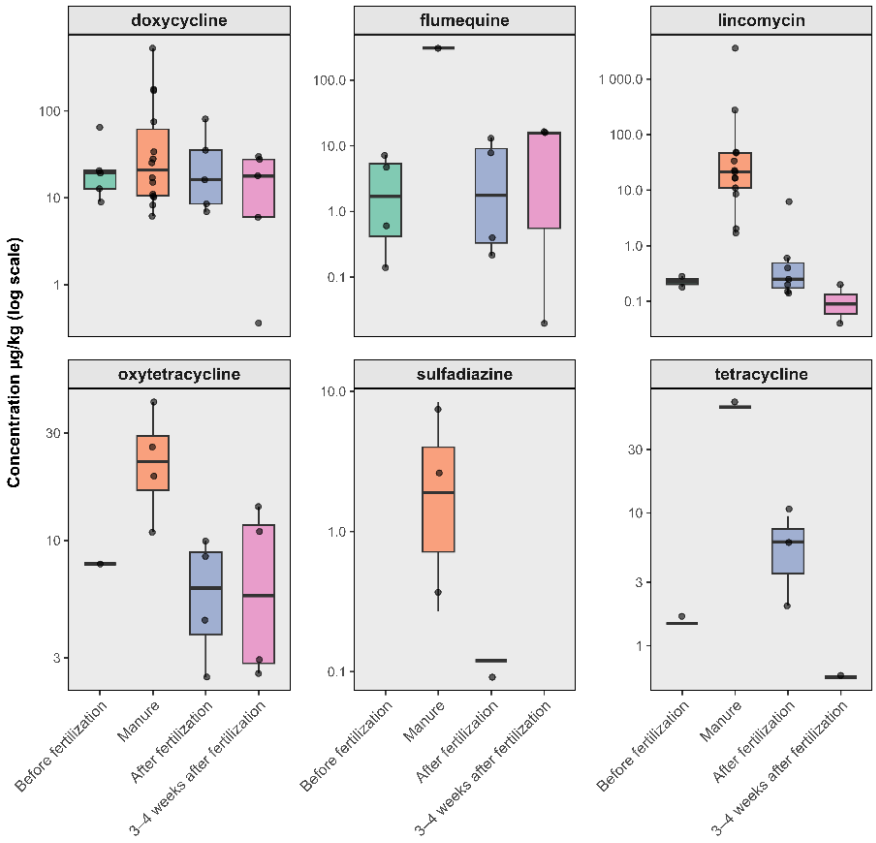
- Antibiotic residues are present in animal manure and can move into soil.
- Antibiotic residues are persistent in soil, even before fertilization.
- Spread depends on chemical properties.
- Action on use, management and monitoring is needed.

Preliminary results from NUTRITIVE – more results are being generated

Antibiotic residues are persistent in soils



5 most prevalent antibiotics



References:
Huygens et al. 2021. Presence of antibiotic residues and antibiotic resistant bacteria in cattle manure intended for fertilization of agricultural fields: A one health perspective. Antibiotics 10. https://doi.org/10.3390/antibiotics10040410
Huygens et al. 2022. Impact of fertilization with pig or calf slurry on antibiotic residues and resistance genes in the soil. Science of The Total Environment 822, 153518. https://doi.org/10.1016/j.scitotenv.2022.153518

CONTACT

Laurens Tuts
EV-ILVO
laurens.tuts@ilvo.vlandeeren.be

Geertrui Rasschaert
EV-ILVO
geertrui.rasschaert@ilvo.vlandeeren.be

Ann Verfaillie
EV-ILVO
an.verfaillie@ilvo.vlandeeren.be

Alberto Scarlata
STA
a.scarlata@staengineering.it

Alessandro Tamagnone
STA
a.tamagnone@staengineering.it

Funded by the European Union

#HorizonEU

NUTRITIVE

INNOVATIVE DECISION-MAKING TOOL FOR DEFINING THE MOST SUITABLE MANURE MANAGEMENT STRATEGIES TO ACHIEVE A SUSTAINABLE LIVESTOCK FARMING SYSTEM DURING THE WHOLE VALUE CHAIN