

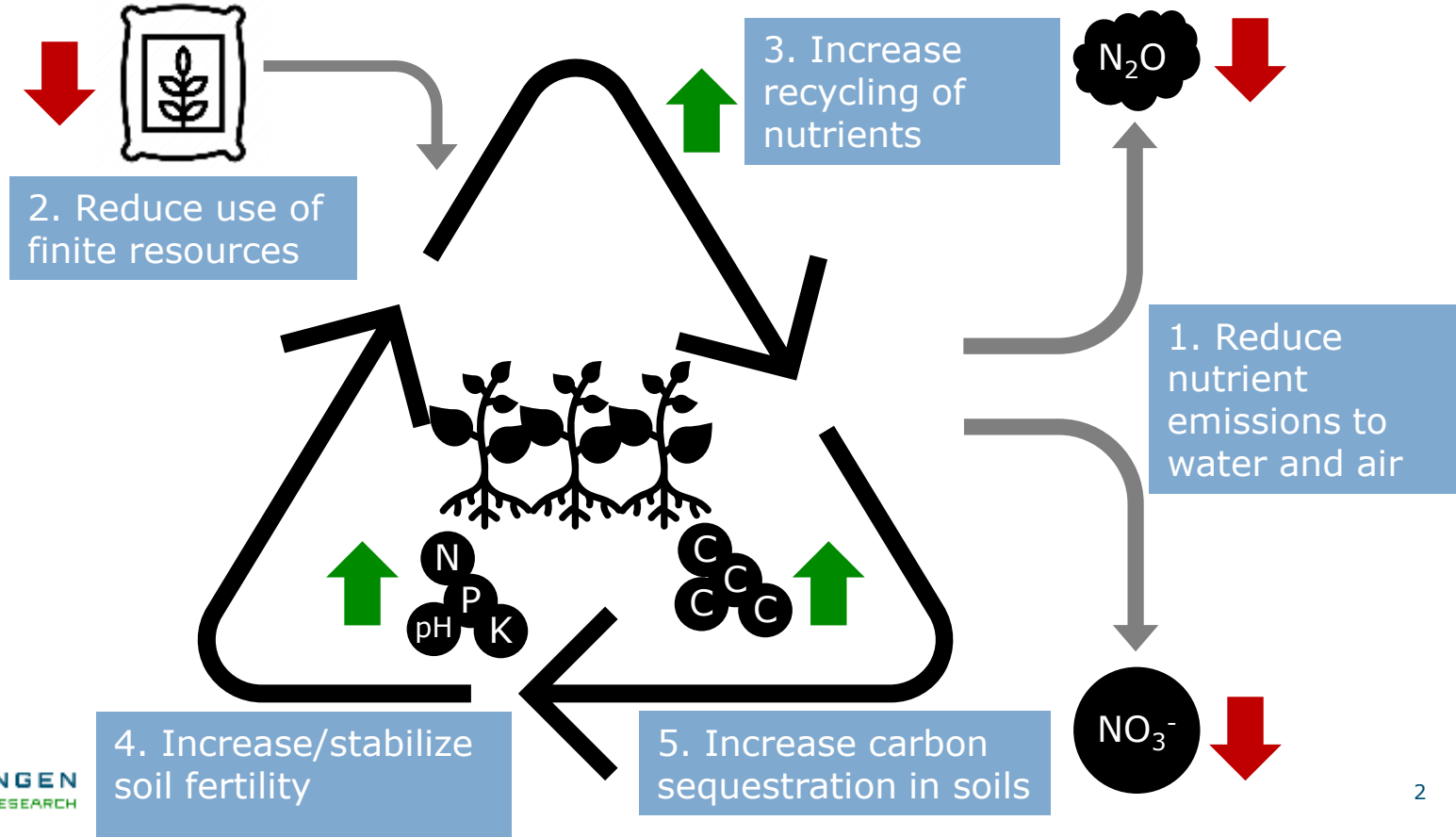
# Necessary renewal of fertilization advice in outdoor crops

EUVRIN Work Group Fertilization & Irrigation 5<sup>th</sup> Workshop, Ljubljana/online

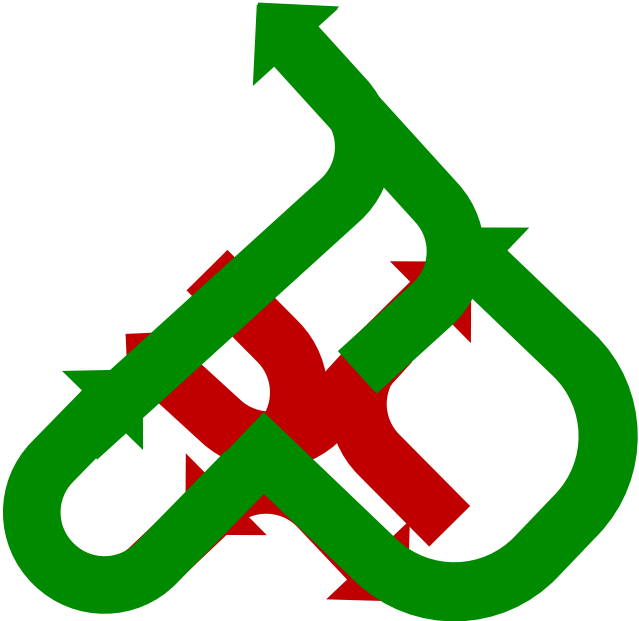
12 September, Janjo de Haan



# Challenges around fertilization



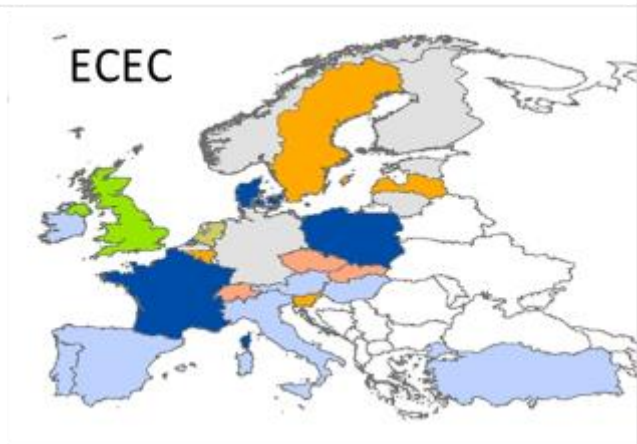
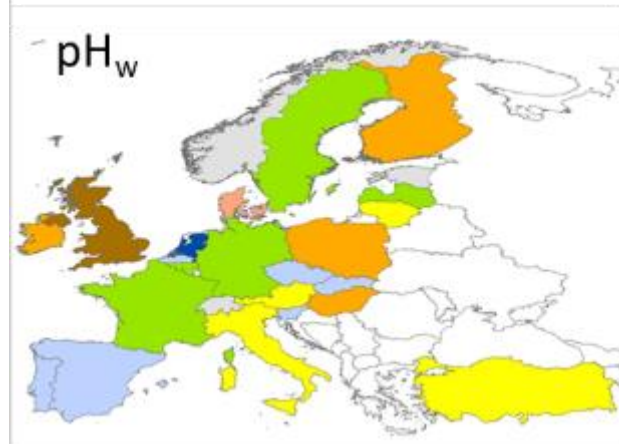
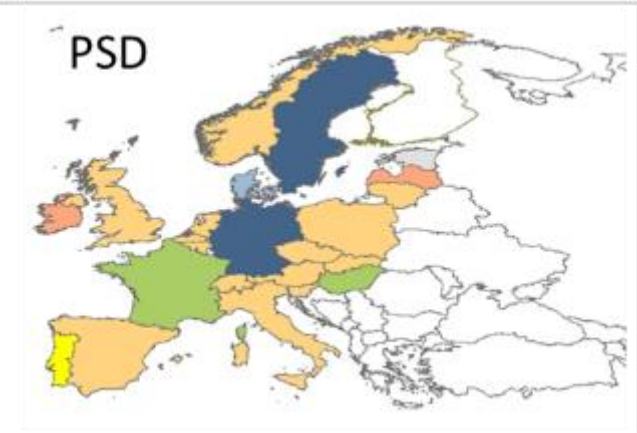
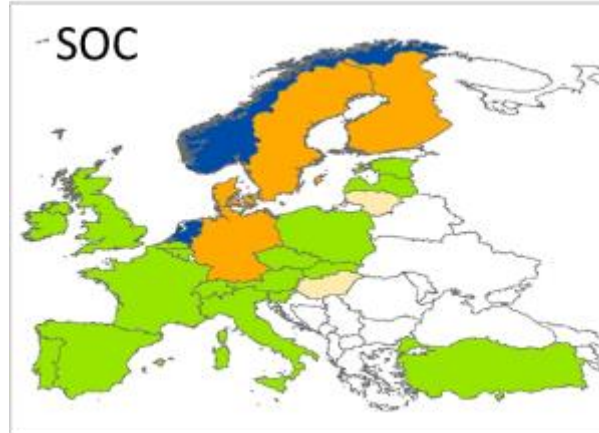
# Harmonize fertilization advices over Europe



# Lab methods used per country

*The same colour within a map indicates the same applied methodology:*

- *SOC – soil organic carbon content;*
- *PSD – particle size distribution;*
- *pH<sub>w</sub> – pH-value in water;*
- *ECEC – effective cation exchange capacity*



# EJP SOIL Stocktake of current fertilisation methodologies across Europe

## CONTEXT

The European Commission has set targets to:

- Reduce nutrient losses > 50%
- Reduce fertiliser use >20% **by 2030**
- While ensuring no deterioration in soil fertility

## OBJECTIVE

To assess fertiliser practices across Europe and discuss harmonisation of methodologies

## METHODS

A stocktake study of current fertilisation guidelines across 23 European countries took place

## RESULTS

- There are differences in fertiliser guidelines operating between neighbouring countries, even within the same environmental zone

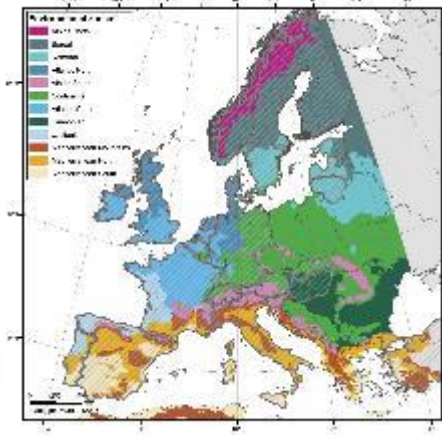
## BARRIERS TO HARMONISATION

- Guidelines need to be specific to soil and climatic variables
- There are significant agri-ecosystem differences across Europe

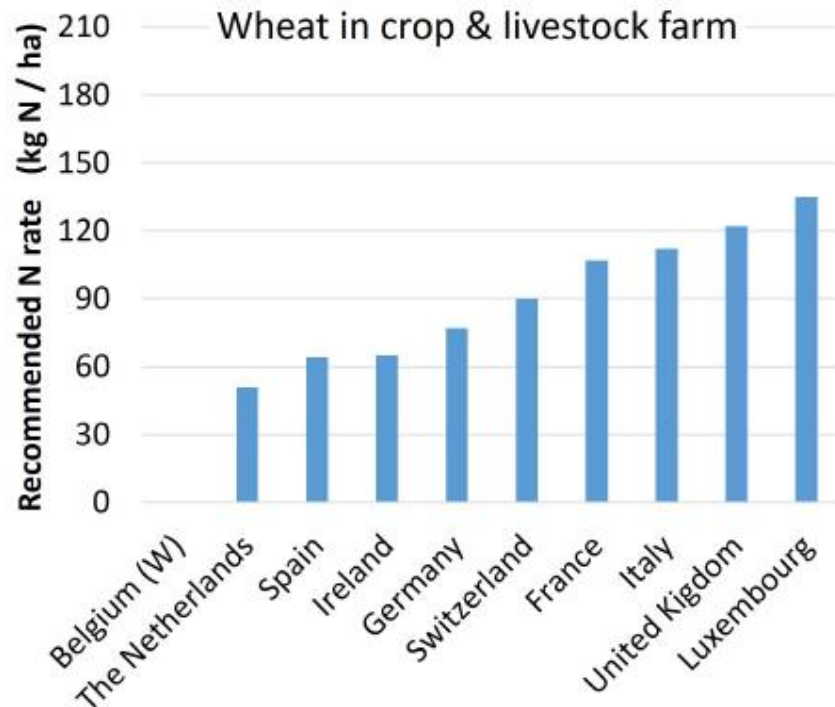
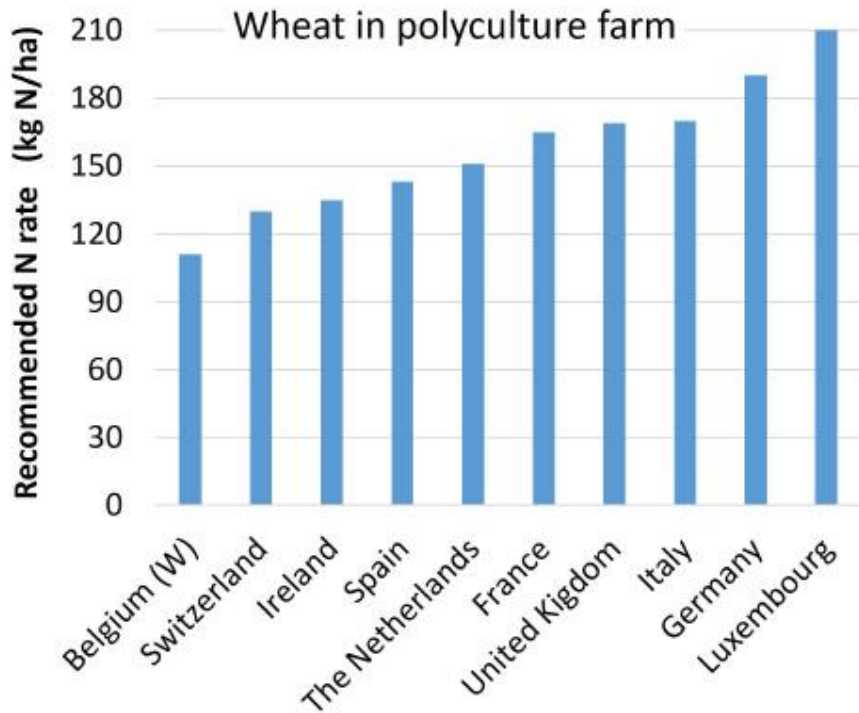
## POTENTIAL BENEFITS OF HARMONISATION

- Shared learning in best practice
- Collective approach to tackling environmental concerns

**SIGNIFICANCE:** This data analysis across 23 European countries provides a baseline from which scientific solutions can be developed to deliver EU policy targets for nutrient loss and soil fertility



# Recommended N-fertilization rates in wheat for two case studies based on methods of ten West European countries

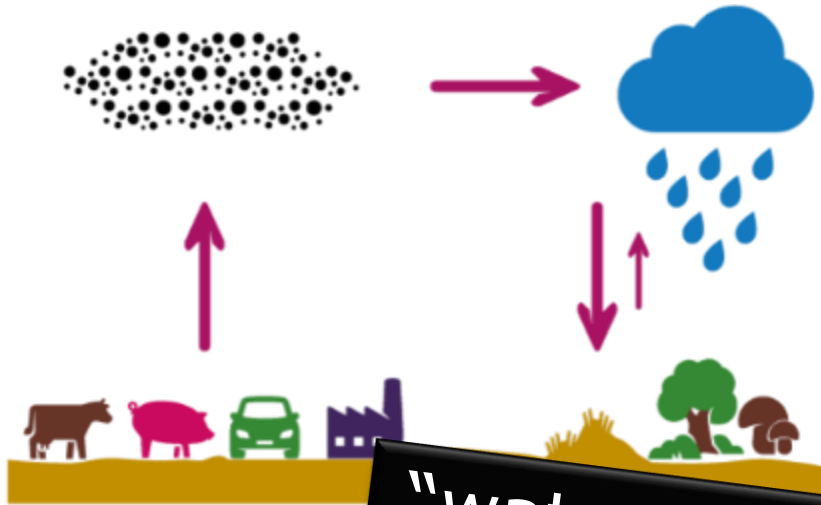


# Variables in the calculation of N-fertilisation rates of methods of ten West European countries

	Outputs (direct or through coefficient)				
	S <sub>end</sub>	C <sub>end</sub>	L	A	AUC
	Soil end	Uptake	Leaching	Atmos. Loses	Apparent Use Coefficient
France					
Italy					
Switzerland					
Belgium (Wal.)					
Germany					
United Kingdom					
Spain					
The Netherlands					
Ireland					
Luxembourg					

	Inputs (or not needed to be brought)										Number of variables (except AUC)	
	S <sub>start</sub>	C <sub>start</sub>	Hu	Past	CR	IC	Ir	M <sub>1</sub>	M <sub>n,1</sub>	Atm D		AdY
	Soil start	Crop start	Humus min.	Pasture min	Crop residues	Interm. crops	Irrigation	Manure	Manure Year-1	Atmos. deposition		Adjust. of the yield
												10
												10
		(*)										9
												9
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												6
												3

# In the Netherlands

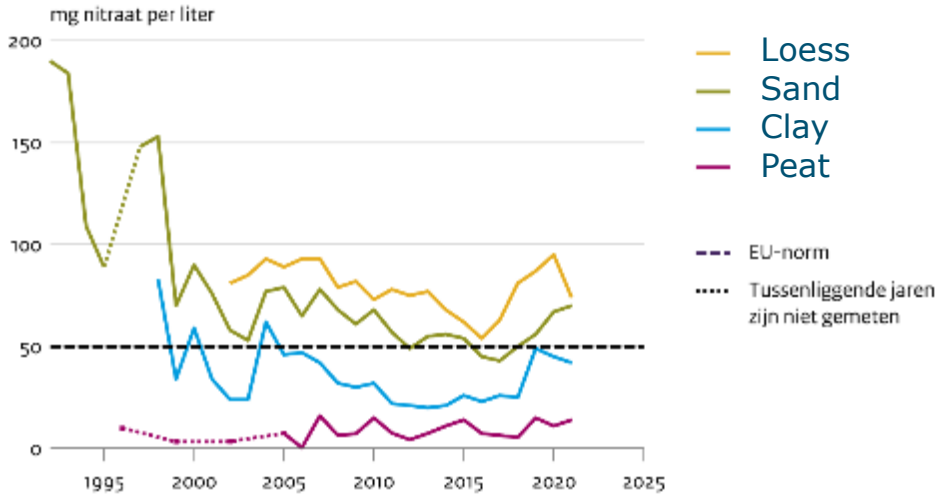


**"water quality crisis much bigger than nitrogen"**



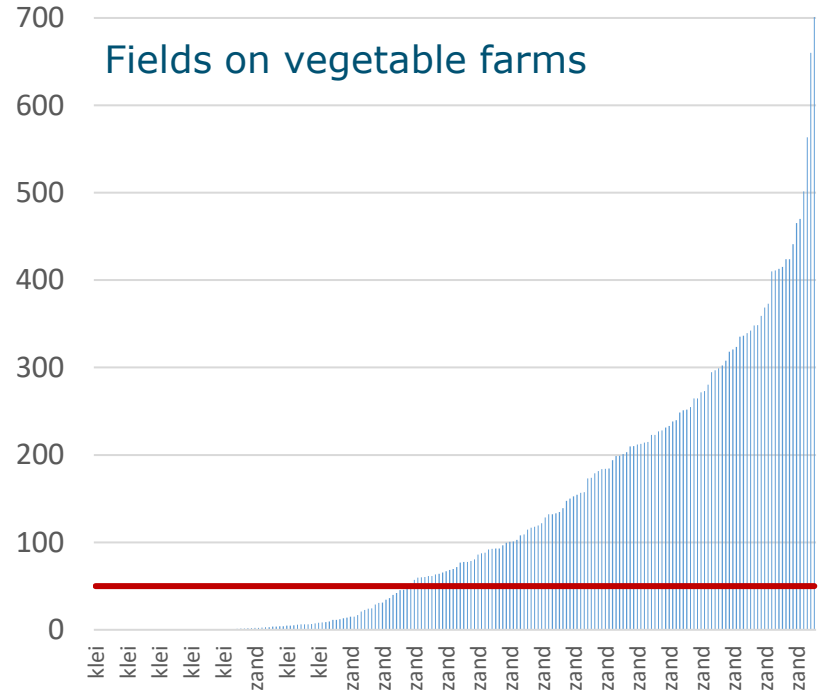
# Nitrate concentrations groundwater in the Netherlands

## All agricultural farms



Bron: RIVM, Landelijk Meetnet effecten Mestbeleid (LMM)

RI  
www.clo.nl



# Fertilization advice in the Netherlands



- Two (active) standing committees
  - Arable farming & vegetables

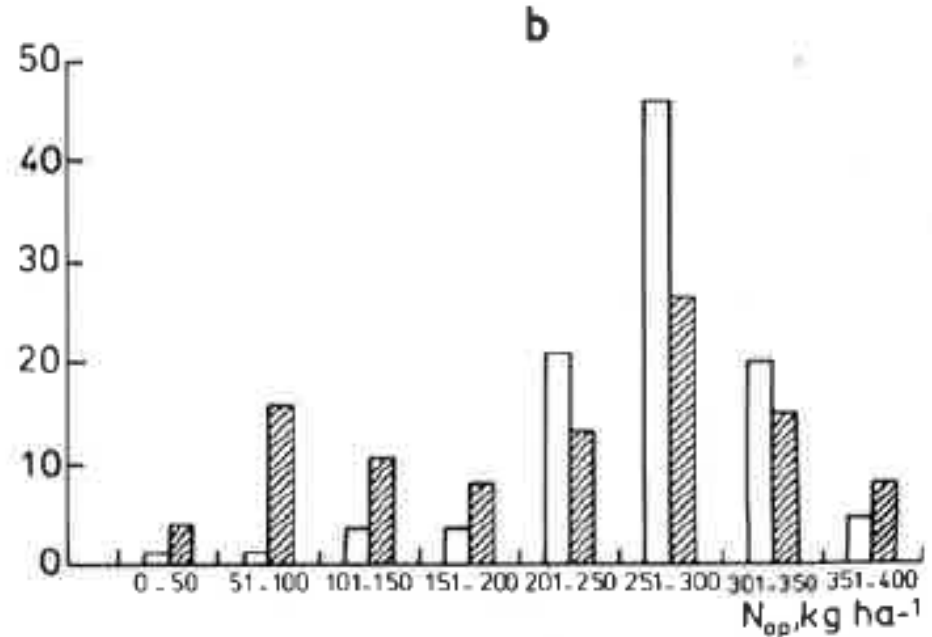
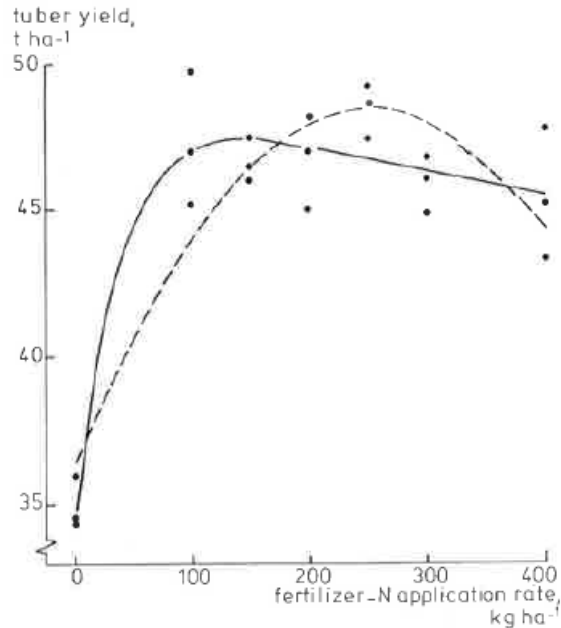
[www.handboekbodemenbemesting.nl](http://www.handboekbodemenbemesting.nl)

- Grassland and fodder crops

[www.bemestingsadvies.nl](http://www.bemestingsadvies.nl)

- Independent
- Scientific based
- Researchers, advisors and farmers
- Privately financed by product boards
- Regular adaptations of current advices

# Current fertilization advice in the Netherlands is outdated



Current fertilization advice: agronomic advice per nutrient and crop

# Fertilization advice based on outdated methods for chemical soil analysis

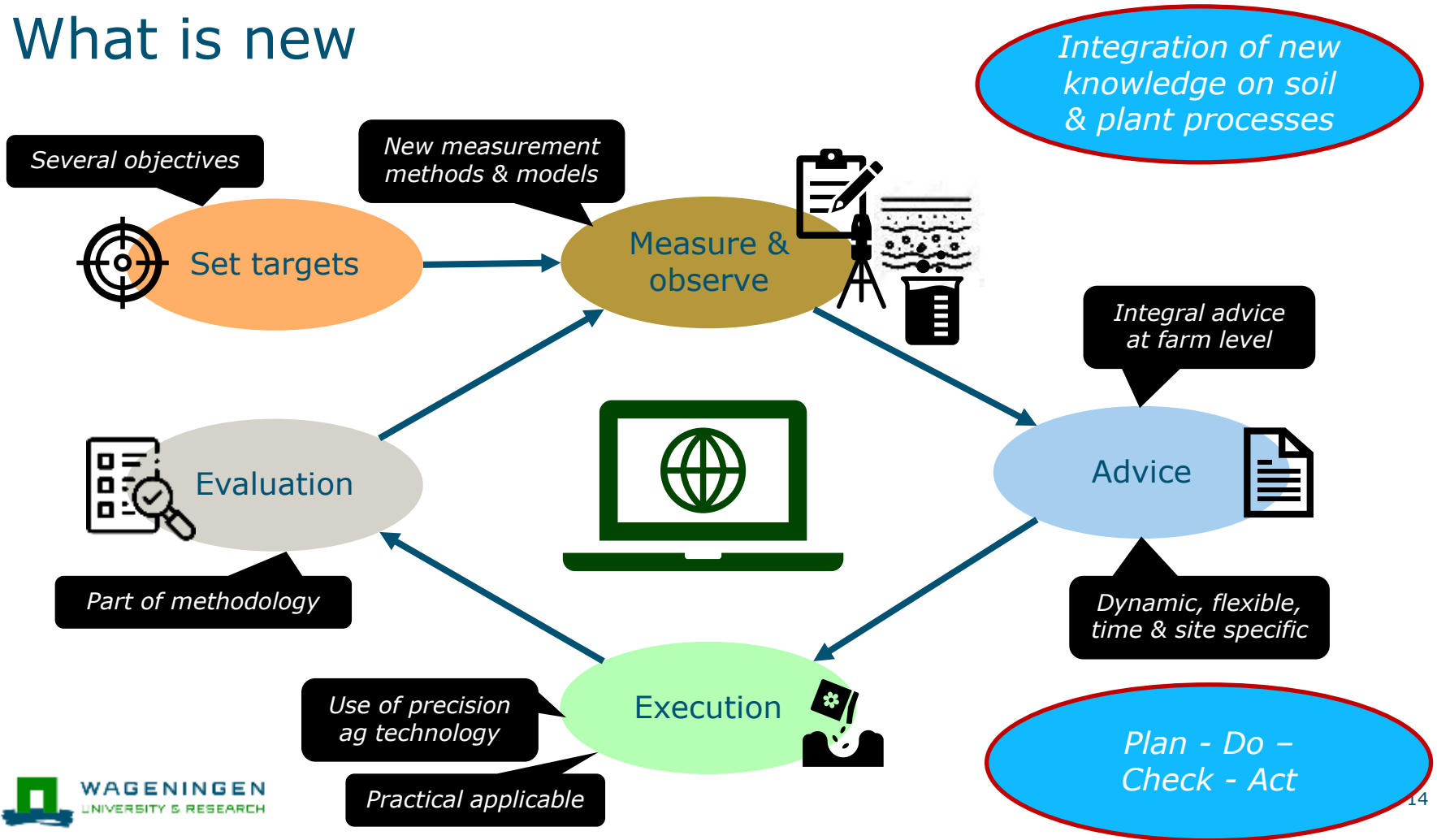


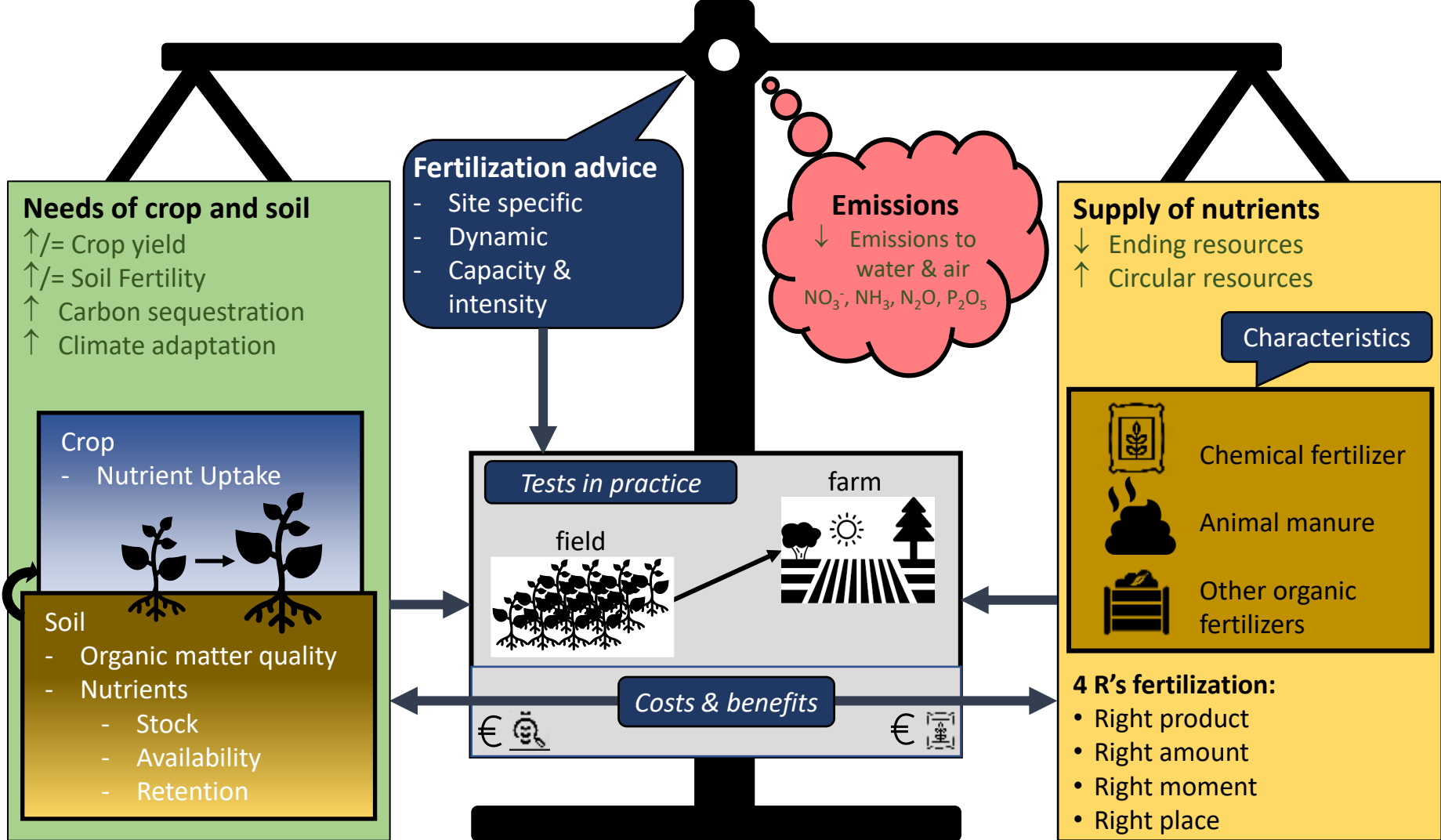
# New Dutch public-private cooperation project



- 4-year project
- Consortium of 3 research organizations & 13 private parties
  - Product board arable farming, industry organisations
  - Fertilizer producers and retail
  - Laboratories, arable industry
- Focus on arable crops
- Budget 1.5 Meuro
  - 50-50 financed by government and private parties

# What is new





# Expected Results

1. Tested methodology for site specific integrated fertilization advice for N, P and organic matter
2. Tested methodology for dynamic (nitrogen) fertilization application within the growing season
3. New fertilization advices based on intensity & capacity (P, K, etc.)
4. Tested methodology for fertilizer choice based on objectives and field conditions
5. Integration of advices on field and farm level and publication of advices in the Dutch fertilization manual



# International workshop fertilization advice

*April 2024, Lelystad, The Netherlands*

- Discuss new methodologies for fertilization advice on all aspects
- Get input for new Dutch fertilization advice methodology
- Inspire you to improve fertilization advice
- First step in harmonization?



# To conclude

Big need for adapted fertilization advice with societal issues

Fertilization advices methods differ a lot over Europe

New knowledge and technology available but not used

Developing new fertilization advice is needed

Let's join forces!  
→ Participate in our  
workshop next spring

# Thanks for your attention

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