

# Unlocking on-farm nutrition management

A bio-reactor concept for on-farm nutrient cycling

# MEET FARMER JAANUS

## HIS CHALLENGES

1. Declining  
Soil Fertility

2. Reduced  
Profits

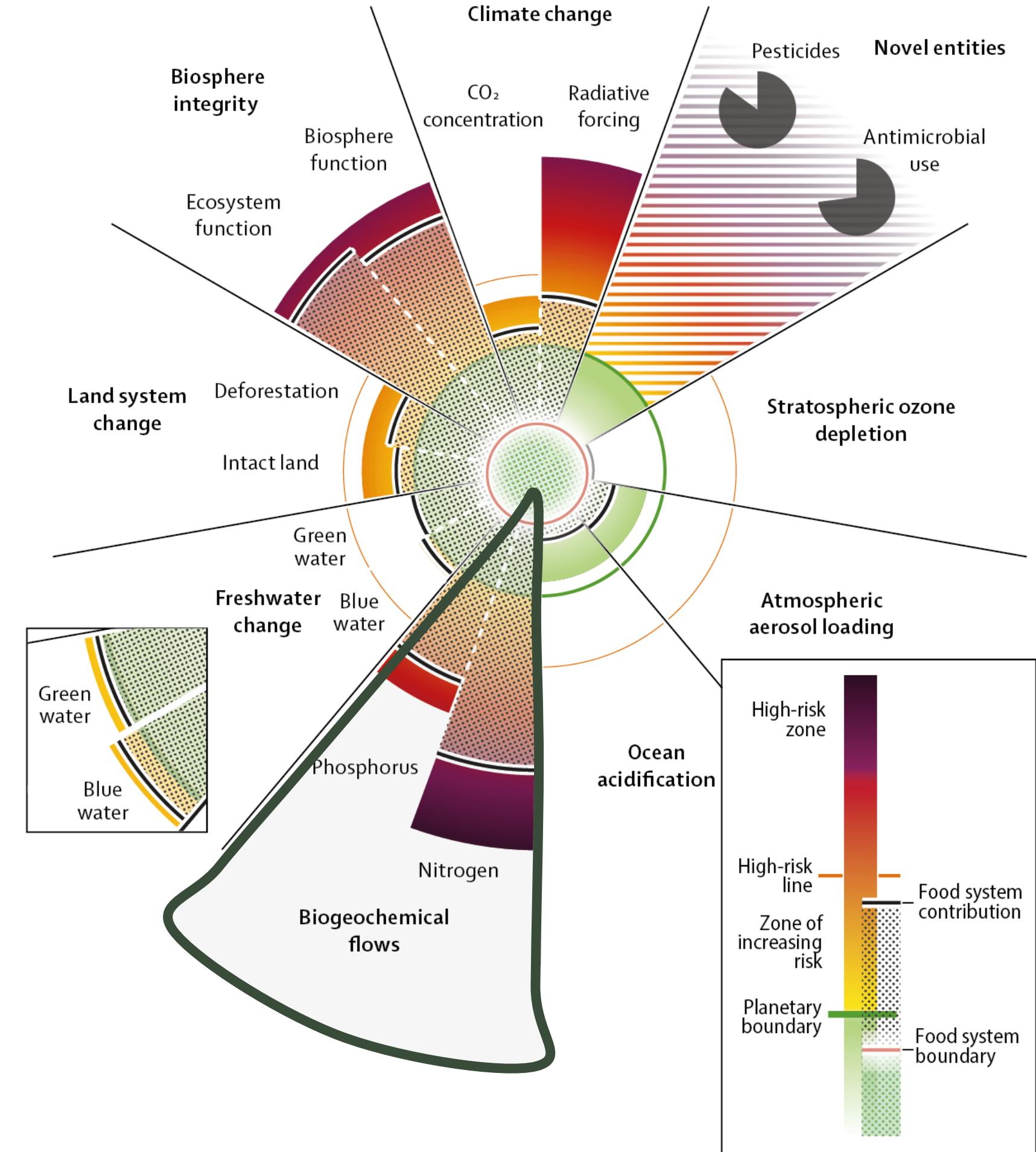
3. Systems  
Lock In



# ZOOMING OUT

## OVERLOADING THE ECOSYSTEM

**Fertilizers use as  
major contributor to  
high risk in  
biogeochemical  
flows.**



# THE SCIENCE IS CLEAR

## SYNTHETIC FERTILIZER USE

**15-60%**

**Low nutrient  
use efficiency**

Sarkar et al. (2021)

**50%**

**Decline in natural  
soil fertility**

Fan et al. (2019)

**5%**

**Of global GHG  
emissions**

Gao et al. (2023)

# ON FARM BIOREACTOR

## NUTRIENT USE EFFICIENT

### Microbiology inoculants

- Seed coating
- In-furrow injection
- Foliar inoculation

### Organically chelated plant nutrition

- Seed coating
- Foliar fertilizing

### Amino acid biofertilizers

- In-furrow injection
- Foliar fertilizing



Prototype – 1500L  
Semi-automated

# COST EFFECTIVE BIOFERTILIZERS



LEVERAGING LOCAL BIOMASS



# THE POTENTIAL BENEFITS

**Between  
20 - 70 %**

**Reduced fertilizer  
use**

**185 - 380  
€/ha**

**Cost saving fertility  
management**

**Up to  
-60%**

**reduction in GHG  
emission**

**Benefits possible from year 1 and grows over 3-5 year period to reach full potential.**



# START TRIAL



Severe soil compaction



Lack of Nutrient Cycling

# TRIAL RESULTS

After 2 years

**Improved soil structure**  
**Enhanced nutrient cycling**  
**Improved kernel weight**  
**Reduced fertilizer cost 20%**

Trial

Control



# Regenerating farmland and farm business

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# FERTILIZER OVER USE

5% of global GHG emissions

Gao et al. (2023)

Up to -50% reduced soil fertility

Fan et al. (2019)

Up to -50% in food nutrient density

Bhardwaj et al. (2024)

Locks farmers into dependency

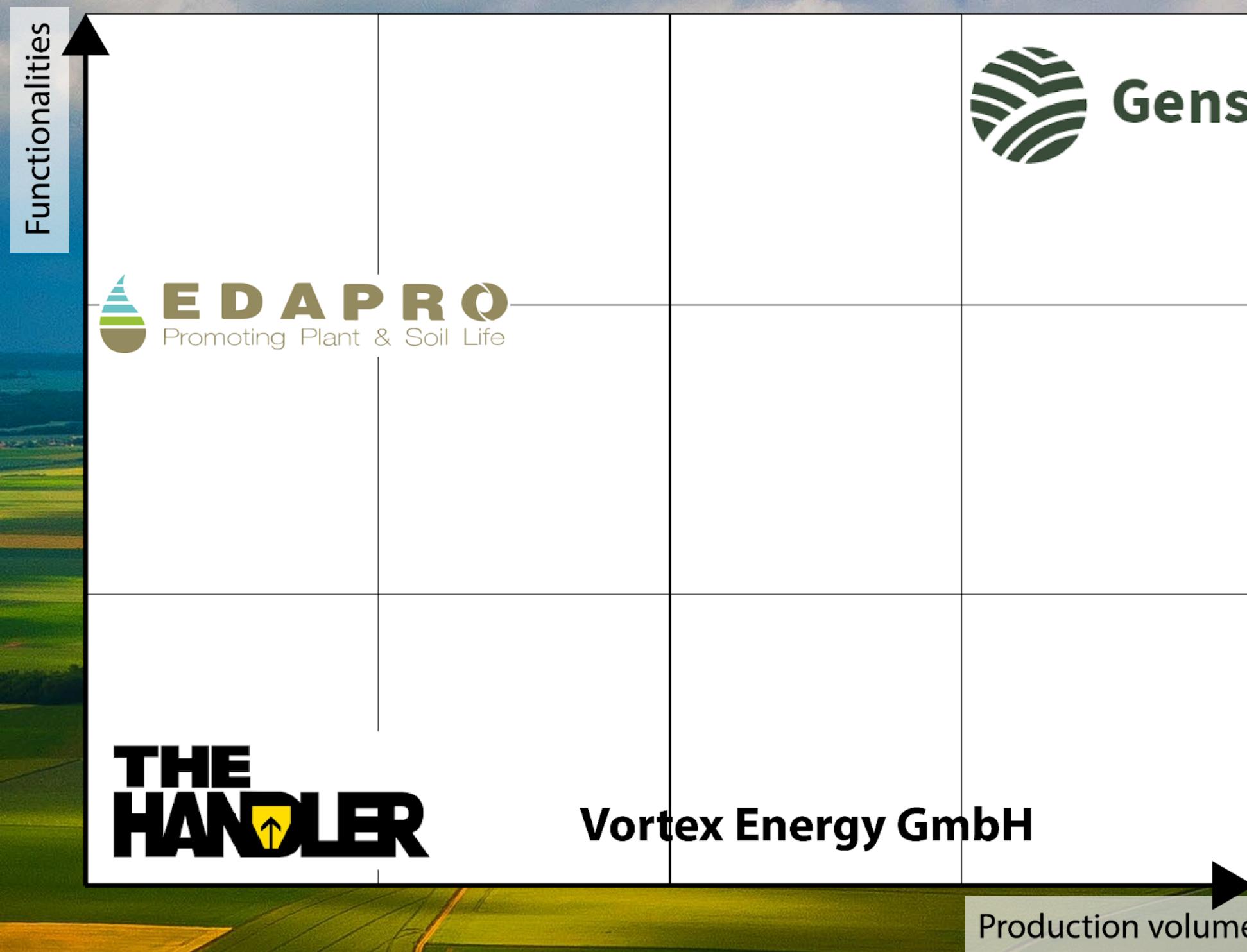
Sarkar et al. (2021)

Nutrient	Efficiency (%)
Nitrogen	30–50
Phosphorus	15–20
Potassium	50–60
Sulphur	8–12
Zinc	2–5
Iron	1–2
Copper	1–2
Manganese	1–2
Boron	2–3
Molybdenum	2–5

# THE MARKET



# THE COMPETITION



# THE TEAM



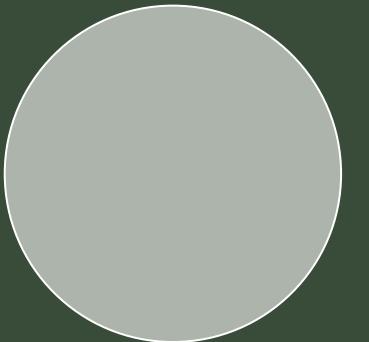
**Olivier de Schaetzen**  
CEO and product manager



**Patricia Wiklund**  
COO and marketing



**Riina Maruštšak**  
Project management and grant writing



**Will you be our - CTO ?**  
Come and help us build an awesome  
tool that empowers farmers, saves the  
soil and addresses climate change!

