



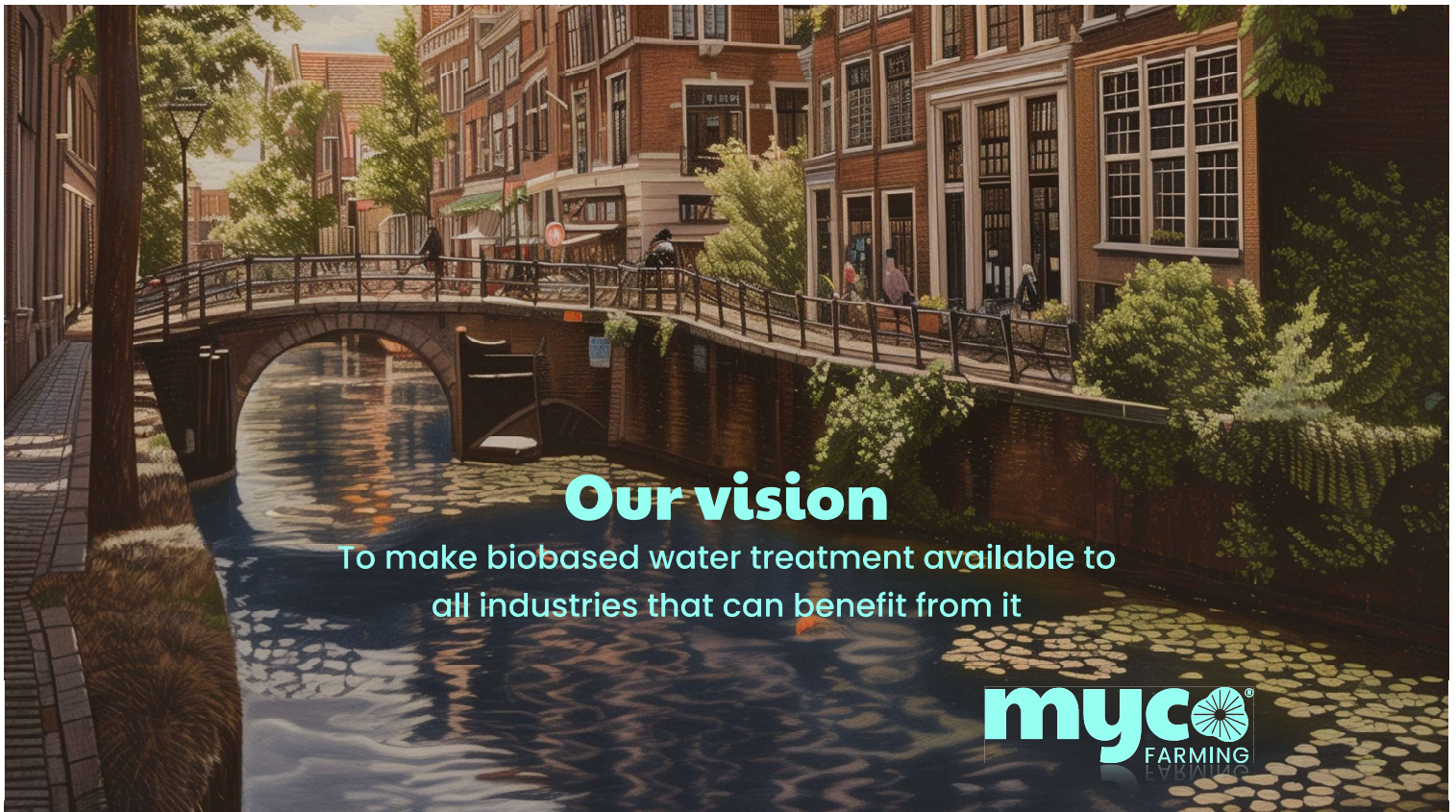
Institute of
Applied Mycology

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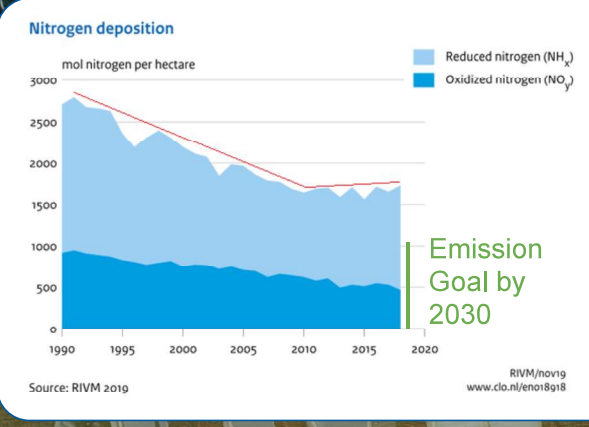
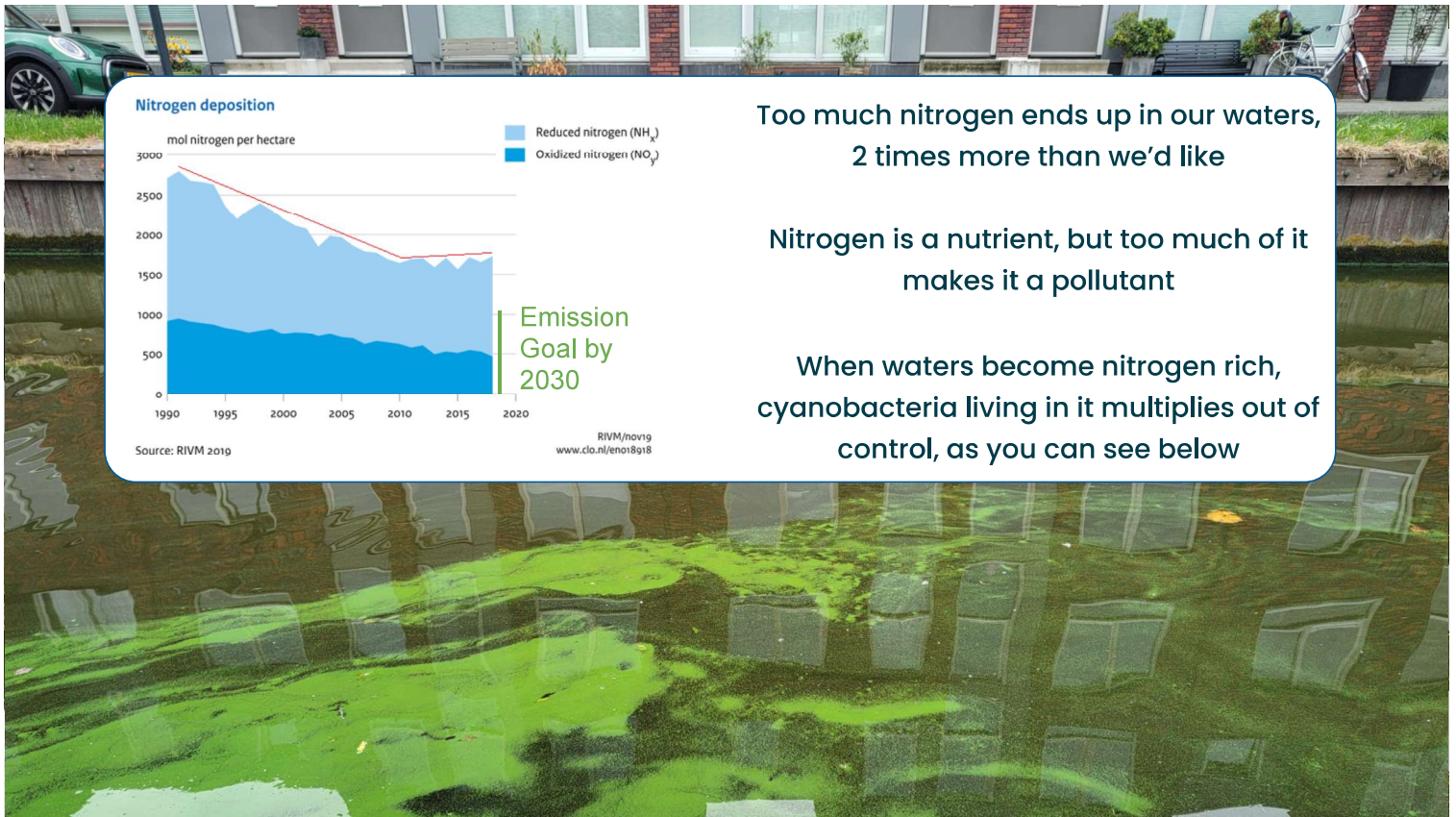
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Our vision

To make biobased water treatment available to
all industries that can benefit from it

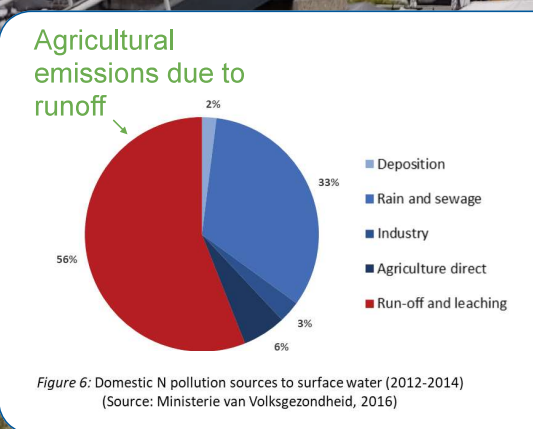
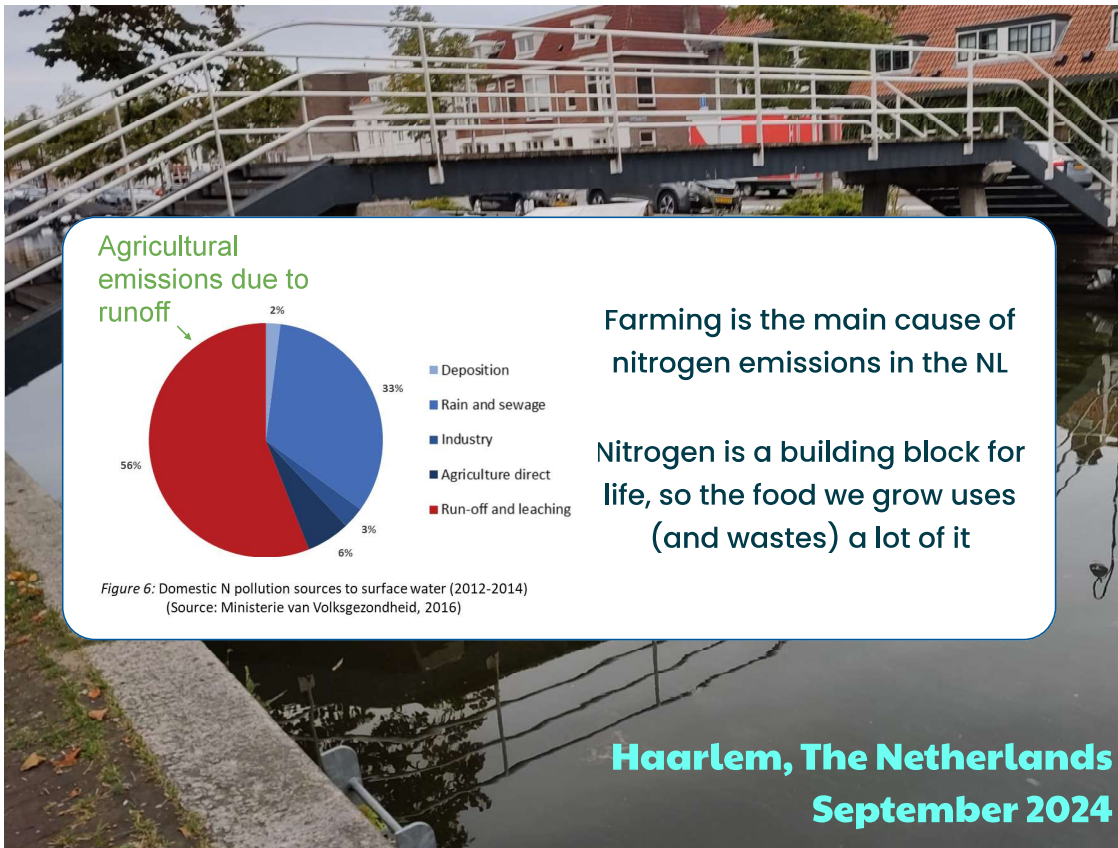




Too much nitrogen ends up in our waters,
2 times more than we'd like

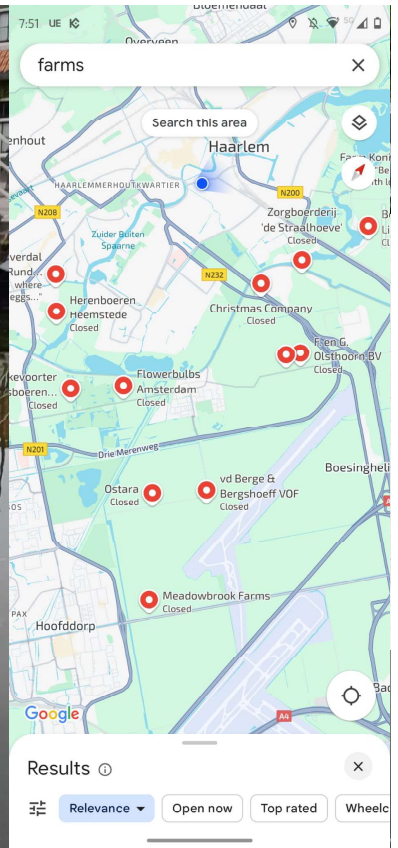
Nitrogen is a nutrient, but too much of it
makes it a pollutant

When waters become nitrogen rich,
cyanobacteria living in it multiplies out of
control, as you can see below

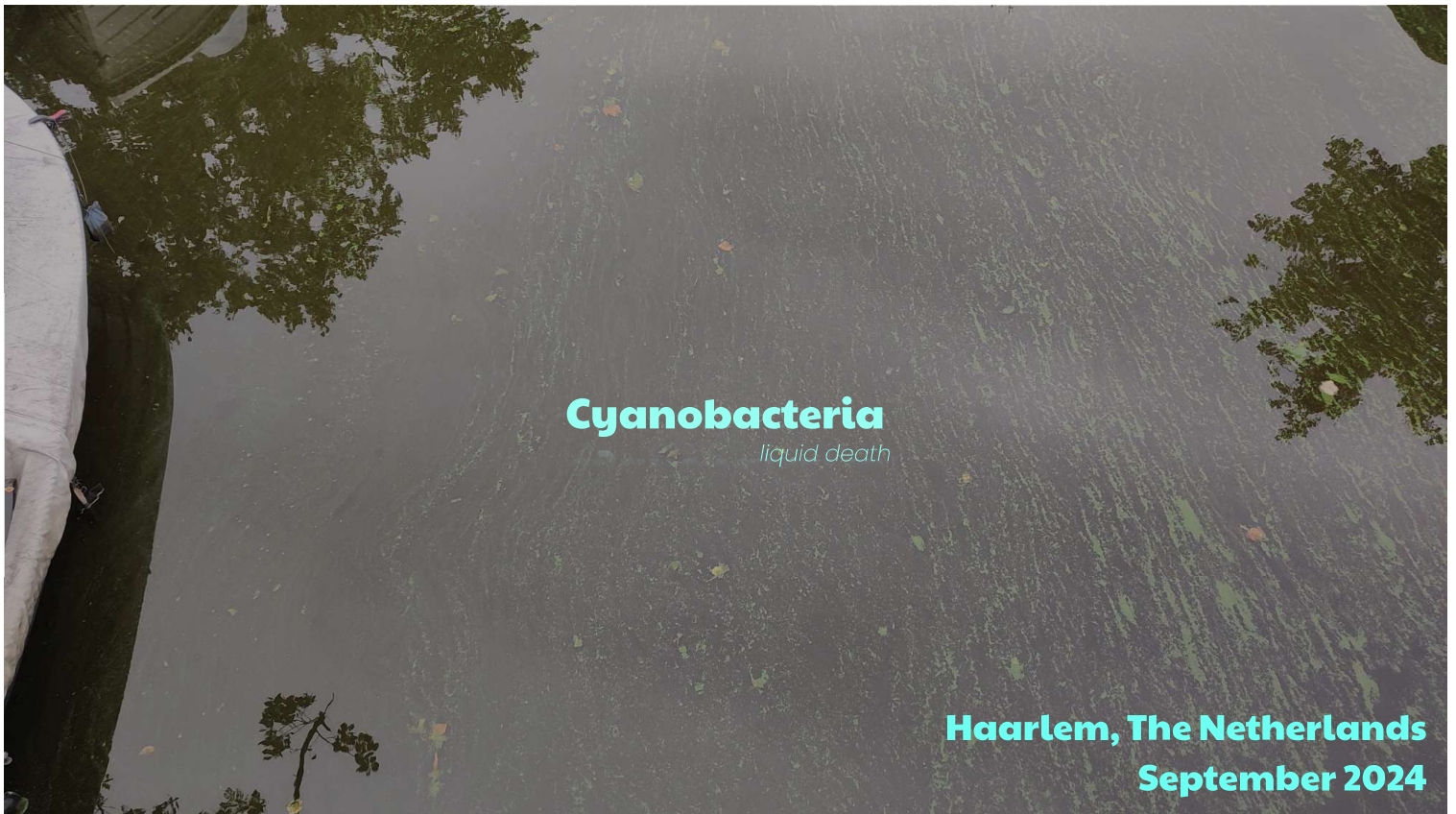
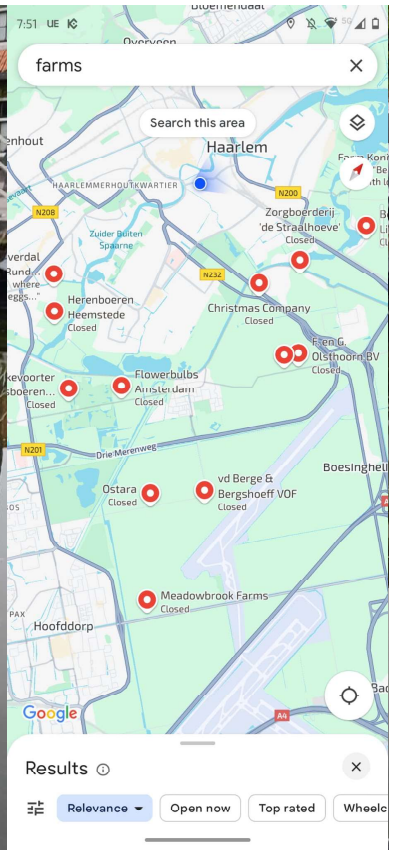


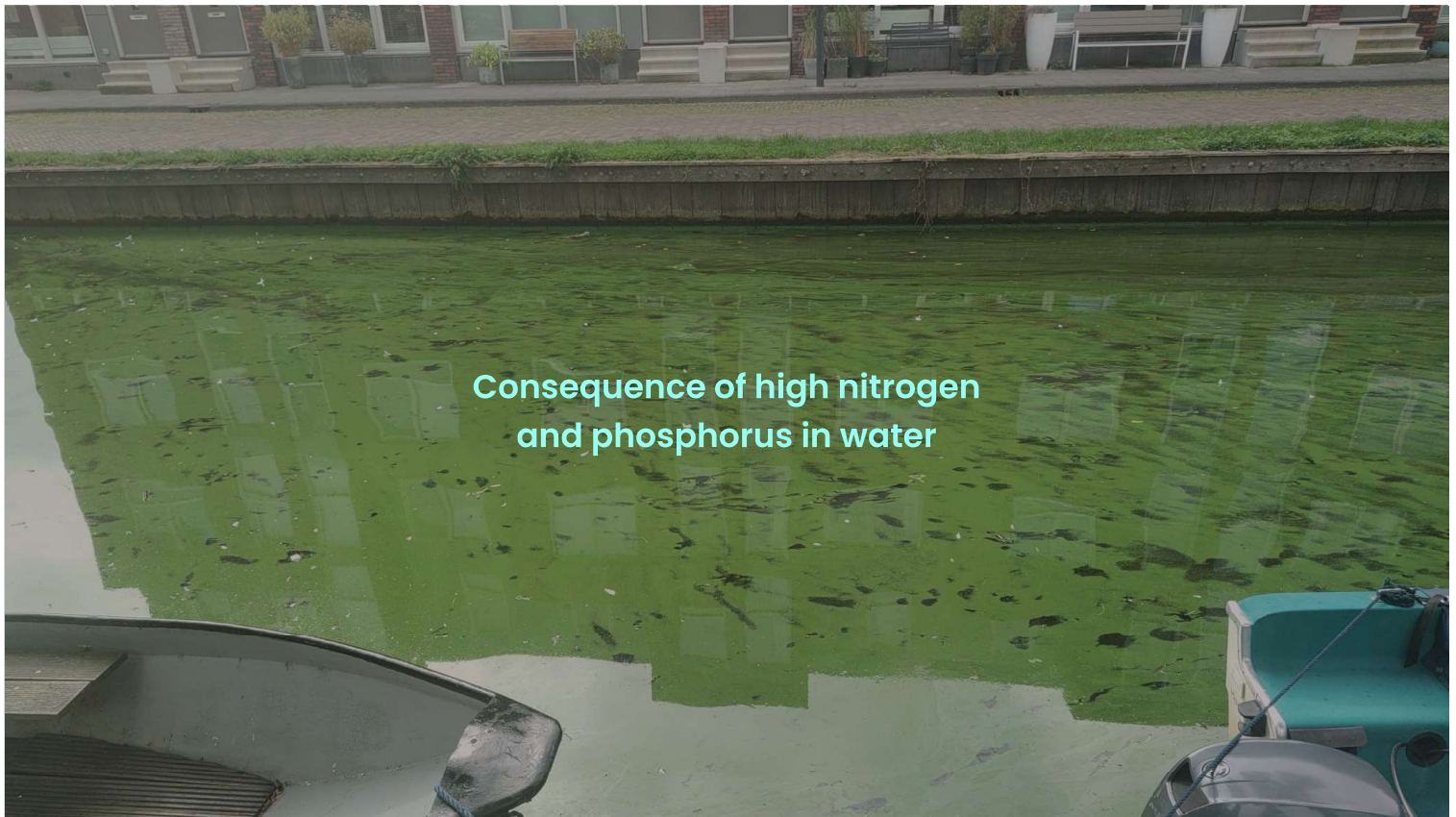
Farming is the main cause of
nitrogen emissions in the NL

Nitrogen is a building block for
life, so the food we grow uses
(and wastes) a lot of it

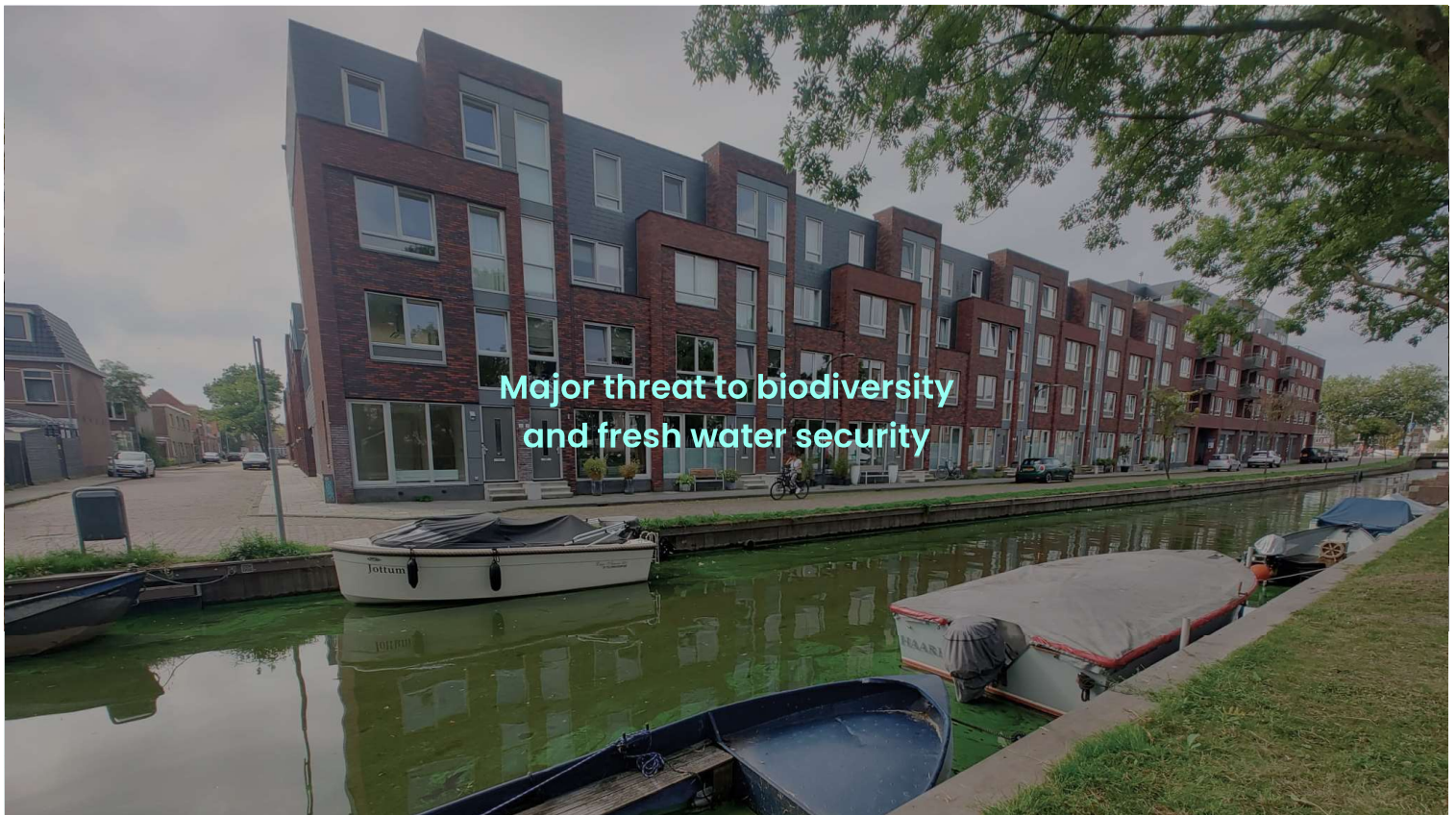


Haarlem, The Netherlands
September 2024



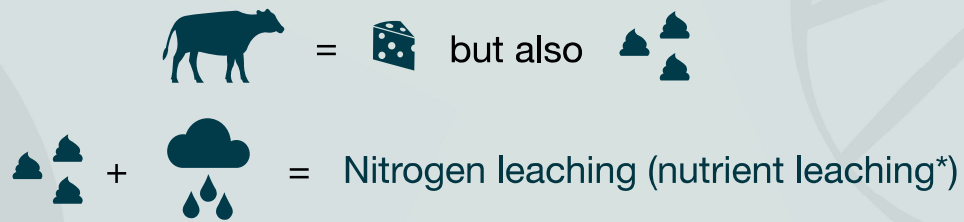



Consequence of high nitrogen
and phosphorus in water





Major threat to biodiversity
and fresh water security

The Nitrogen Crisis



In order to reduce the amount of 

Farmers have to reduce the amount of  & 

Nutrient leaching accounts for more than 50% of the total nitrogen emissions from agriculture*

Or do they?

*Ministerie van Volksgezondheid, 2016

Why?



To be able to **grow more food**
while **polluting less**

We also need to be able to **sustain our ability**
to **deal with our increasing levels of pollution**

How does nature deal with all of our 

The answer is **fungi**

At MycoFarming we grow mycelium specialised for water treatment

Mycelium is the main body of fungi, a dense block of threads that looks and acts as a sponge

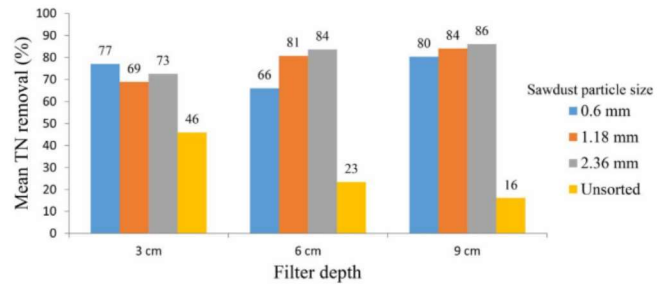
Mycelium not only **absorbs** pollutants like nitrogen and phosphorus but also **breaks them down**, accelerating their decomposition



Lab test results:

Nitrogen reduction by 40 mg/L/hour

Phosphorus reduction by 42 mg/L/hour



*Figure: Mean Nitrogen removal for different trials

MycoFiltration

"using mycelium as biological filters to extract pollutants"

Scalable

This **biobased** technology is powered by fungi, making it **cost-effective**

Sustainable & Regenerative

This process cycles pollutants back into nutrients recovering lost value

Effective

Breaks down and absorbs pollutants like **nitrogen & phosphorus**



What's coming?

Pilot for Mycofiltration at dairy farms

Partnered with **Deltares** for water quality analysis



MycoFarming is conducting **the first** pilot project for mycofiltration in a dutch farm setting

In labs the technology has shown reductions of more than **90%** of Nitrogen and Phosphorus

Pilot at festivals

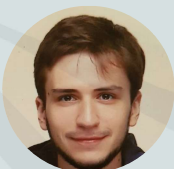
Fun & groundbreaking, we will also be conducting a pilot with Innofest at DGTL ADE to test the potential use of mycofiltration at festivals 🎵

MycoFarming is led by Juan Cruz Tubio, systems engineer, the core that drives MycoFarming



Our research team is led by dr. Osarenotor, one of the world leading mycologists specialising in wastewater management

Our commercial team is led by Rutger de Bruijn, ex-Rabobank* Venture Builder



Our engineering team is led by Agustin Manzione, a reliable FAANG engineer



Rabobank is the Netherlands' bank of the farmers*

Our partners



Incubators & Accelerators



Growing fungi is circular, it grows happily from our waste

Just like cows turn our plant waste into food,
fungi turn paper & plant waste into **mycelium**

And with mycelium we can do all sorts of things, from
construction materials to **water treatment**

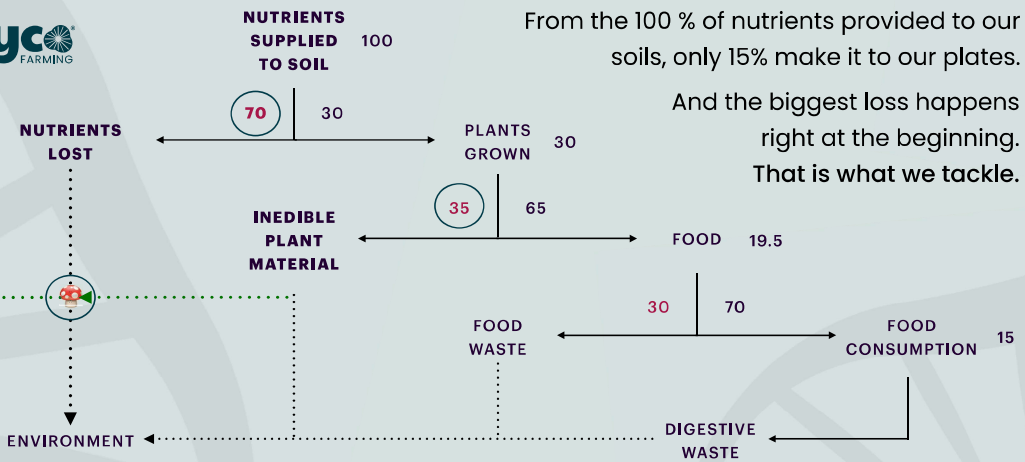
Contributing to international **Sustainable Development Goals**



MycoFarming
is part of
Amsterdam
Circular
edition #3



Impact: Food system



Competitive Landscape

Reverse Osmosis
Energy intensive

Filtration
Limited to Undissolved pollutants

Chemical treatment
Hazardous waste

UV-treatment
Expensive



Competitive Landscape

What about biological solutions?

At the moment, **biological solutions** are being explored but **tend to be found lacking** in terms of:

- Limited range of pollutants that can be treated
- Limited time efficiency
- Biological constraints of application

Our mycelium is here to change this



Synergies

Our mycelium is highly synergistic with existing technologies



**With
phytoremediation**

**With existing
water treatment plants**

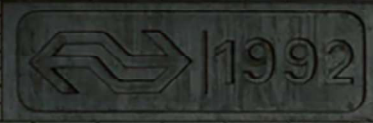
In nature fungi grows through symbiotic relationships
So do we, **get in touch to pilot our technologies together**

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Additional slides



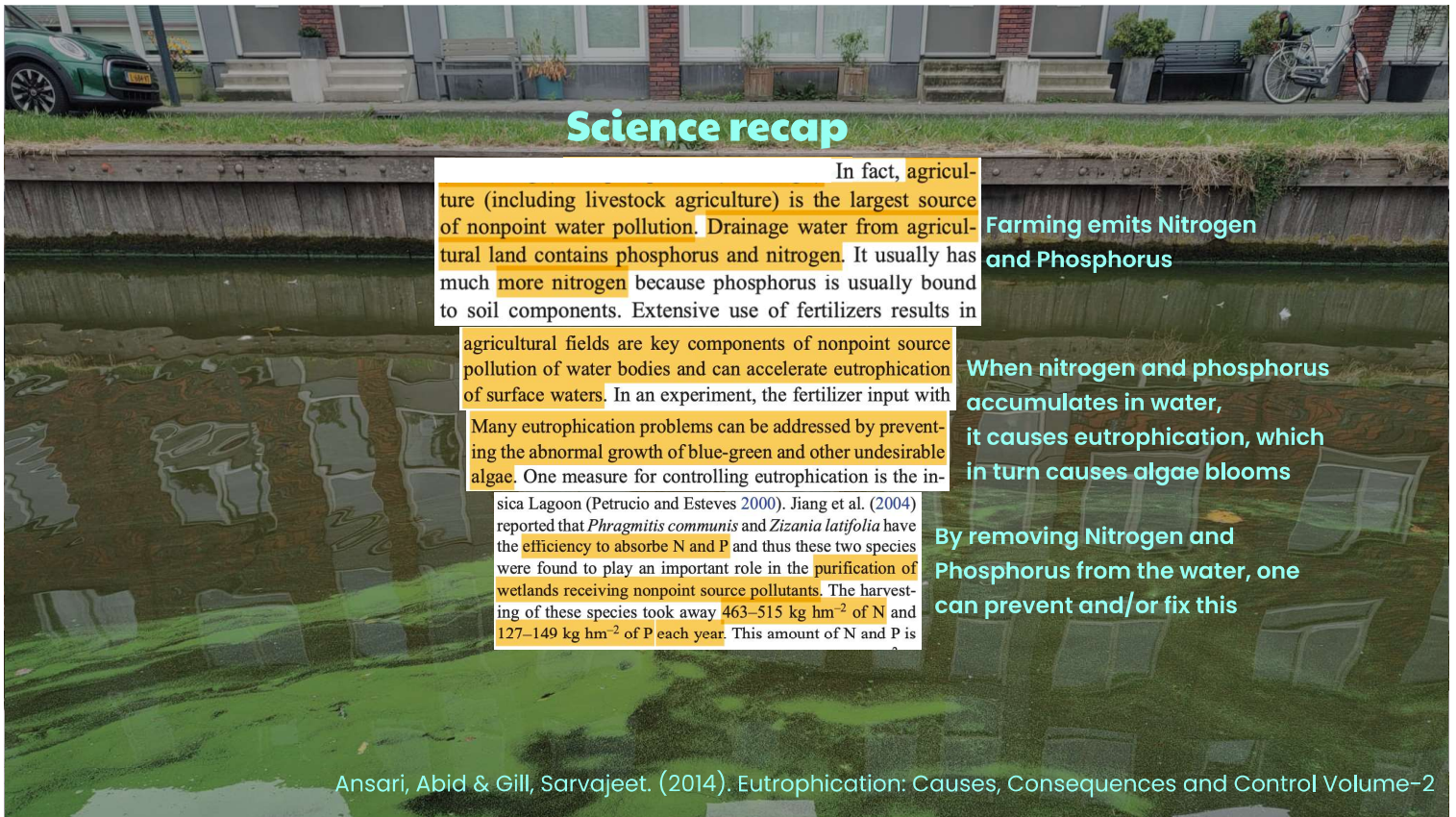
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Science recap

In fact, agriculture (including livestock agriculture) is the largest source of nonpoint water pollution. Drainage water from agricultural land contains phosphorus and nitrogen. It usually has much more nitrogen because phosphorus is usually bound to soil components. Extensive use of fertilizers results in

Farming emits Nitrogen and Phosphorus

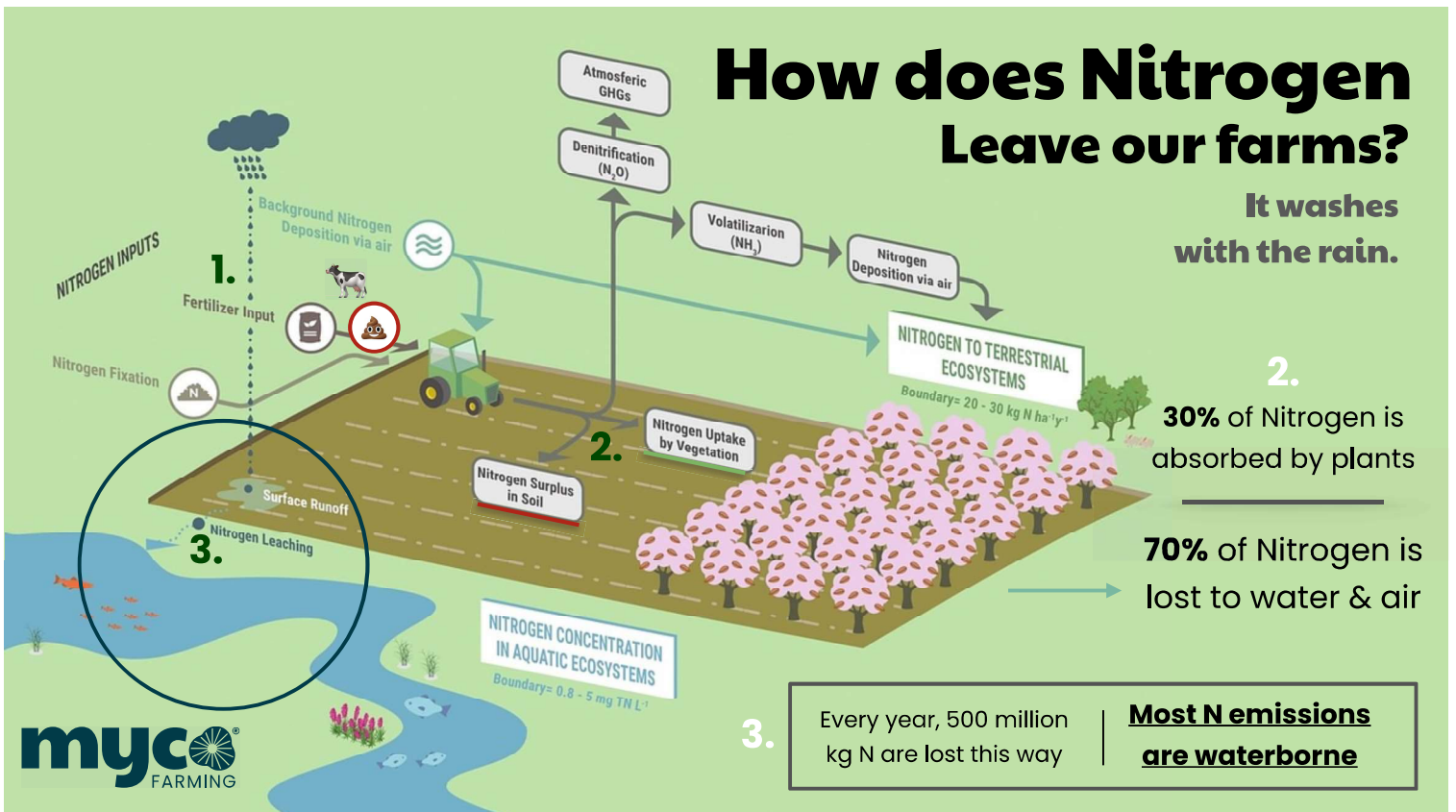
agricultural fields are key components of nonpoint source pollution of water bodies and can accelerate eutrophication of surface waters. In an experiment, the fertilizer input with Many eutrophication problems can be addressed by preventing the abnormal growth of blue-green and other undesirable algae. One measure for controlling eutrophication is the in-

When nitrogen and phosphorus accumulates in water, it causes eutrophication, which in turn causes algae blooms

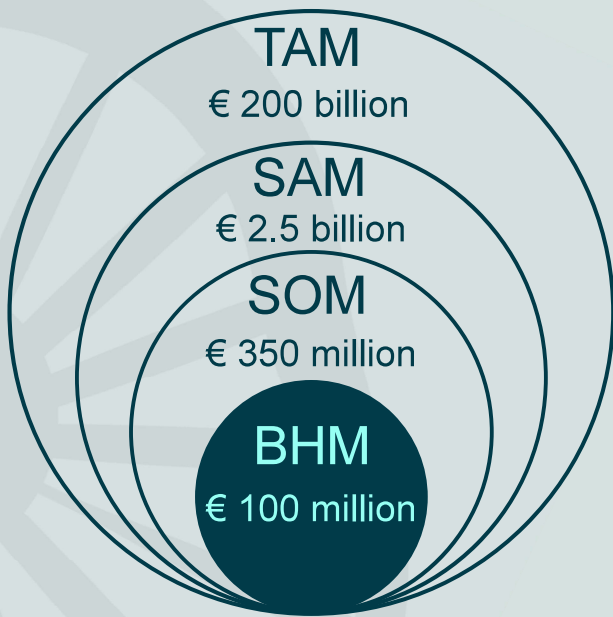
sica Lagoon (Petrucio and Esteves 2000). Jiang et al. (2004) reported that *Phragmites communis* and *Zizania latifolia* have the efficiency to absorb N and P and thus these two species were found to play an important role in the purification of wetlands receiving nonpoint source pollutants. The harvesting of these species took away 463–515 kg hm⁻² of N and 127–149 kg hm⁻² of P each year. This amount of N and P is

By removing Nitrogen and Phosphorus from the water, one can prevent and/or fix this

Ansari, Abid & Gill, Sarvajeet. (2014). Eutrophication: Causes, Consequences and Control Volume-2



Market analysis



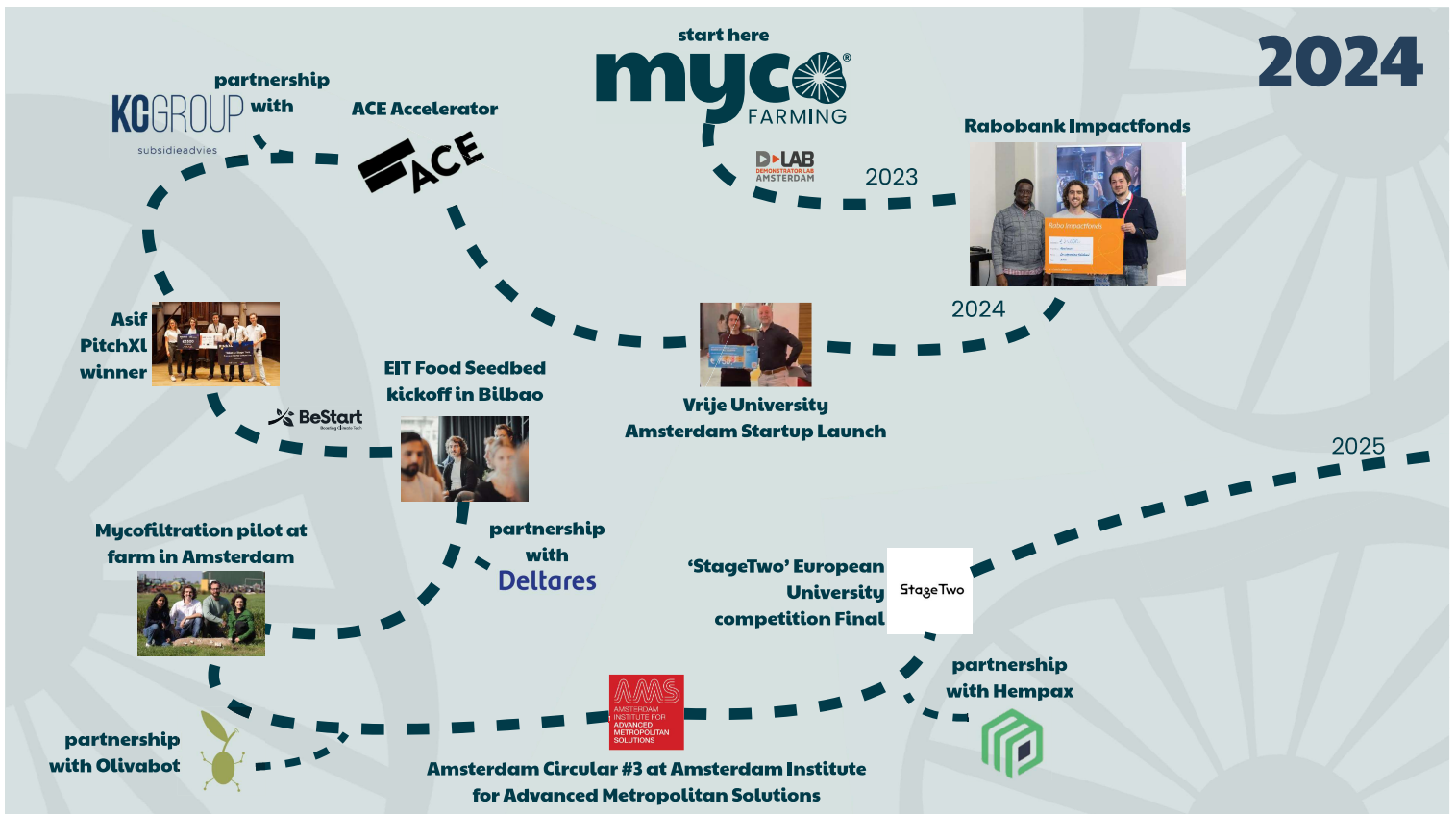
Mycofilters treat effluents from:

- Agricultural
- Urban
- Textile
- Personal care
- Healthcare

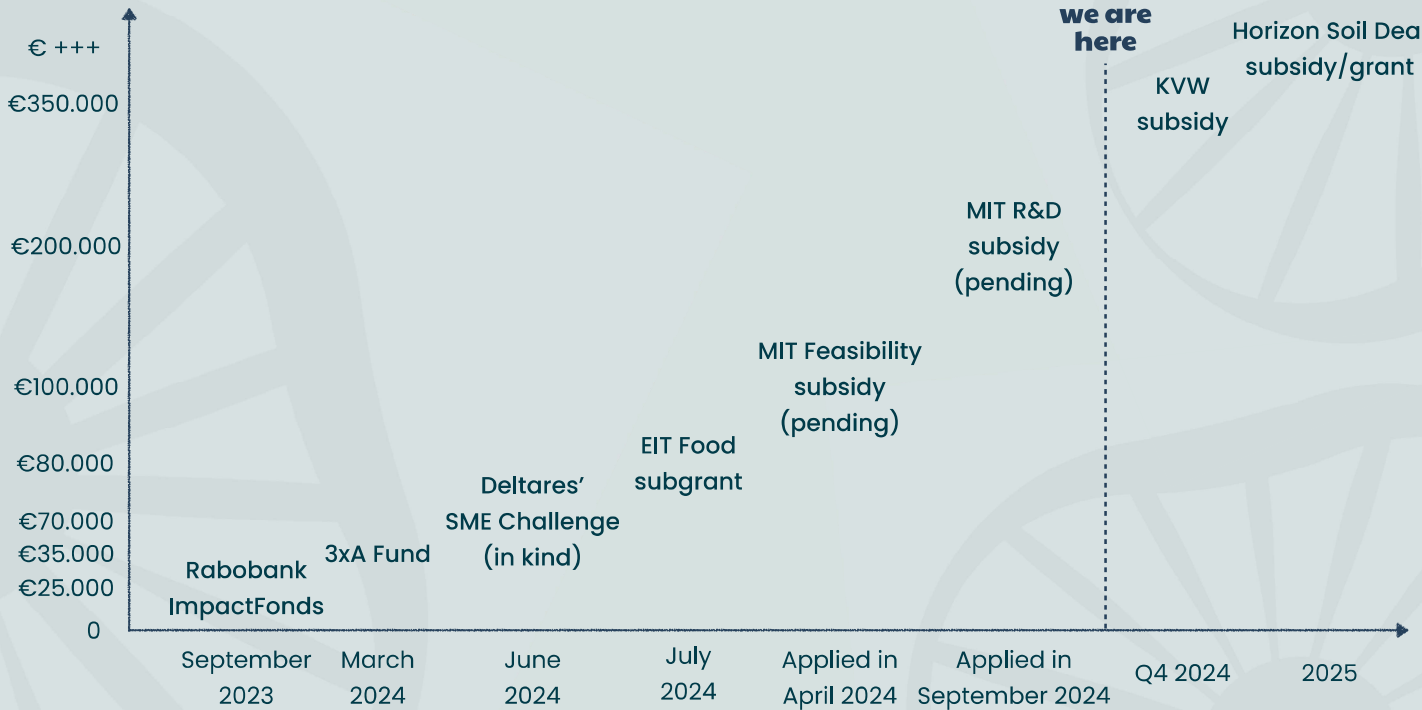
and Cosmetic wastewater

Combined, the treatment of their effluents make up our TAM

Our beachhead market is dairy farming, main nutrient polluter and in need for a solution



Non-dilutive fundraising



Advisory board

