

1<sup>st</sup> Annual Conference AgriFoodTure  
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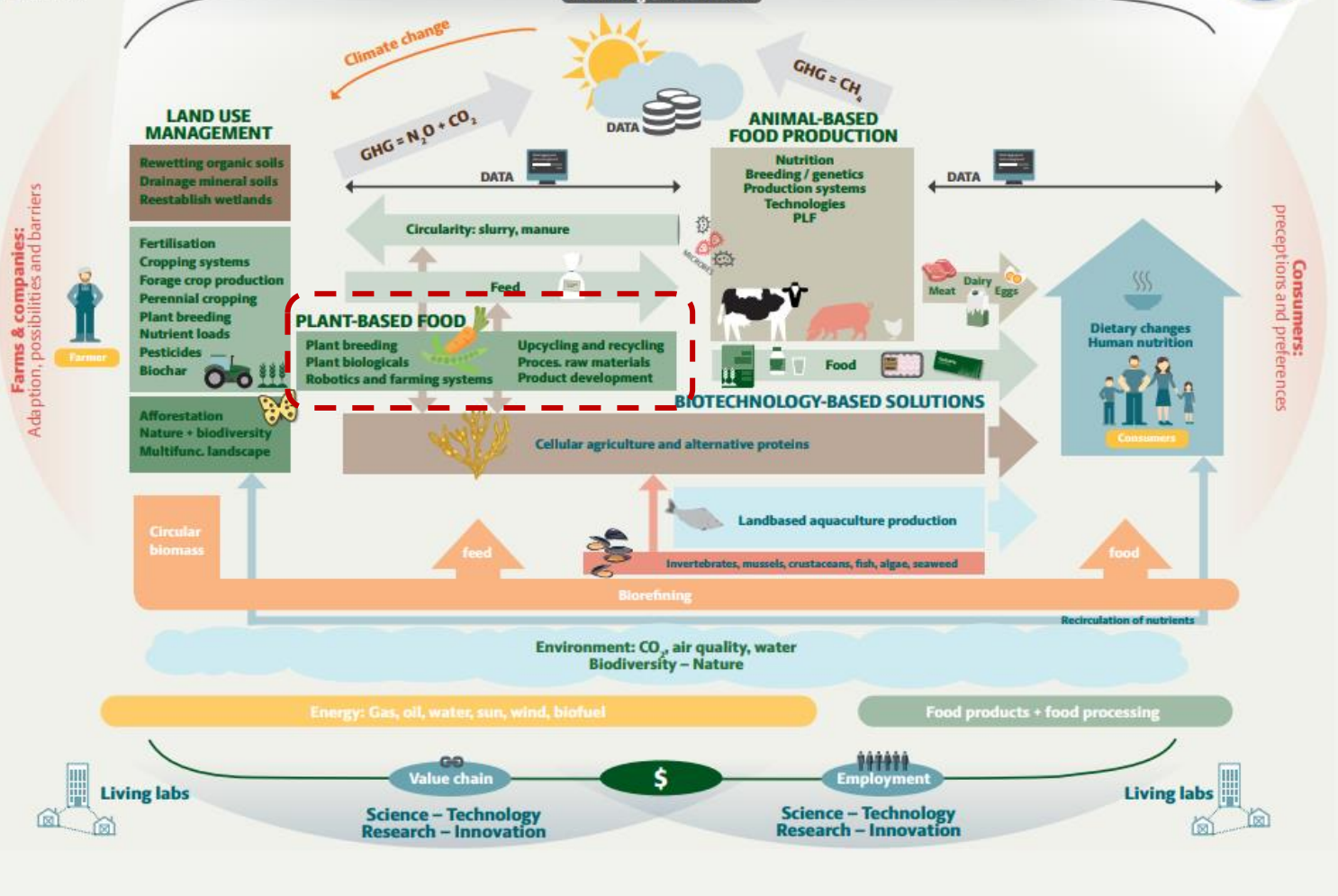
# CLIMATE FRIENDLY PLANT BIOLOGICALS

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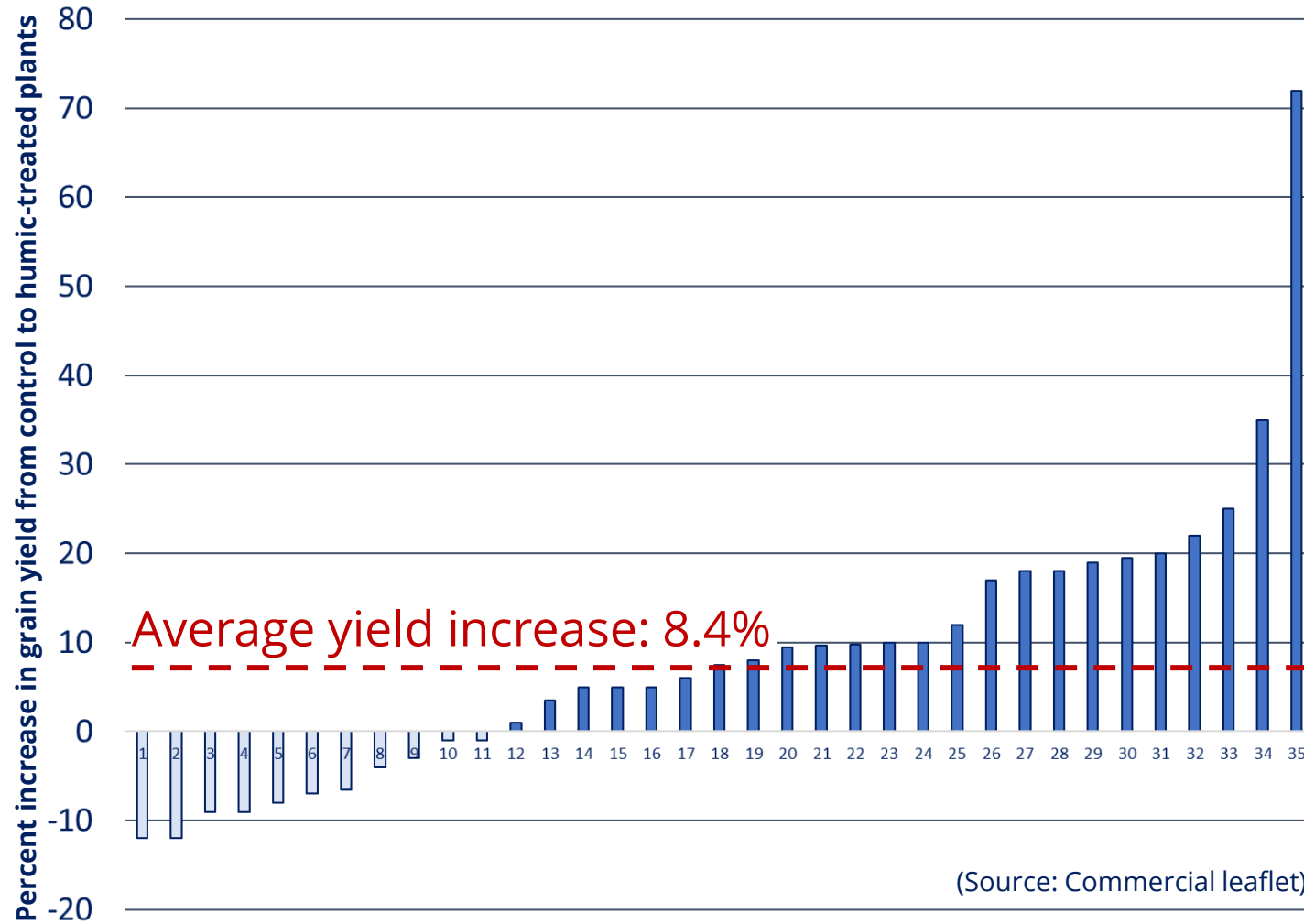


# GLOBAL FOOD SYSTEM

Human demands, social and cultural transformation



## Percent yield increase in 35 field trials



# PARTNERS

UCPH – Department of Plant and Environment Sciences

AU - Department of Agroecology

AU – Department of Environmental Sciences

SEGES Innovation P/S

Chr. Hansen

FMC

Novozymes

Plant Biologicals Network

Danish Technological Institute (Project lead)



# AIM & OBJECTIVES



Strengthen the quantification of the effect of plant biologicals with regards to

- **Crop productivity**
- **Biodiversity**
- **Climate and Environment**

by implementing the plant biologicals mode of action and conditional needs



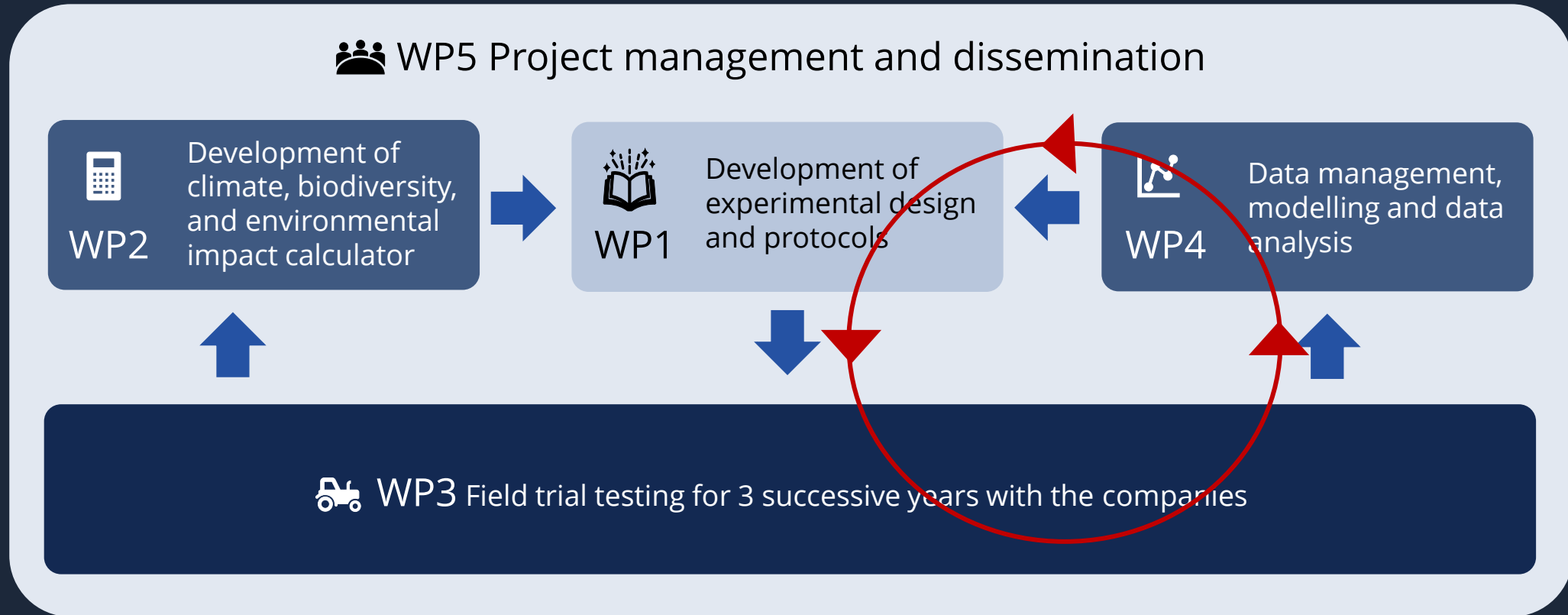
The creation of a paradigm and cases on how to develop experimental design, protocols and statistical analysis/models that support integration of multiple data types from field experiment to generate scientific documentation of efficacy on crop yields.



Development of models to estimate the potential impact of the applied plant biologicals on the climate, environment, and biodiversity.



# WORKPACKAGES



# DESIGN PROTOCOLS

## AIM

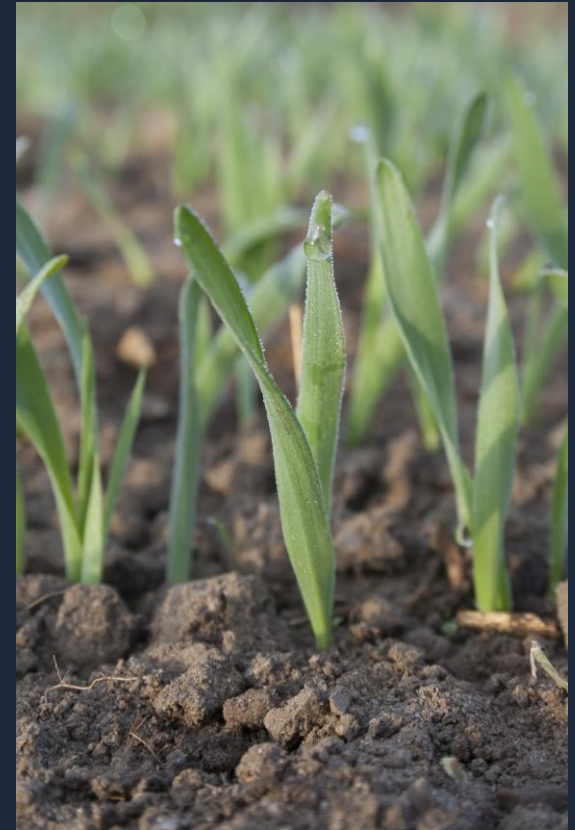
Development of experimental design and protocols (best practice) for testing the efficacy and robustness of plant biologicals (PB)

## Methodology

- Primarily based on knowledge gathered from reviewing international studies
- Prioritize data from plant experiments in soil conducted in growth chamber, greenhouse and in the field

Focus on archetype PBs :

biostimulants, biofertilizers, biological control agents, resistance inducers ... and their complex interactions with plant and environmental factors



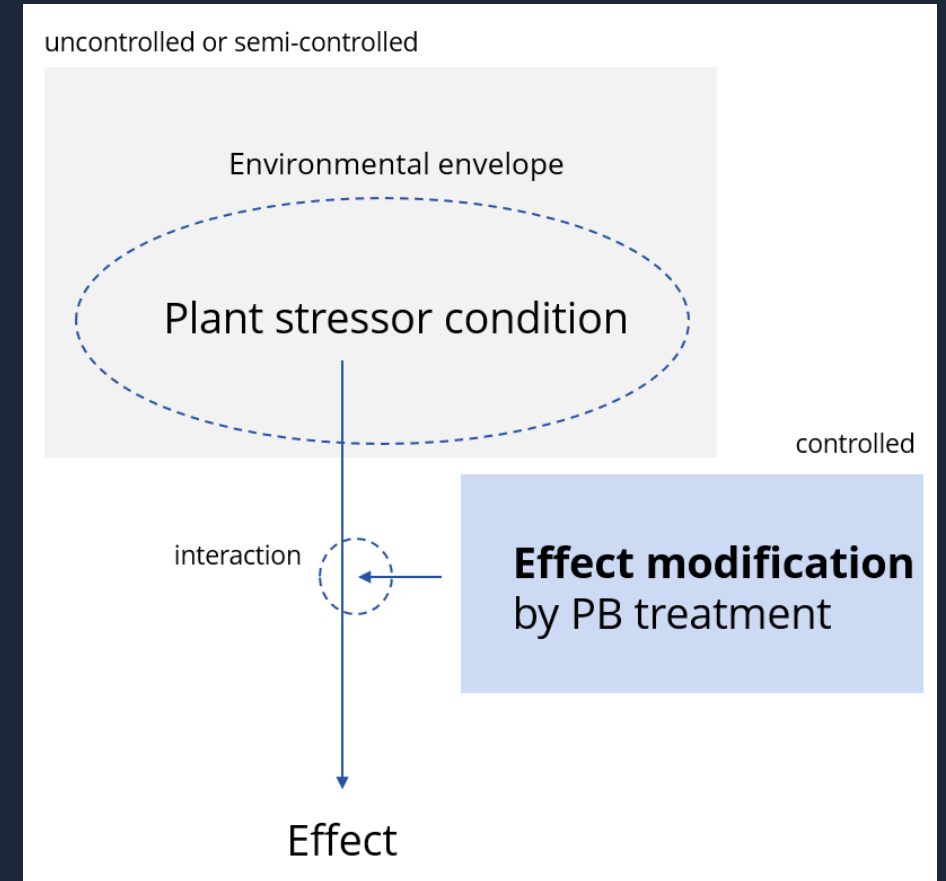
# DATA ANALYSIS

## AIM

Development of models targeted towards analysis of **differential treatment effects** of biologicals **under varying environmental conditions**, including transfer of models well-proven in the social and ecological sciences to the field trial setting.

This includes:

- Models for analyzing
  - **exploratory** trials
  - **confirmatory** (claim-based) trials
- Models addressing the **observational** and **correlational** nature of the data
- Statistical power calculation for developed models





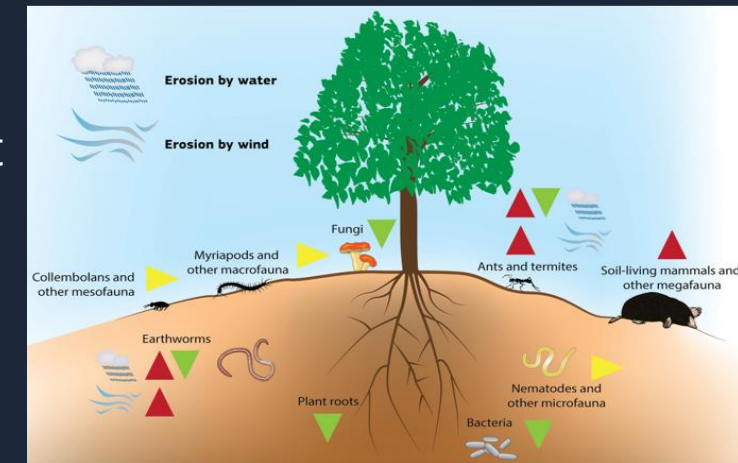
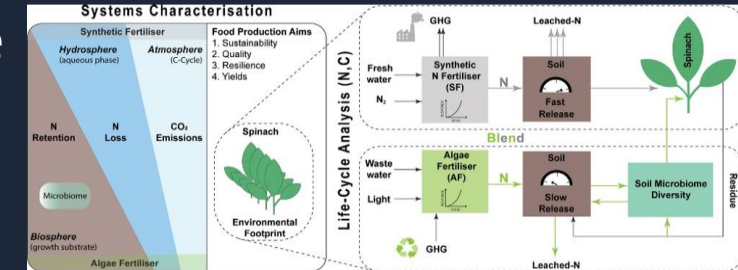
# IMPACT CALCULATOR

## AIM

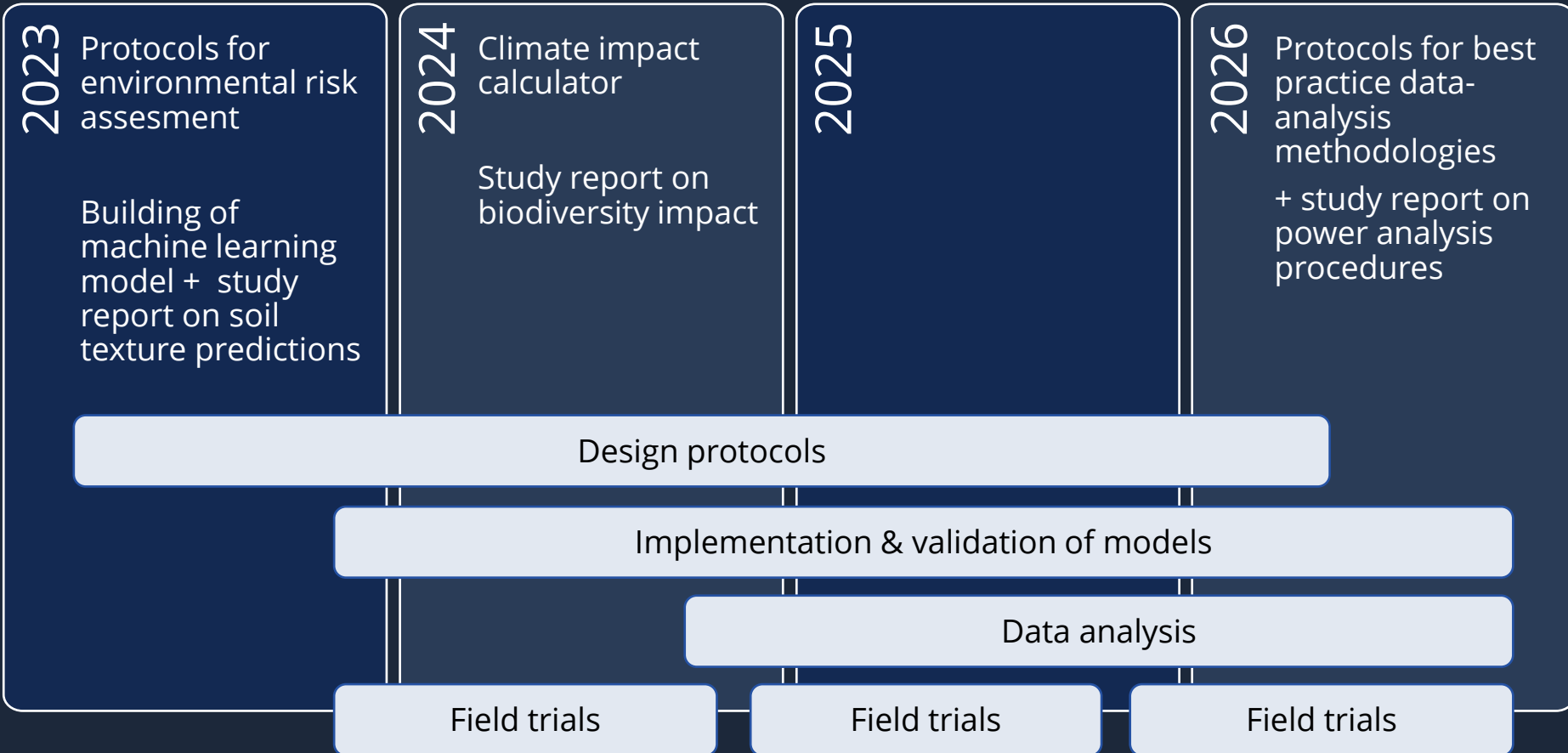
A range of various protocols is to be described to calculate both the climate impact of PB as well as the impact on biodiversity and environment

## Methodology

- Define crop production baselines for agricultural crops where PBs can be used
- Estimate the CO<sub>2</sub> emission under different conditions per produced unit and hectare for the impact of PBs from different treatments for direct land use
- Validate a meta-transcriptomic method to describe impact on biodiversity. Biodiversity index will be calculated.
- Define protocols for assessing the impact on environmental risk by PBs (biocontrol) compared to chemical pesticides.



# PROJECT TIMELINE



# THANK YOU FOR YOUR ATTENTION

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