

# Field-Scale Strategies for Biomass Cultivation on Degraded Soils: Insights from the Marginal Field Lab

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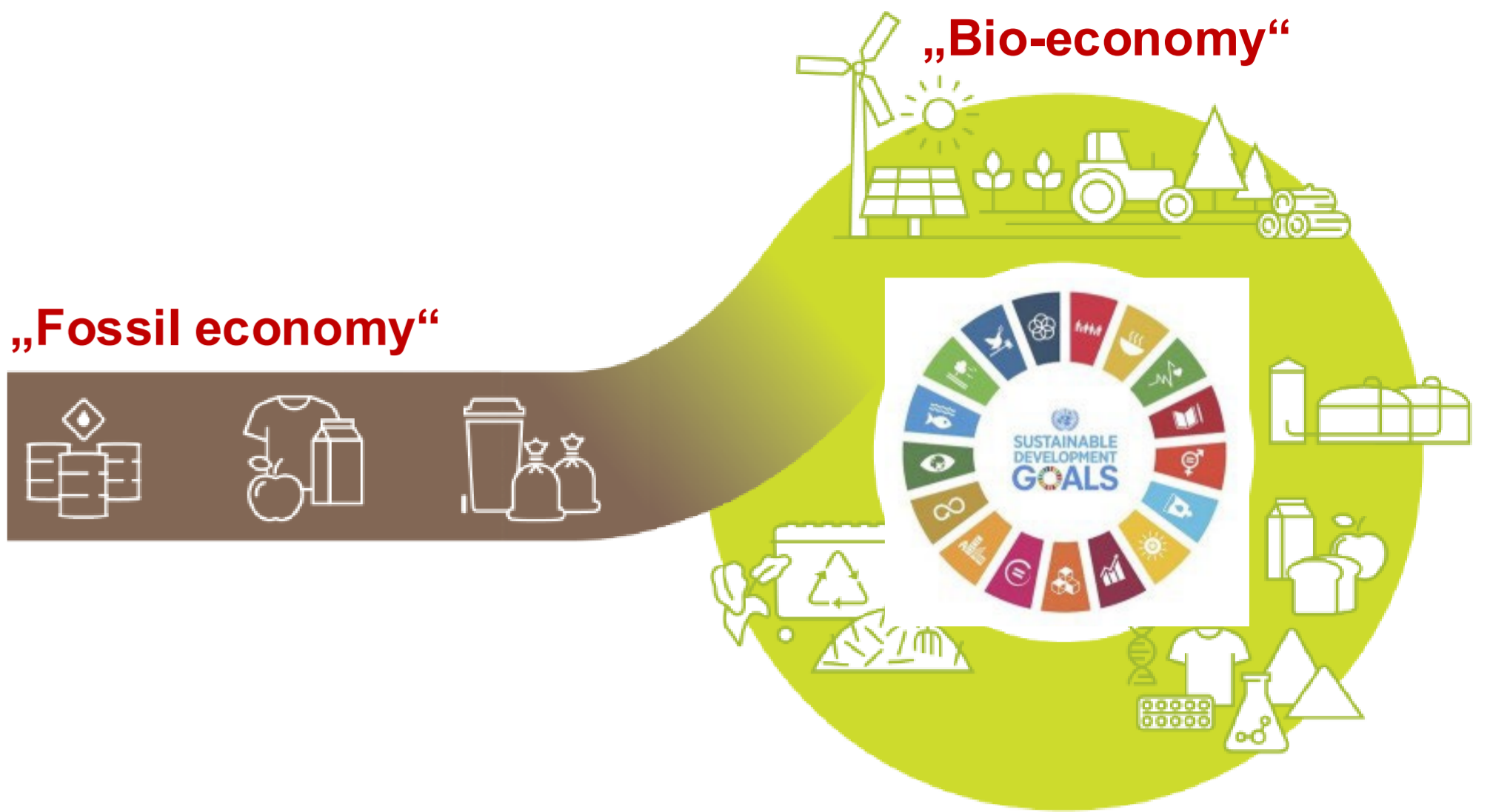
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## INTRODUCTION

- Soil and resource depletion, growing demand of biogenic resources, threats of climate change → growing share of marginal soils.
- Sustainable, bio-based economy → sufficient biomass provision is crucial.
- Avoid land use conflicts → utilize nutrient-poor marginal soils → “make them suitable” for plant production.
- unique opportunity with homogeneously nutrient-poor defined substrates on spoil-heap of surface-mine → Marginal Field Lab
- Targeted fertilization → cultivation of economically relevant and alternative (biomass) plants.
- Testing various plants for cultivation on unused fallow or marginal lands.

## AIMS & SCOPE

### Coal phase-out in the Rhenish mining area Region in transition



- Replacing fossil resources
- Building on strengths
- Innovative nutrition systems
- Developing key technologies
- Circular Economy
- New products, processes and services

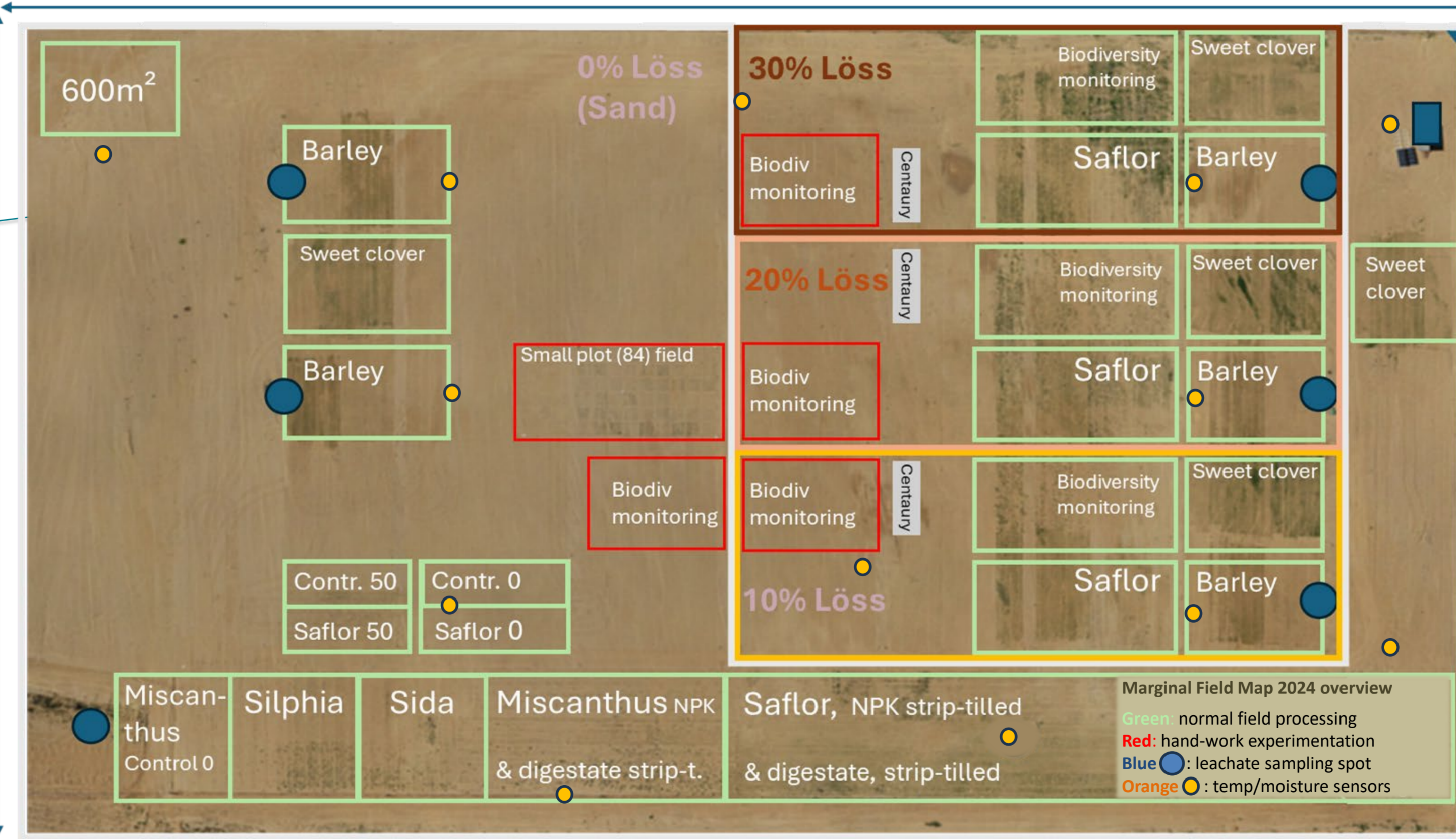
## MATERIALS, METHODS & EXPERIMENTAL SETUP

### Marginal Field Lab

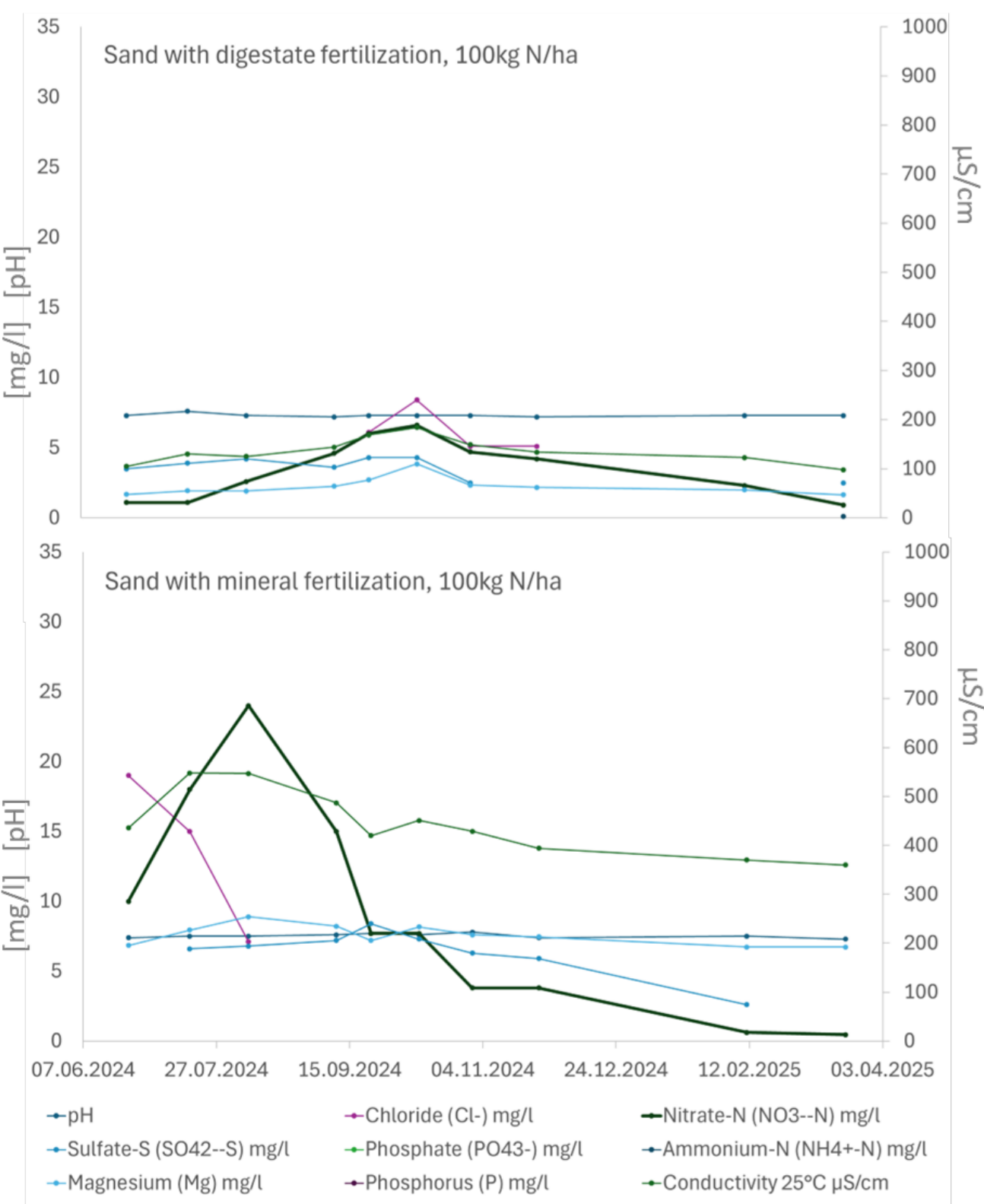
- Trial area to
- test new technologies under real conditions and in relevant scale.
  - investigate plant resource efficiency and resilience; phenotype plant performance.
  - evaluate more efficient and sustainable plant production for implementation in existing and new value chains; in cooperation with RWE and regional farmers.



More info and related topics:

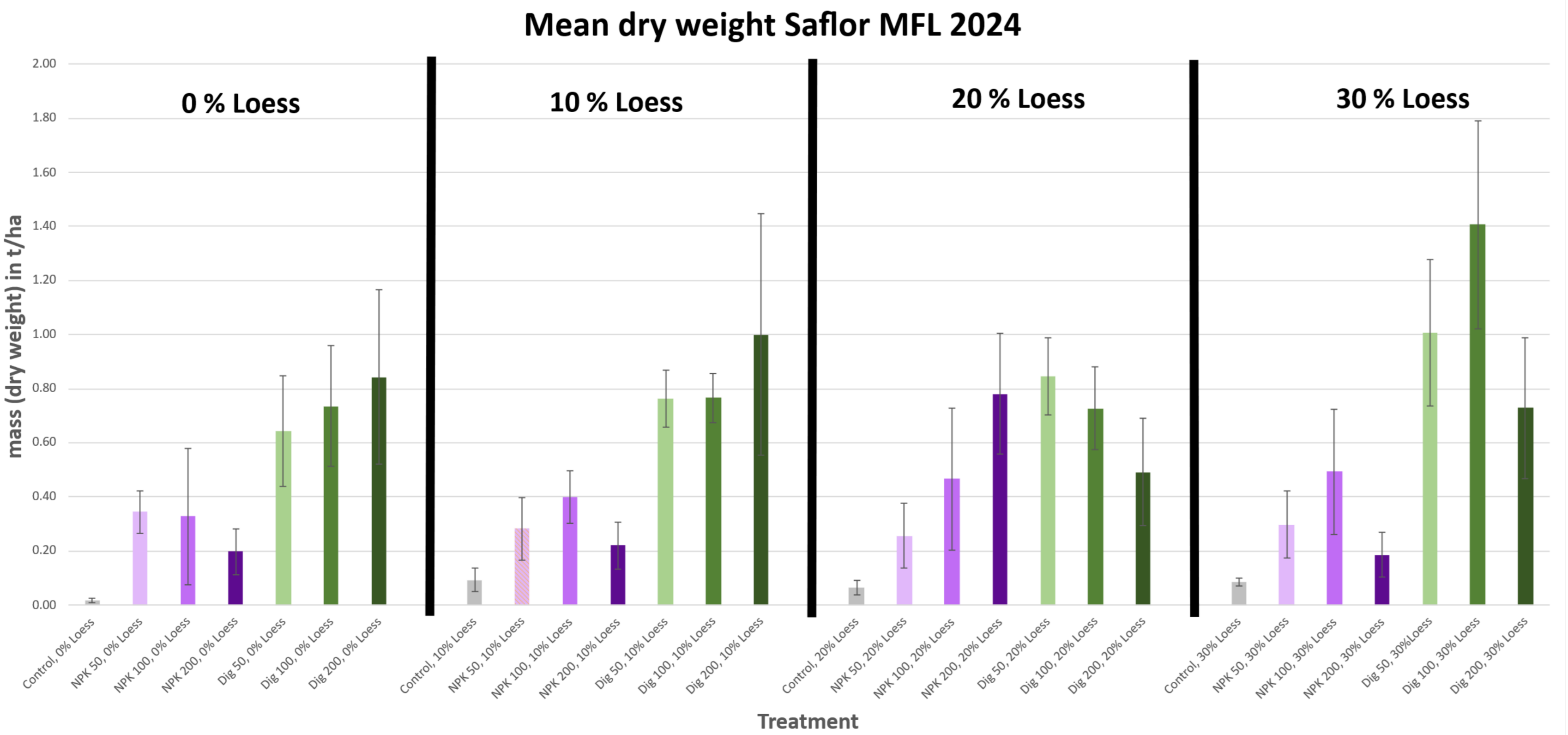


## INITIAL RESULTS



**Left:** soil leachate analysis at two measurement spots (1 m depth) with different fertilization.

**Right:** differences in safflower growth during the 2024 season on different substrates with different fertilization.



## SUMMARY & OUTLOOK

- Successful plant growth on nutrient poor, marginal sandy soils employing tailored fertilization for safflower, sweet clover, *Miscanthus*, *Sida*, *Silphium*.
- Aiming for and evaluation of accelerated pedogenesis by organic amendments and plant-soil-interactions.
- Evaluation of sustainable value chains with local farmers & industries.