JUSTUS-LIEBIG-UNIVERSITÄT GIESSEN

BOKU

Regulation of meadow saffron (*Colchicum autumnale* L.) in extensively managed grassland

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Background

- Problem: High population densities of the toxic *Colchicum autumnale* in extensively managed grasslands: 20 - 50 plants/m²
- *C. autumnale* profits from late mowing date in mid-June

- Farmers have problems to market their hay

Risk that they intensify or abandon management

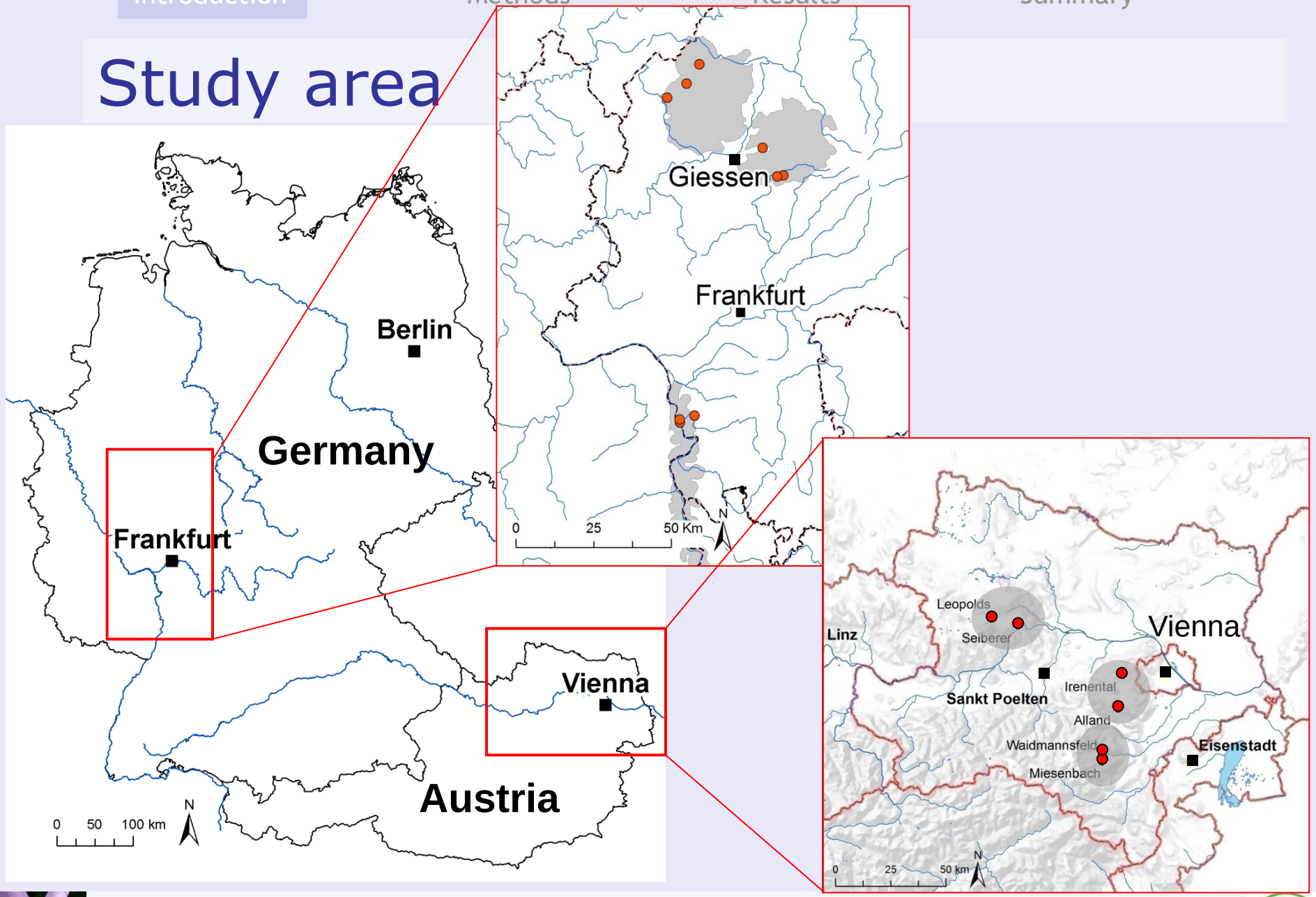
Objective

Reduce population density of *Colchicum autumnale*

by mowing treatments, which differ in:

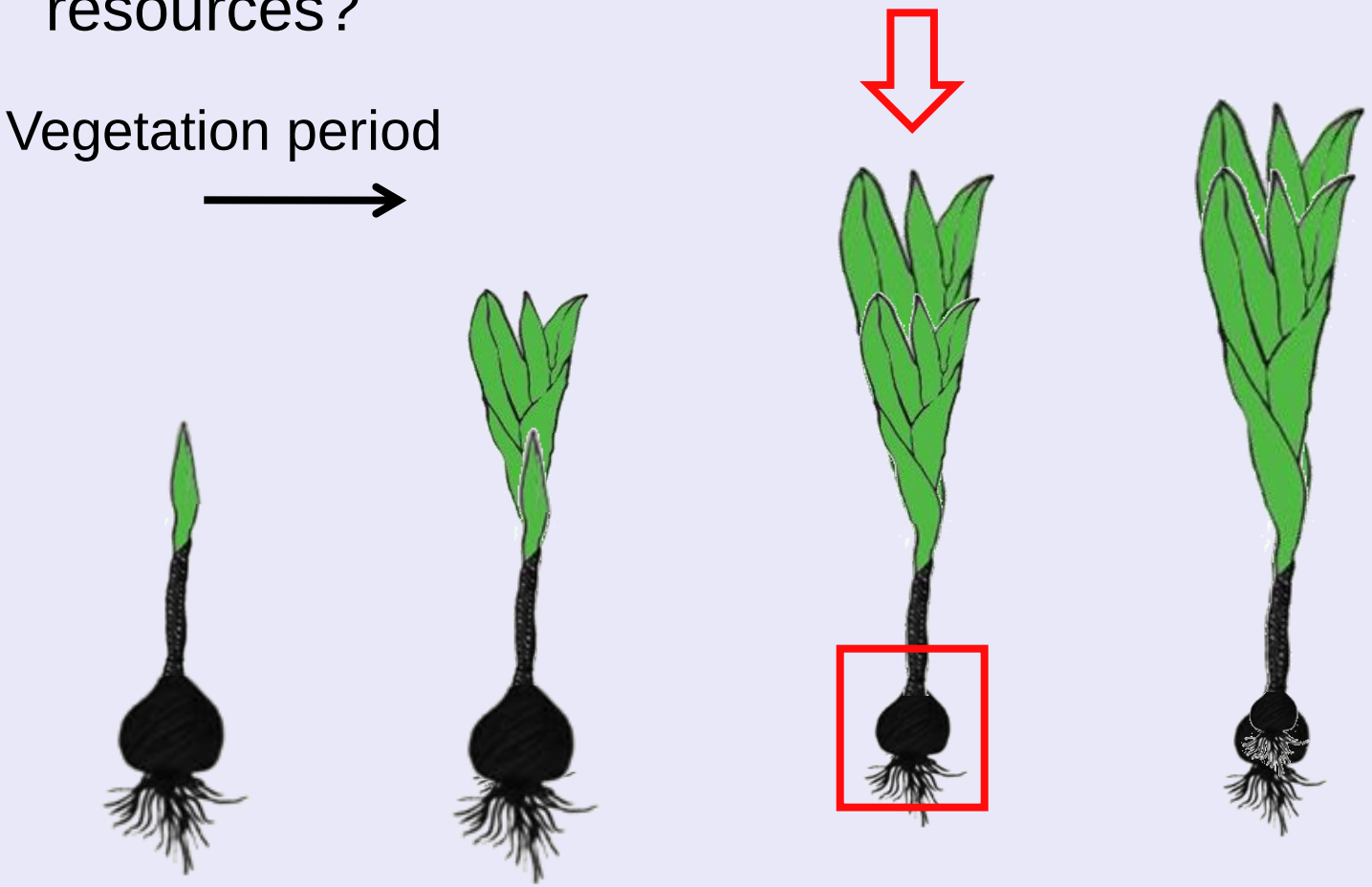
- Mowing date
- Mowing intensity = Number of cuts/year

Study area


Giessen
Frankfurt
Berlin
Germany
Frankfurt
Vienna
Austria
0 50 100 km
N
0 25 50 Km
N
Leopolds
Seiberer
Linz
Vienna
Irenental
Sankt Poelten
Alland
Waidmannsfeld
Miesenbach
Eisenstadt
0 25 50 km
N

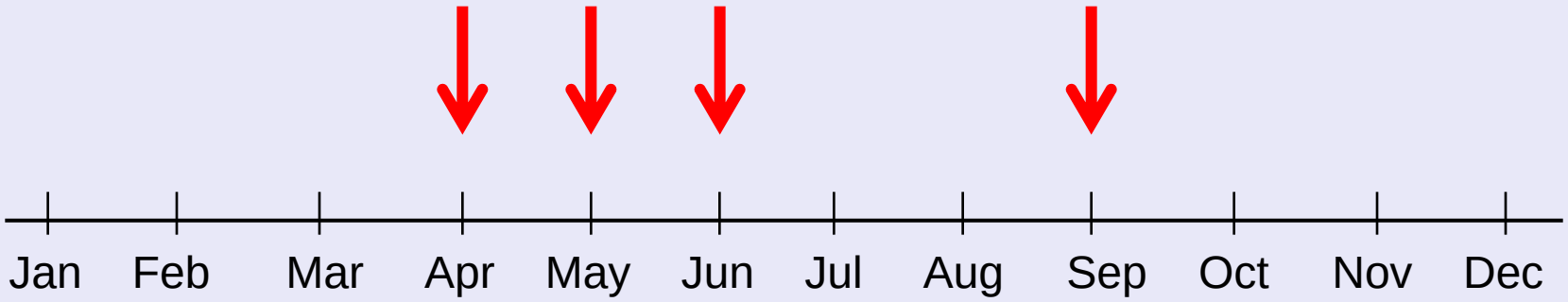
Methods

- Right point during vegetation period to extract most resources?



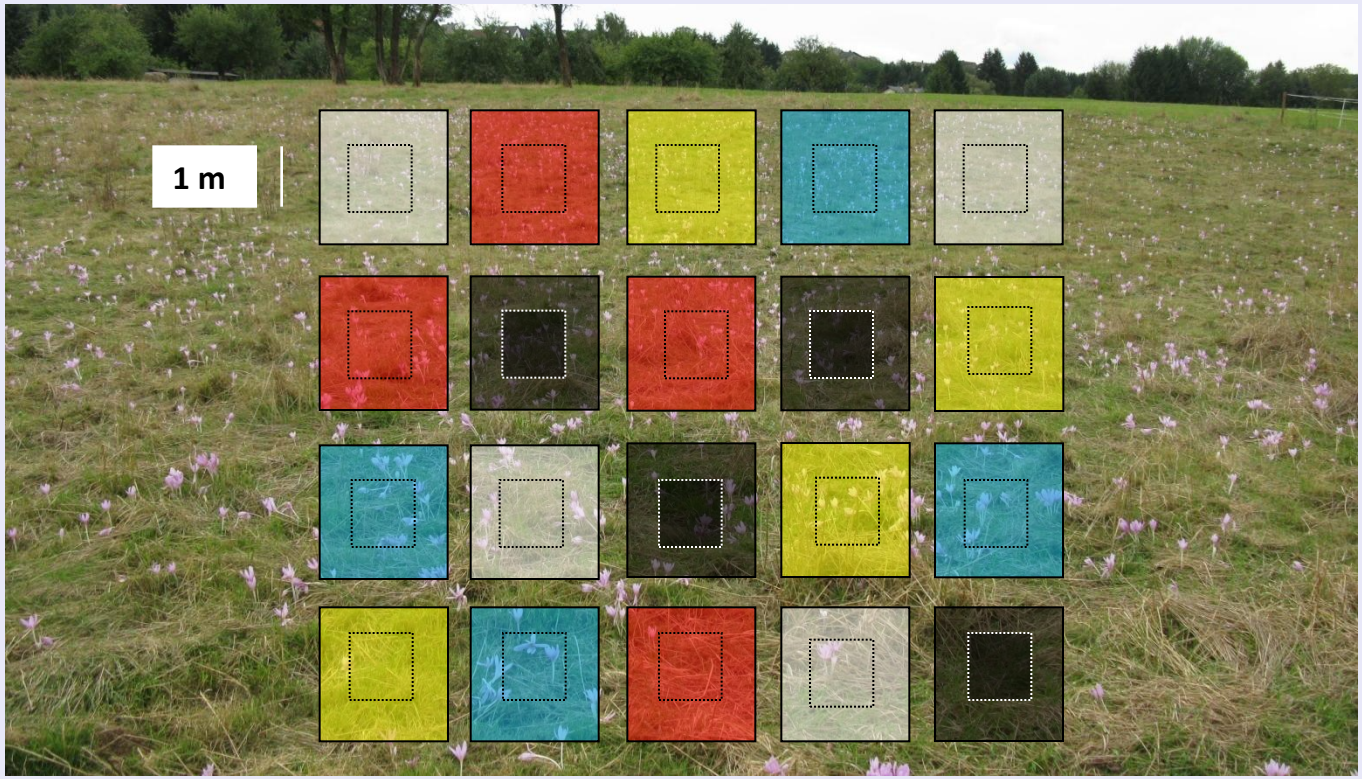
Methods

- Mowing date and intensity



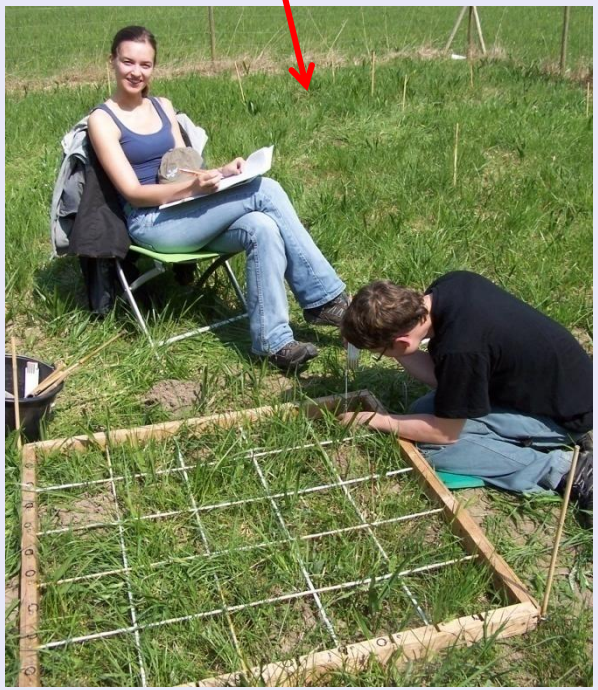
Methods

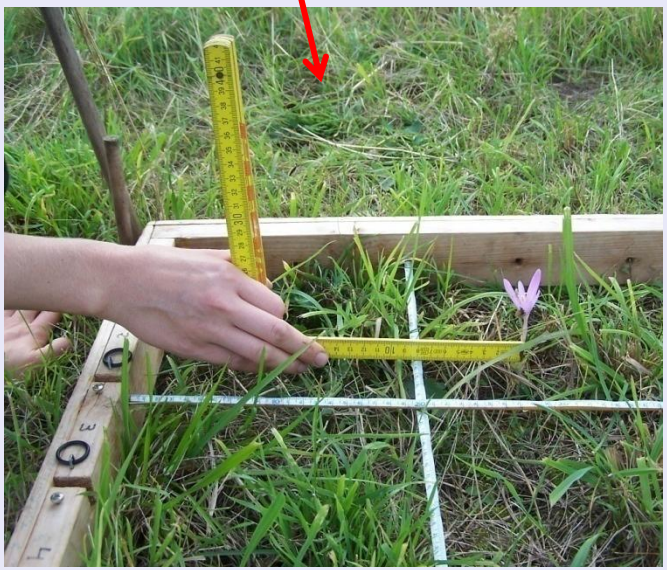
- 1 m² plots (with buffer)
- 4-5 different mowing treatments per population
- 4 replicates



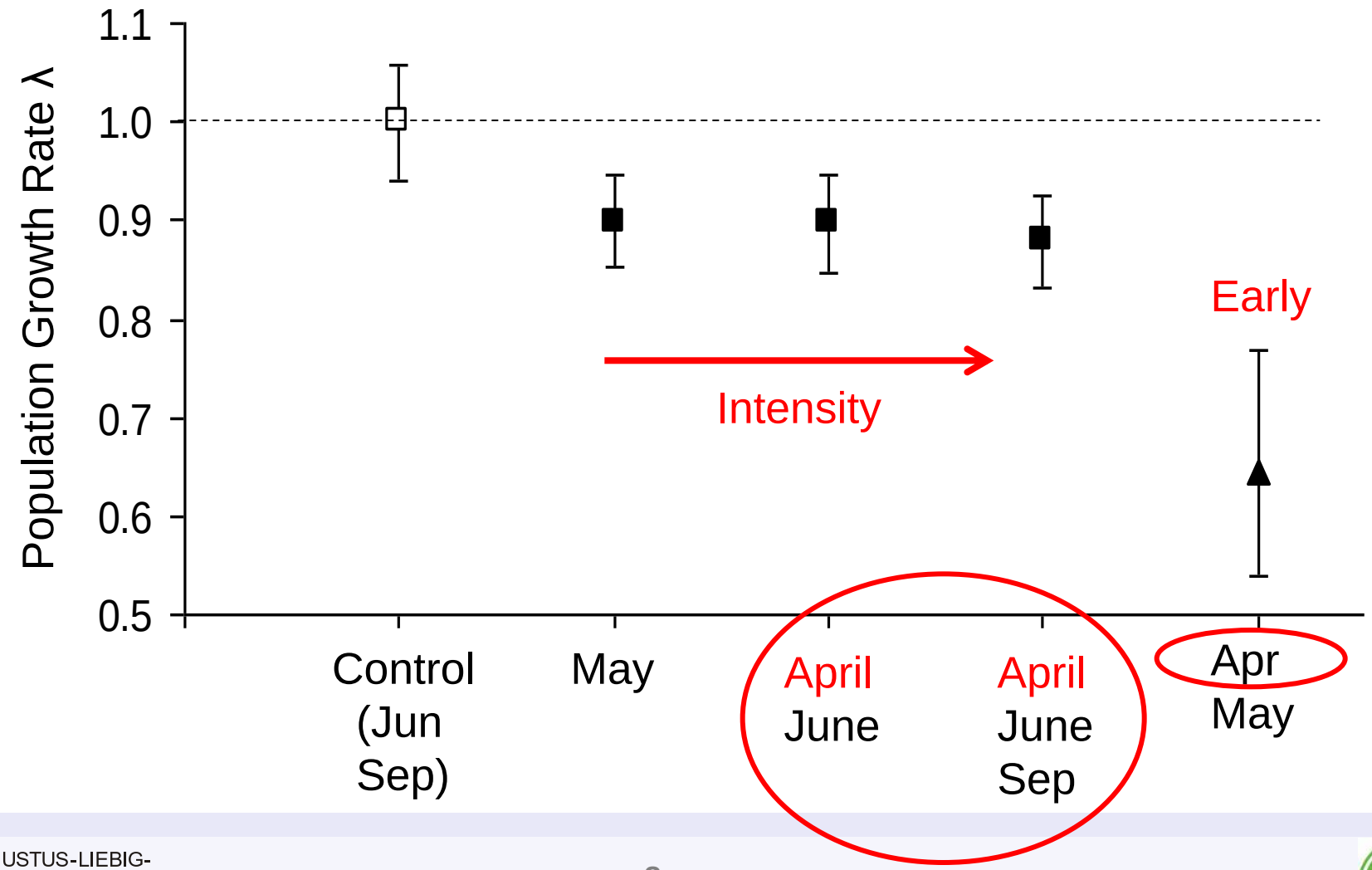
Methods

- Record of every individual plant per year per plot
- Analysis by Matrix population models

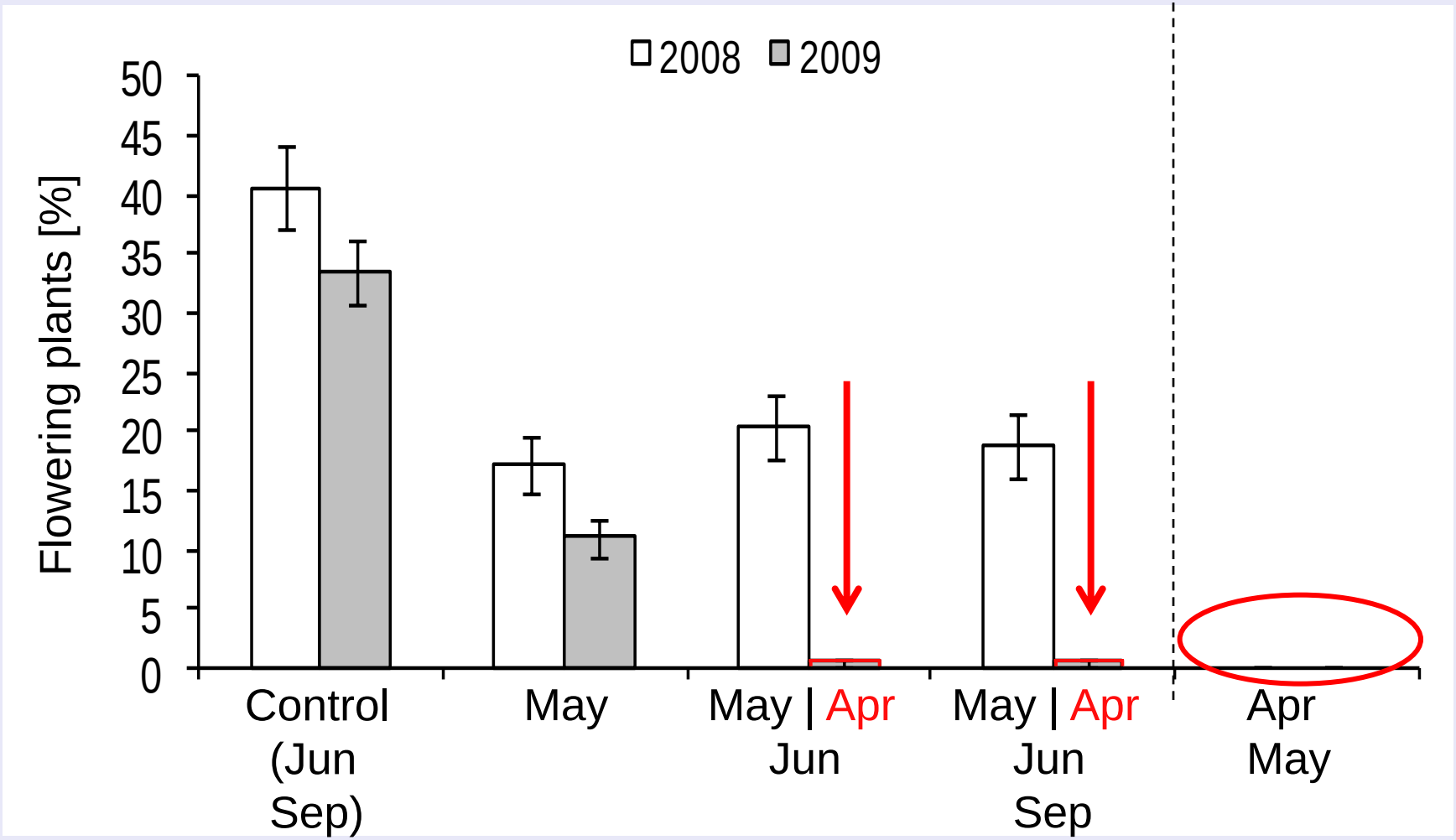




Results Germany



Results Germany



Summary

- All mowing treatments led to population decline: population growth rate <1
- Mowing intensity had no influence
- Most important influence: Time of first mowing date
  - Early mowing in April instead of May largely reduced flower production

Open Questions

- How many years of mowing are necessary until plant death?
- What is the impact of mowing treatments on other plant species?

⟶ Will be investigated in the following years.

Thank you for your attention!

Supported by:

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