



# Tackling yellow nutsedge with fallow periods and cover crops

**Max Fuchs & Judith Wirth**  
**EWRS workshop physical and cultural weed control**



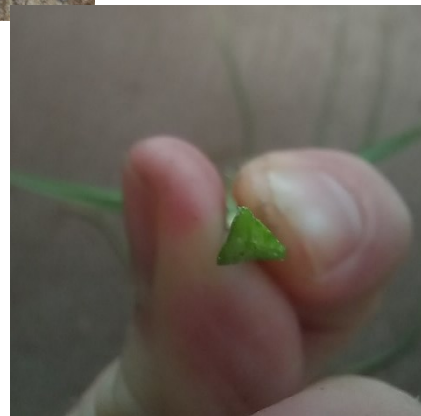
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Wageningen University and Research, 27<sup>th</sup> – 29<sup>th</sup> May 2024



# Yellow nutsedge characteristics

**Taxonomic name:** *Cyperus esculentus* L. (1753),  
sedge from the cyperacea family





# Objectives and strategy



The project is partly financed by the organisation of organic agriculture in Switzerland “BioSuisse”

**Main idea:** develop a yellow nutsedge control strategy for organic farmers with highly infested fields

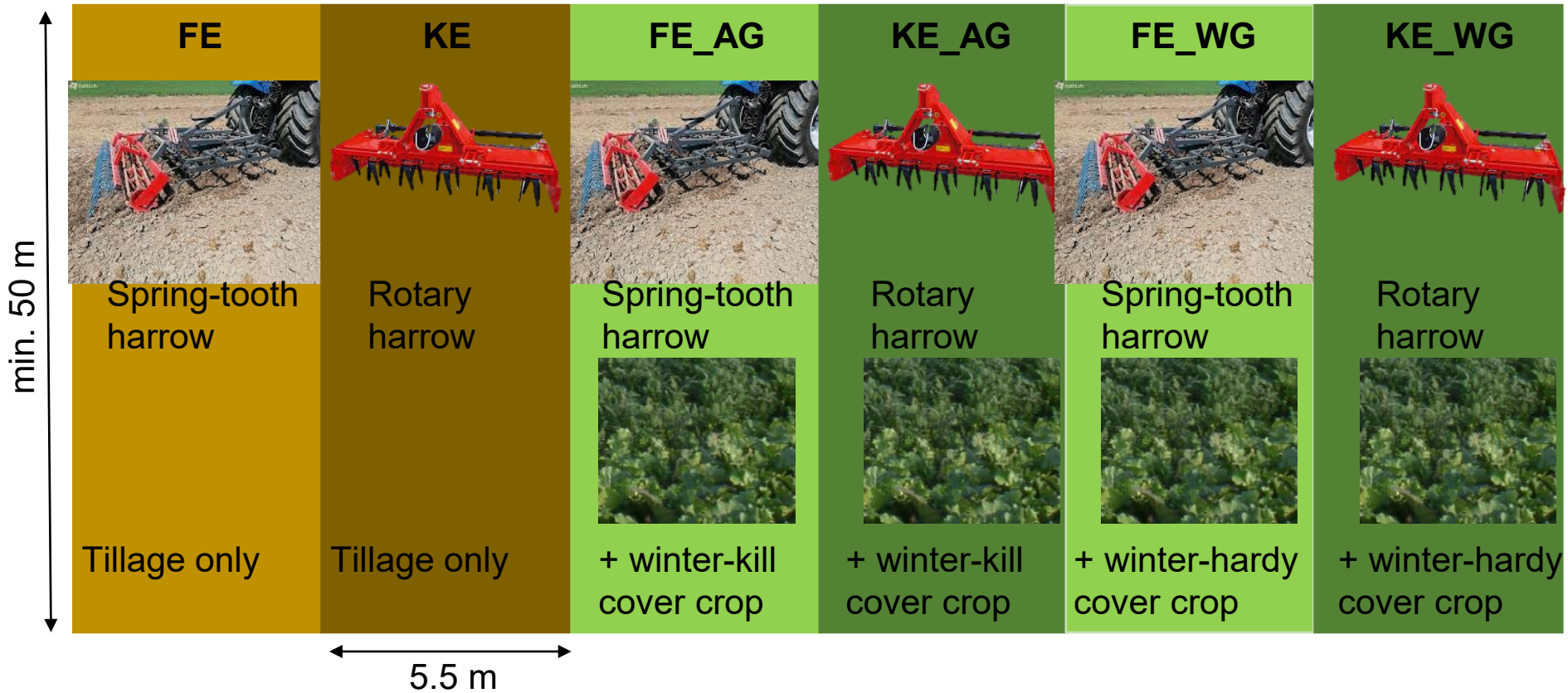
Two main levers:

1. Mechanical destruction of growing plants and stimulation of new germinations
2. Sowing highly competitive cover crops in late summer for outcompeting yellow nutsedge and maintaining soil organic matter levels



# Experimental design

- Repeated soil cultivation every 2 to 4 weeks from May to October
- Soil cultivation depth: ~10 cm
- Sowing of cover crops end of July







# Material and methods

- Project conducted in collaboration with two institutions in Switzerland (FiBL and HAFL)
  - 4 strip trials led by Agroscope (9 in total)
  - 3 locations in the region of Bern, Switzerland

=>one location with two repetitions
- Monitoring of the tuber numbers in the soil in georeferenced microplots
- Germination tests by size categories after washing of the soil samples (<3 mm / 3-5 mm / >5 mm)





# Cover crop mixtures developed by HAFL

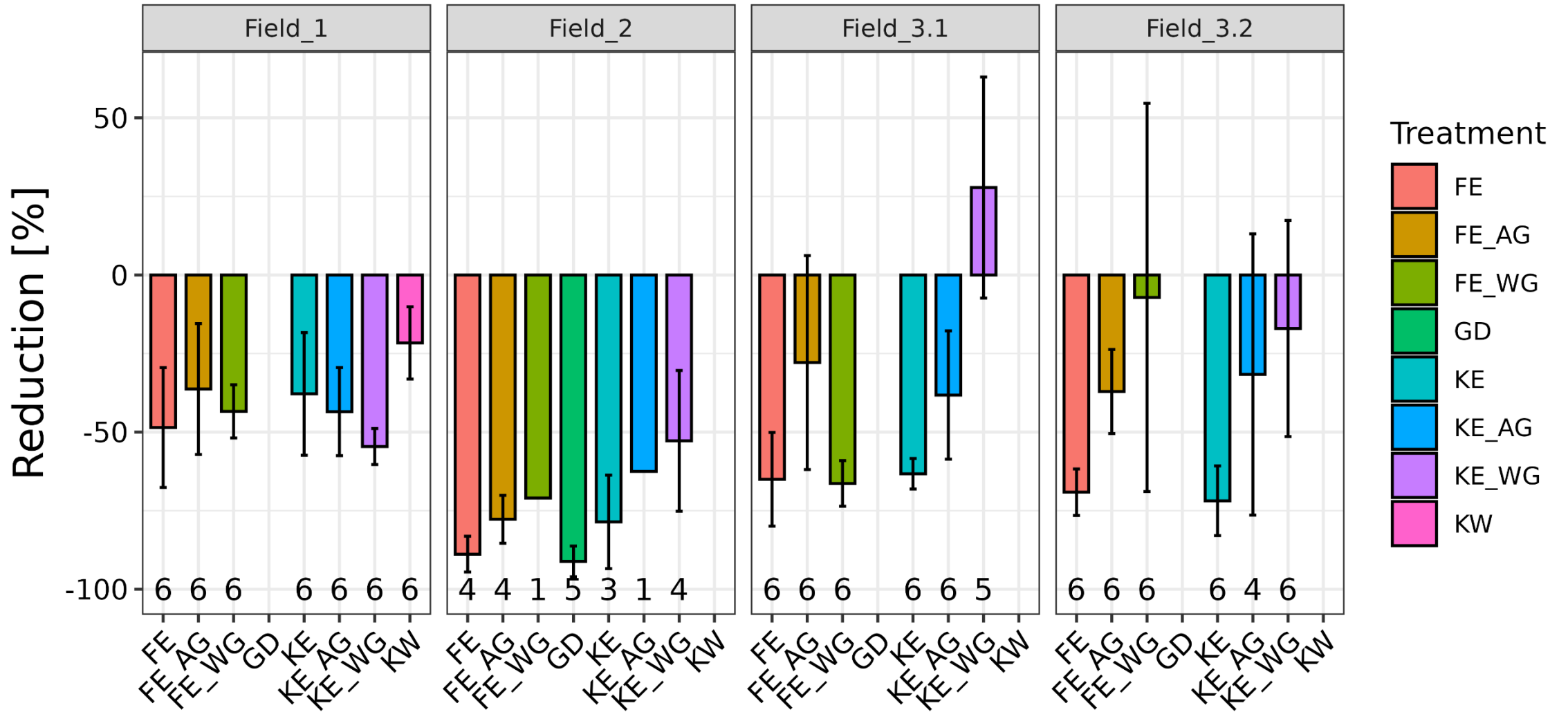
Characteristics of the selected plant species for the mixtures:

- Fast-growing
- High biomass production
- Allelopathic effect

Winter-kill cover crop		Winter-hardy cover crop	
Black oat	45%	Forage rye	51%
Summer vetch	18%	Winter oat	29%
Summer rye	15%	Austrian winter pea	10%
Egyptian clover	12%	Winter turnip rape	6%
Fodder radish	7%	Fodder radish	5%
Phacelia	3%		

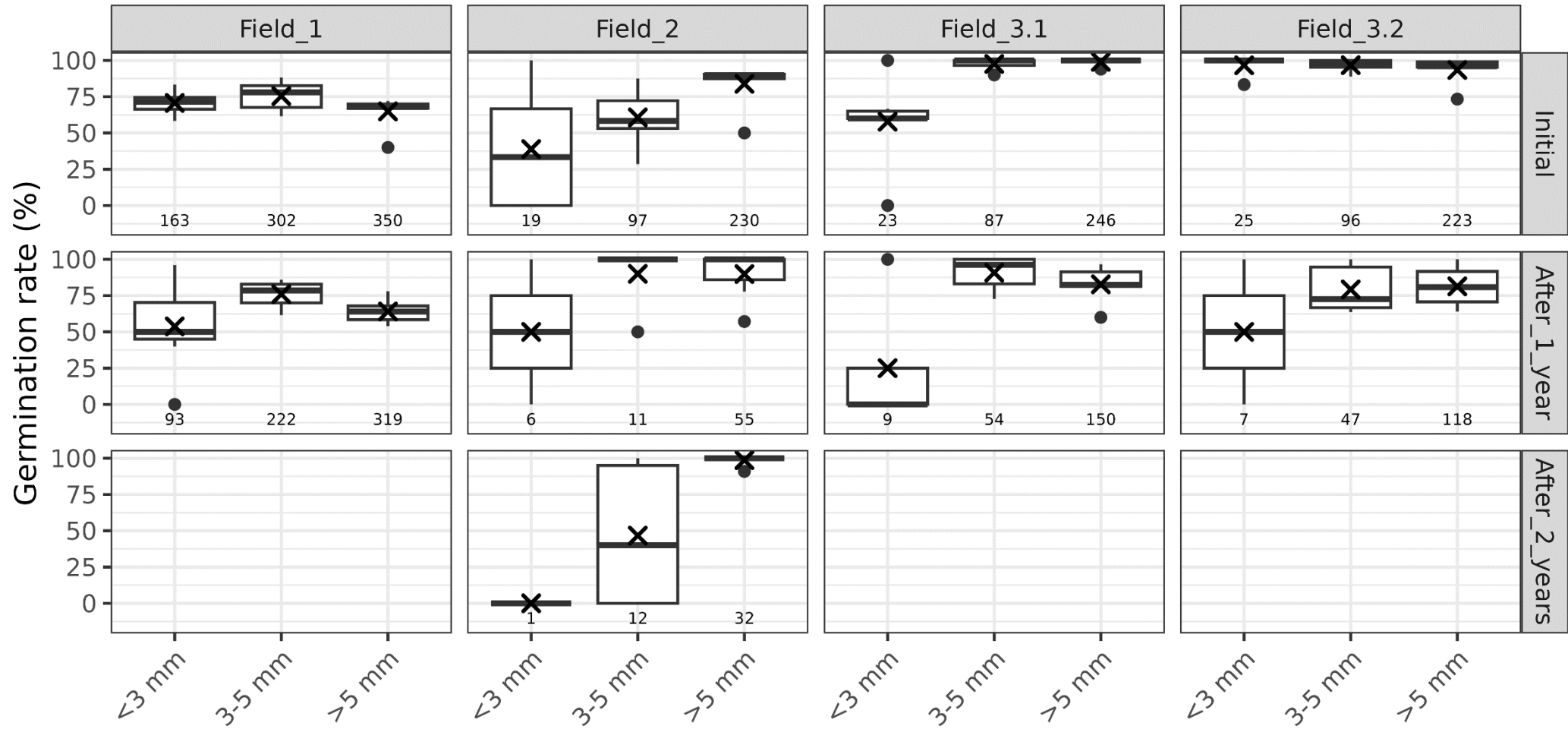


# Tuber reduction after one year





# Germination tests







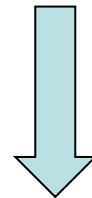
# Depth dependent viability



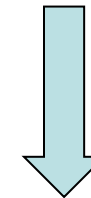
Depth	4th April 2022		22nd November 2022		22nd November 2023	
	Germinated /dead	Dormant	Germinated /dead	Dormant	Germinated /dead	Dormant
10 cm	20%	80%	11%	89%	27%	73%
20 cm	1%	99%	5%	95%	7%	93%
40 cm	3%	97%	1%	99%	2%	98%



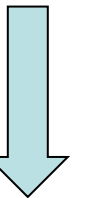
Germination test



100% germinated after 14 days



99% germinated after 21 days

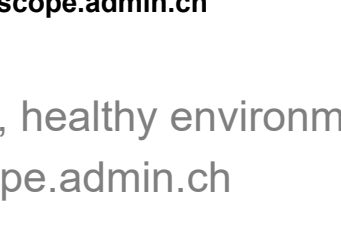
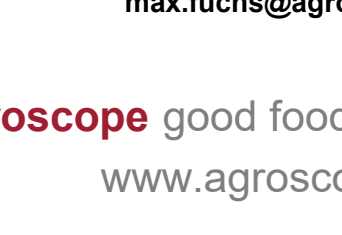
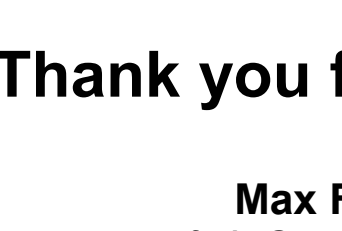
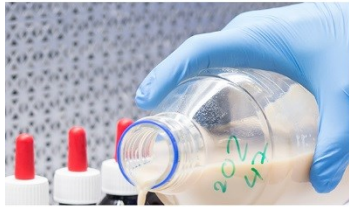




# Conclusions and outlook

- One year of fallow combined with cover crops is effective for tuber reduction:
  - 60% reduction with repeated cultivation alone
  - 20-40% reduction with inclusion of cover crops
- Rotary harrow with a packer roller led to more re-rooting of yellow nutsedge
- Trials will continue until 2025





Thank you for listening

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