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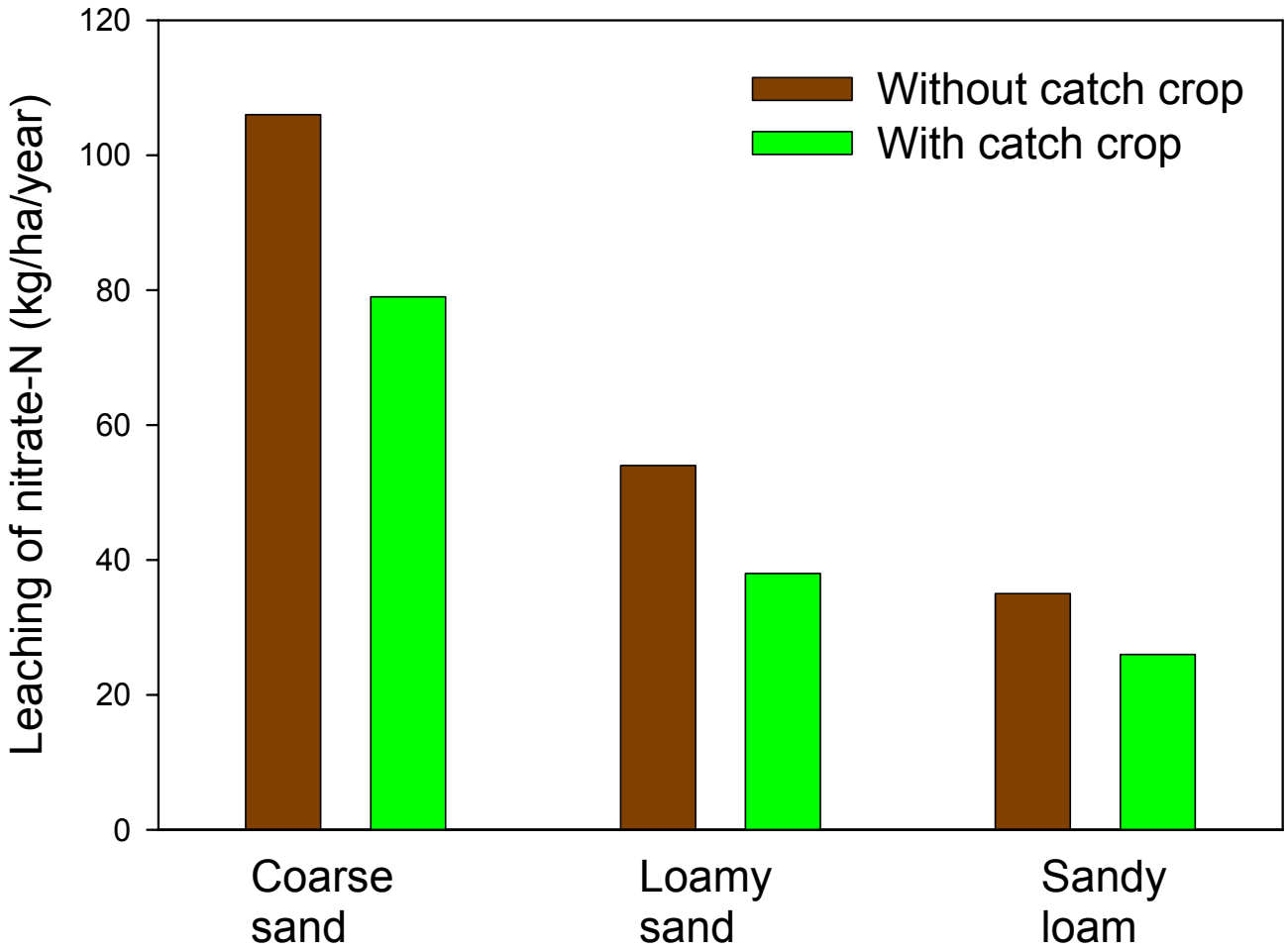
# Long-term organic crop rotation experiments for cereal production – perennial weed control and nitrogen leaching

# Catch crops

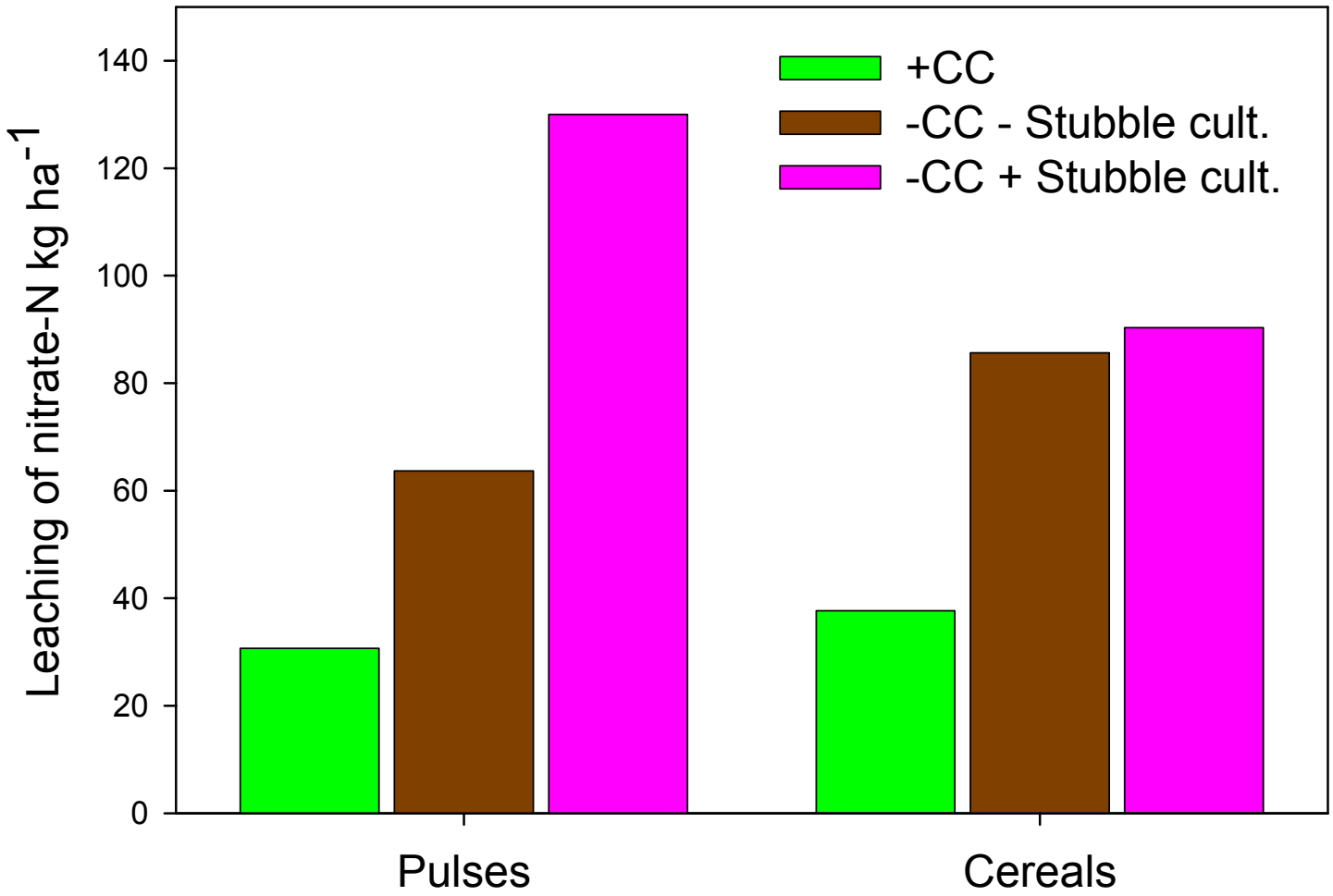
Danish Research Centre for
Organic Food and Farming

# Nitrate leaching with or without catch crop in rotation with grass-clover

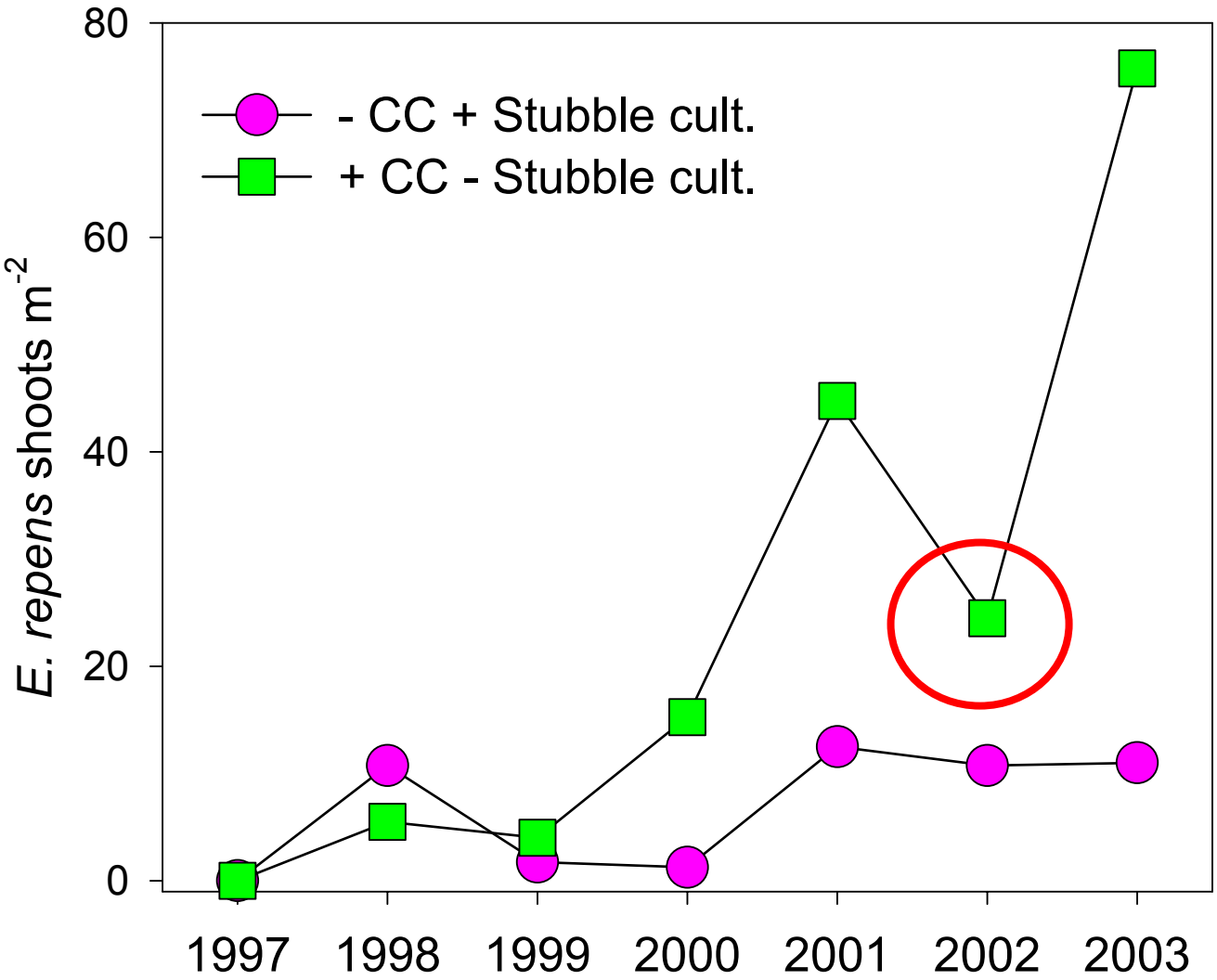


# Control of perennial weeds in stubble

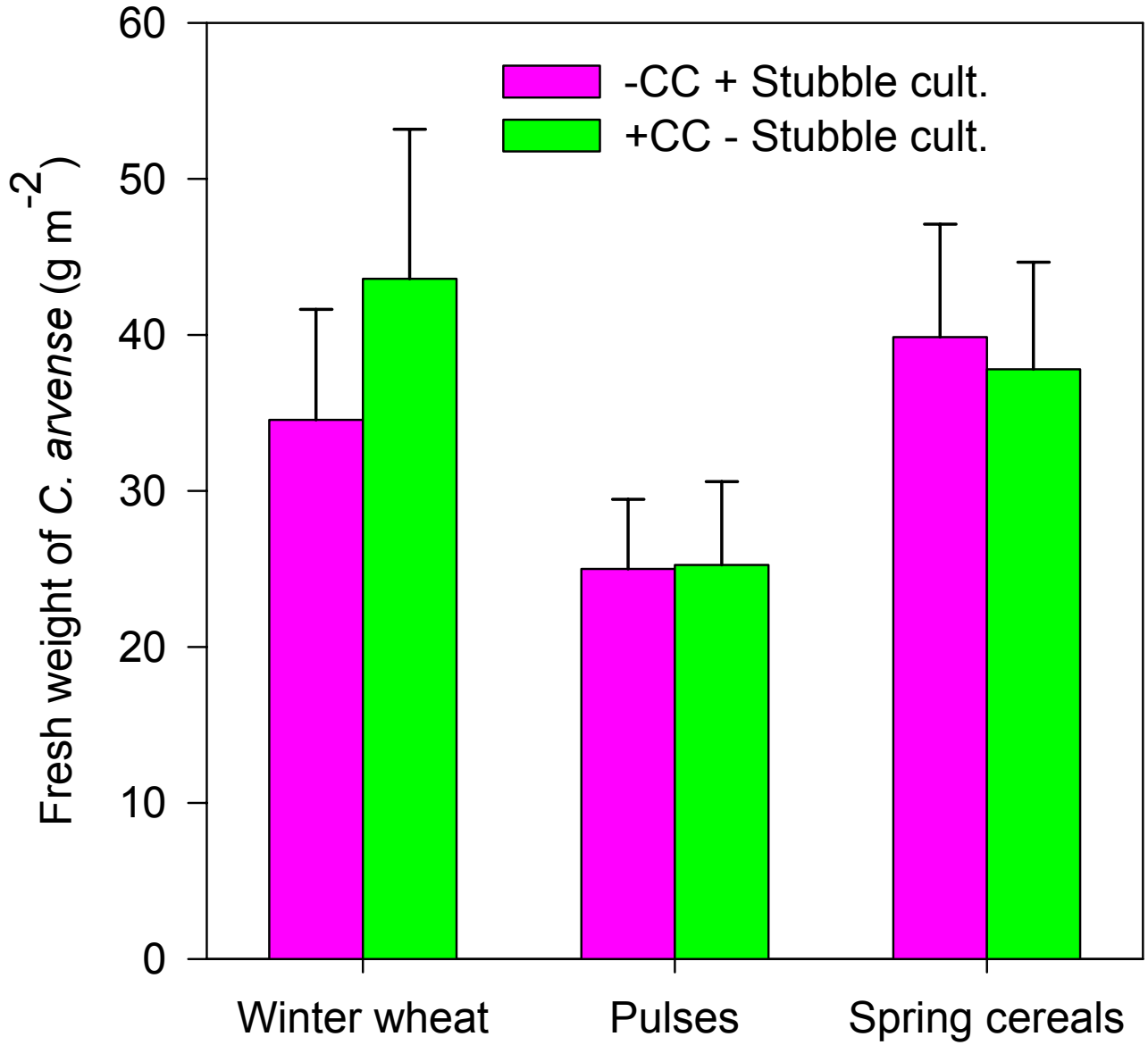

# N-leaching on coarse sandy soil with or without catch crops and stubble cultivation



# *E. repens* shoots in spring barley on coarse sandy soil with and without catch crops



# *C. arvense* biomass on sandy loam in different crop types with and without catch crops

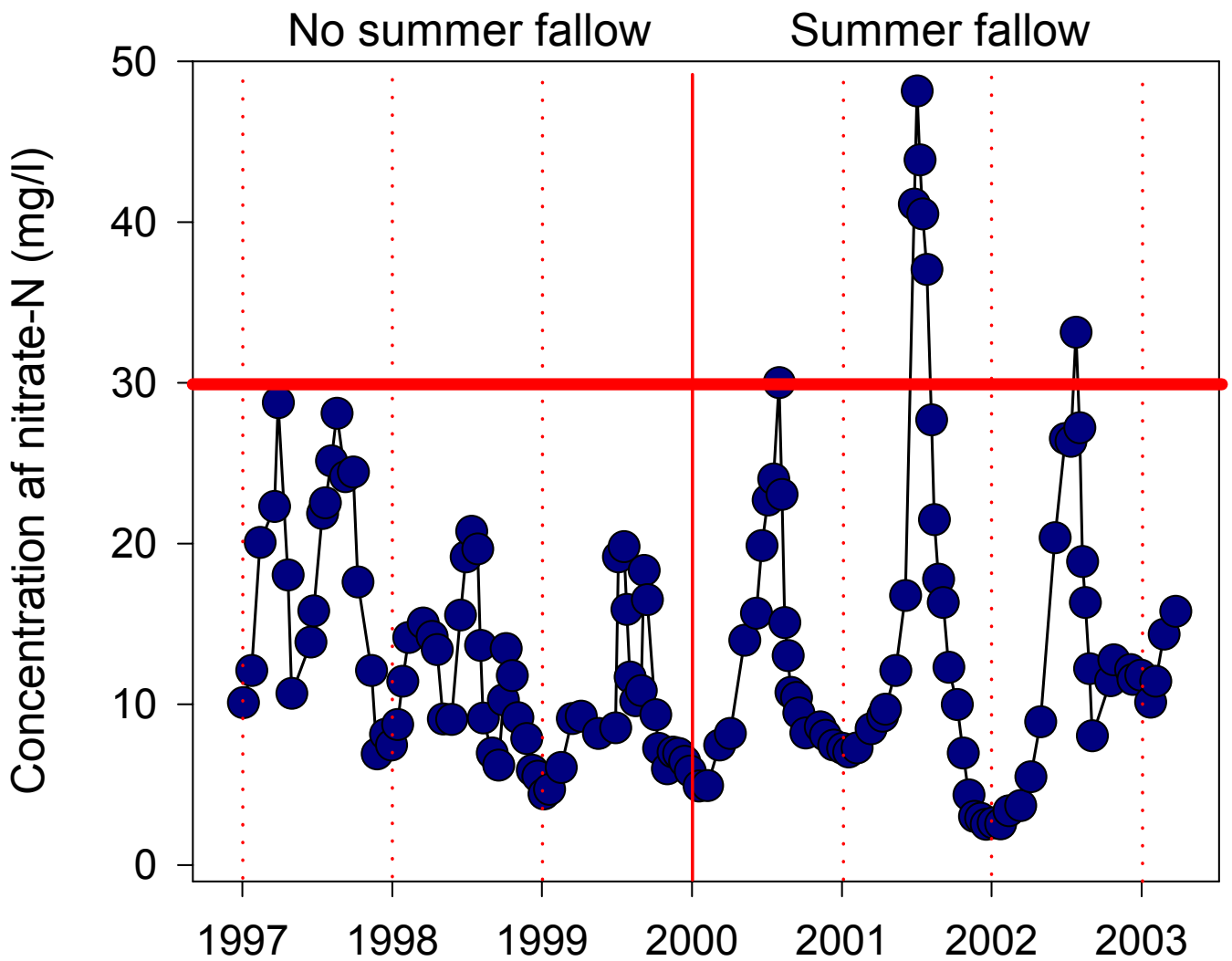


# Summary

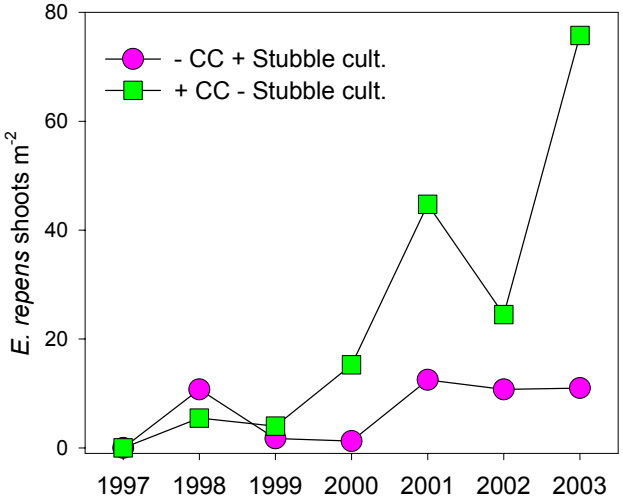
- Catch crops should be included in systems with grass-clover to reduce nitrate leaching when possible, especially on sandy soils
  - but use of catch crops precludes stubble cultivation
- Stubble cultivation should be used to reduce *E. repens* infestations
  - but not after pulses
- Stubble cultivation did not seem to reduce *C. arvense* biomass in our experiments

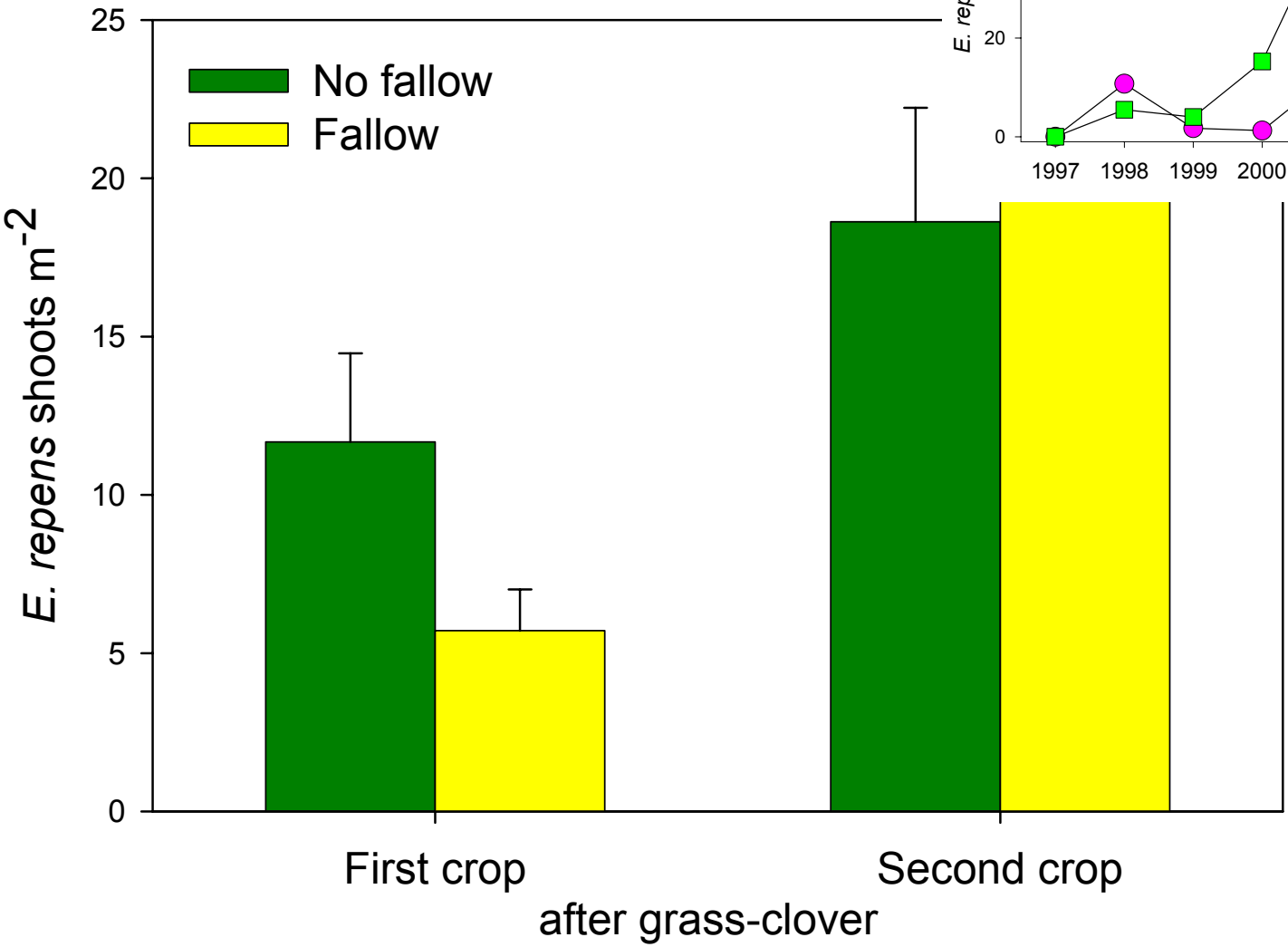
# Control of perennial weeds in grass-clover: Summer fallow

# Concentrations of nitrate-N on coarse sandy soil. Mean of 4 crops, without catch crop, with manure



# *E. repens* shoots on coarse sanc after grass-clover with or without sum

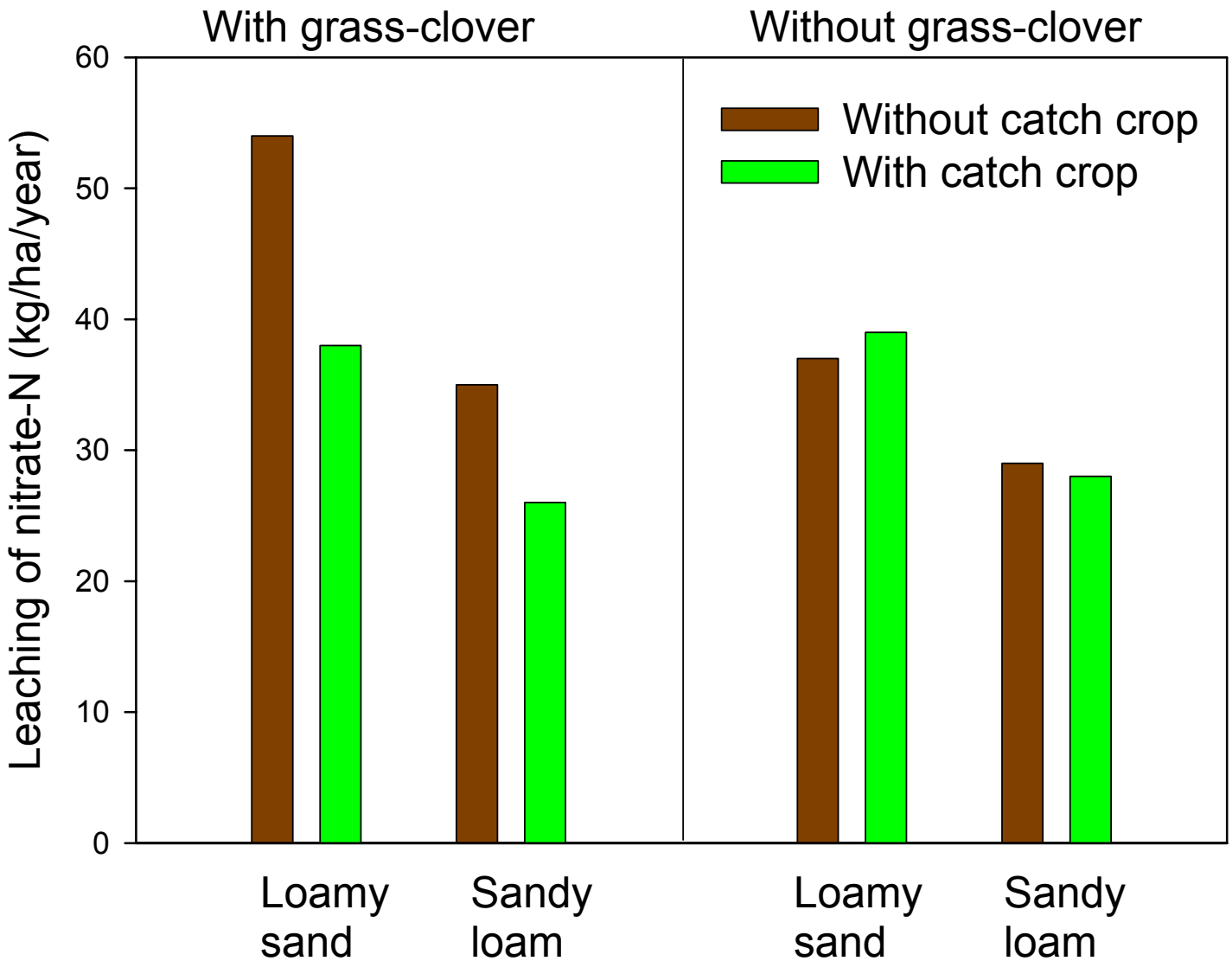


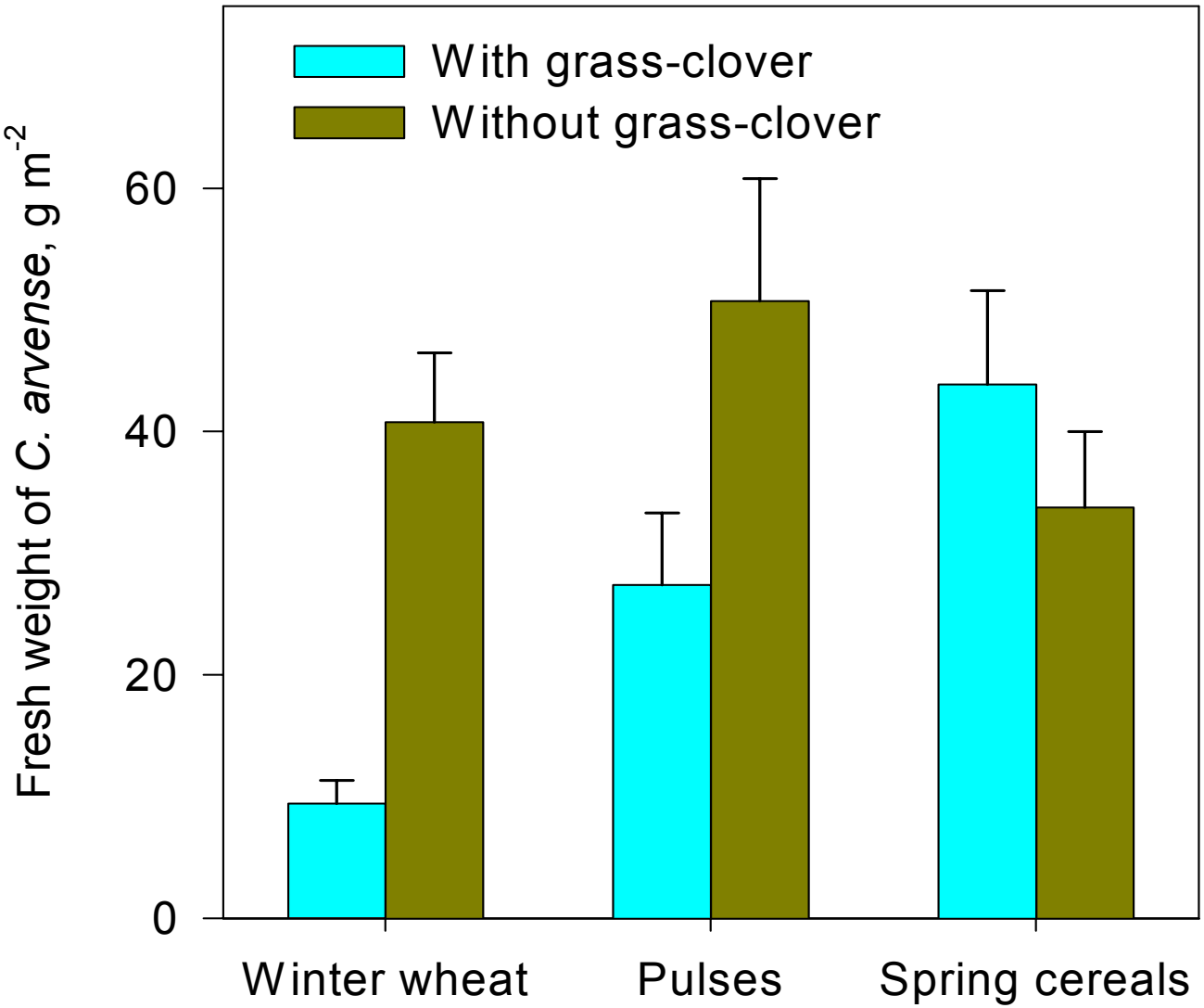
# Summary

- Summer fallow could be used to reduce *E. repens* infestations
  - mainly the first year after fallow
  - increases risk of nitrate leaching on sandy soil
- Other options should be preferred

# Nitrate leaching with or without catch crop in rotations with or without grass-clover



# *C. arvense* biomass on sandy loam in different crop types in two rotations



# Summary

- Grass-clover can be managed to reduce *C. arvense*
- Catch crops should be included in the rotation to avoid nitrogen leaching

# Conclusions

- In organic farming research, it is not sufficient to study effects seperately, such as:
  - Perennial weed control
  - Nitrogen leaching
- Unstudies interactions can make the conclusions misleading

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Thank you for your attention!