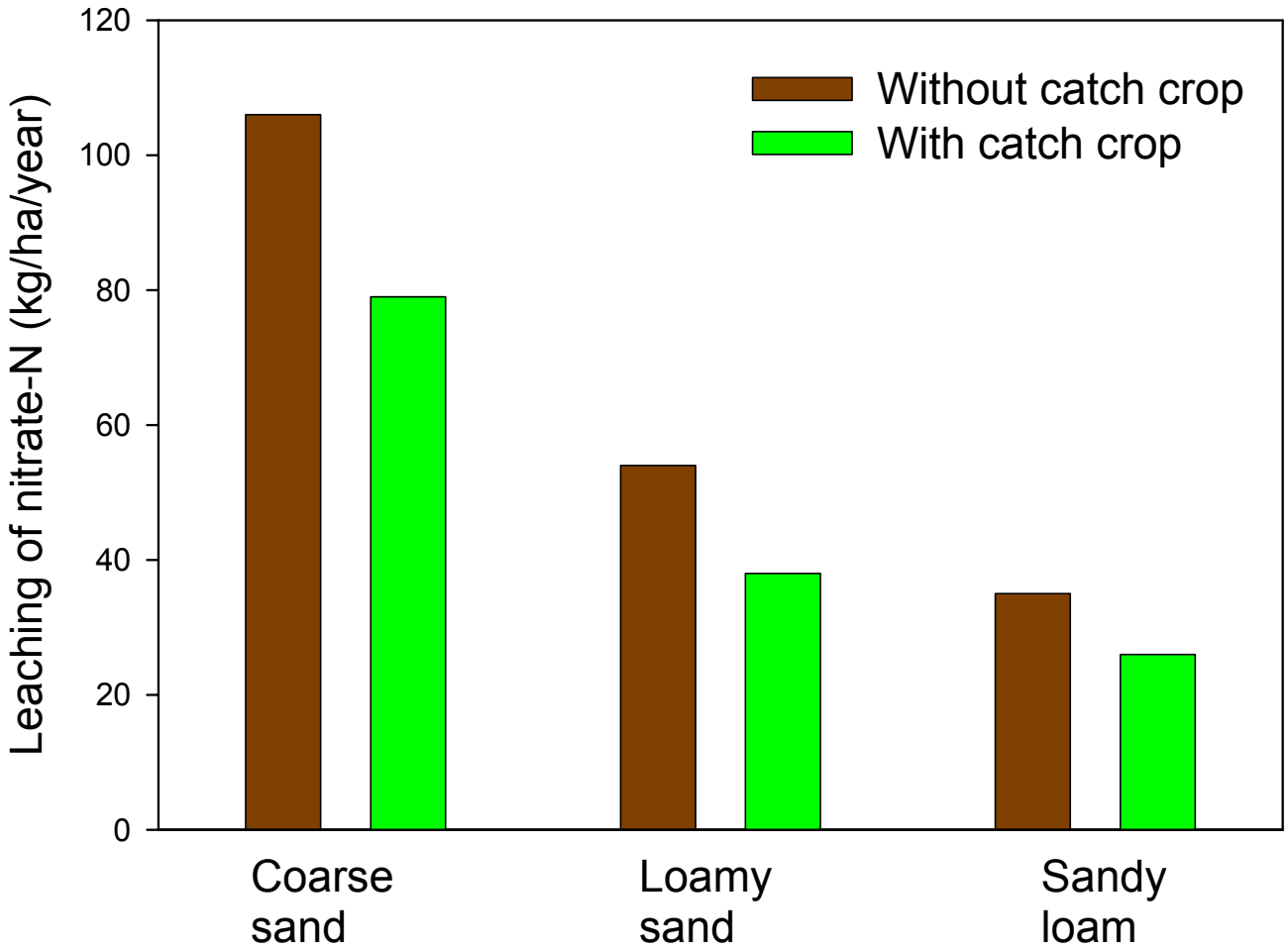
Ilse A. Rasmussen,
Dept. of Integrated Pest Management
Margrethe Askegaard & Jørgen E. Olesen,
Dept. of Agroecology
Danish Institute of Agricultural Sciences

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

Catch crops

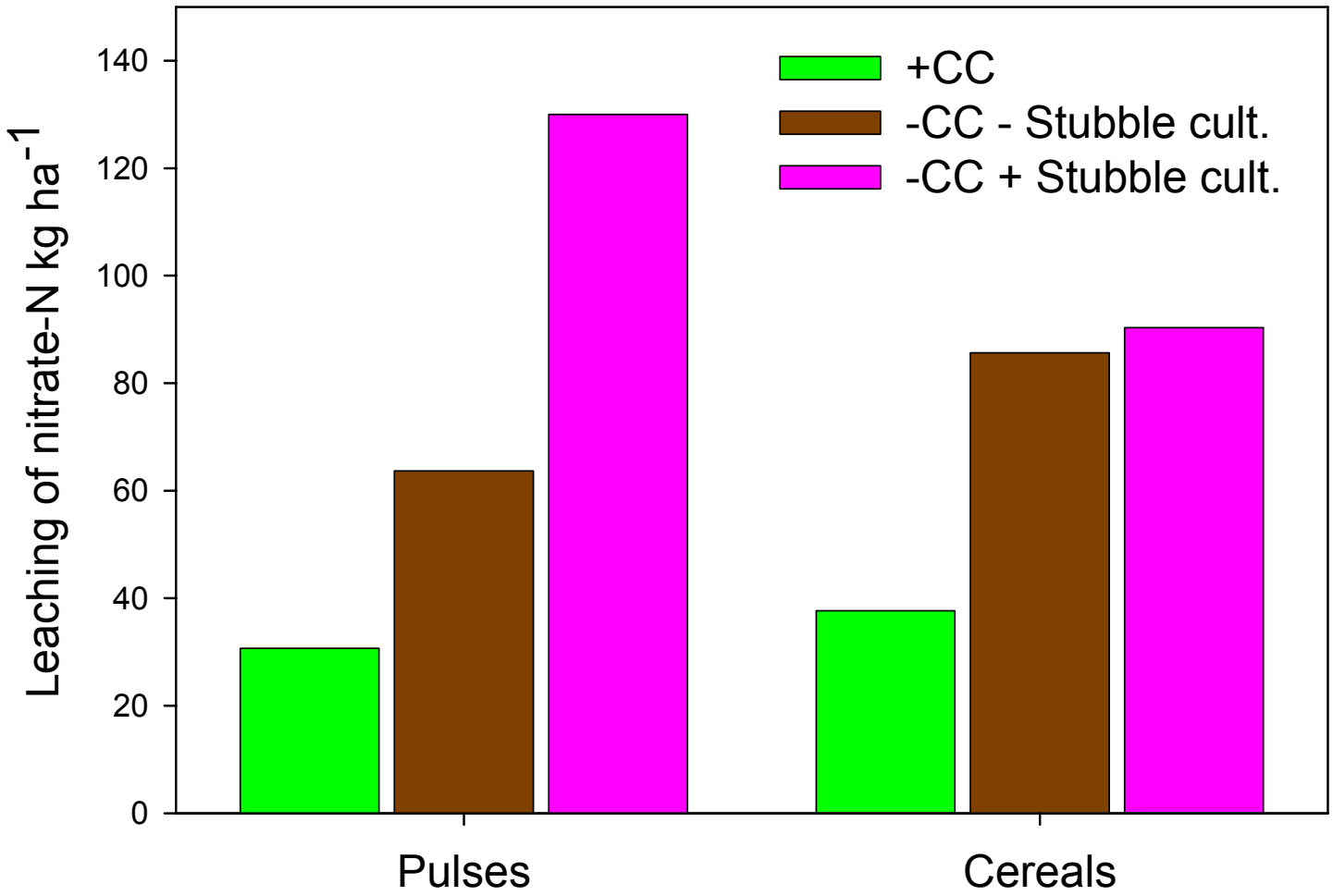
Danish Research Centre for
Organic Food and Farming

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

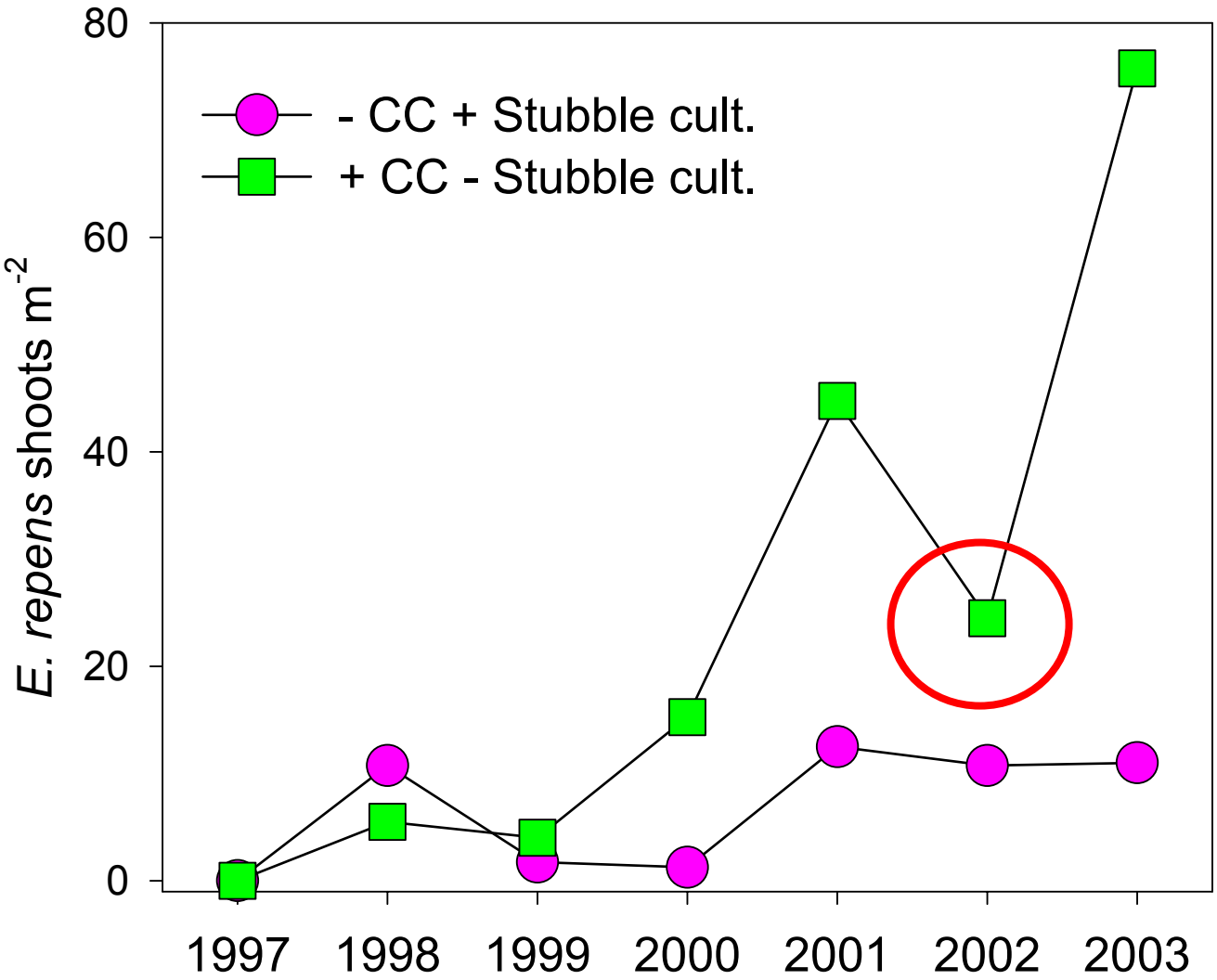


Control of perennial weeds in stubble

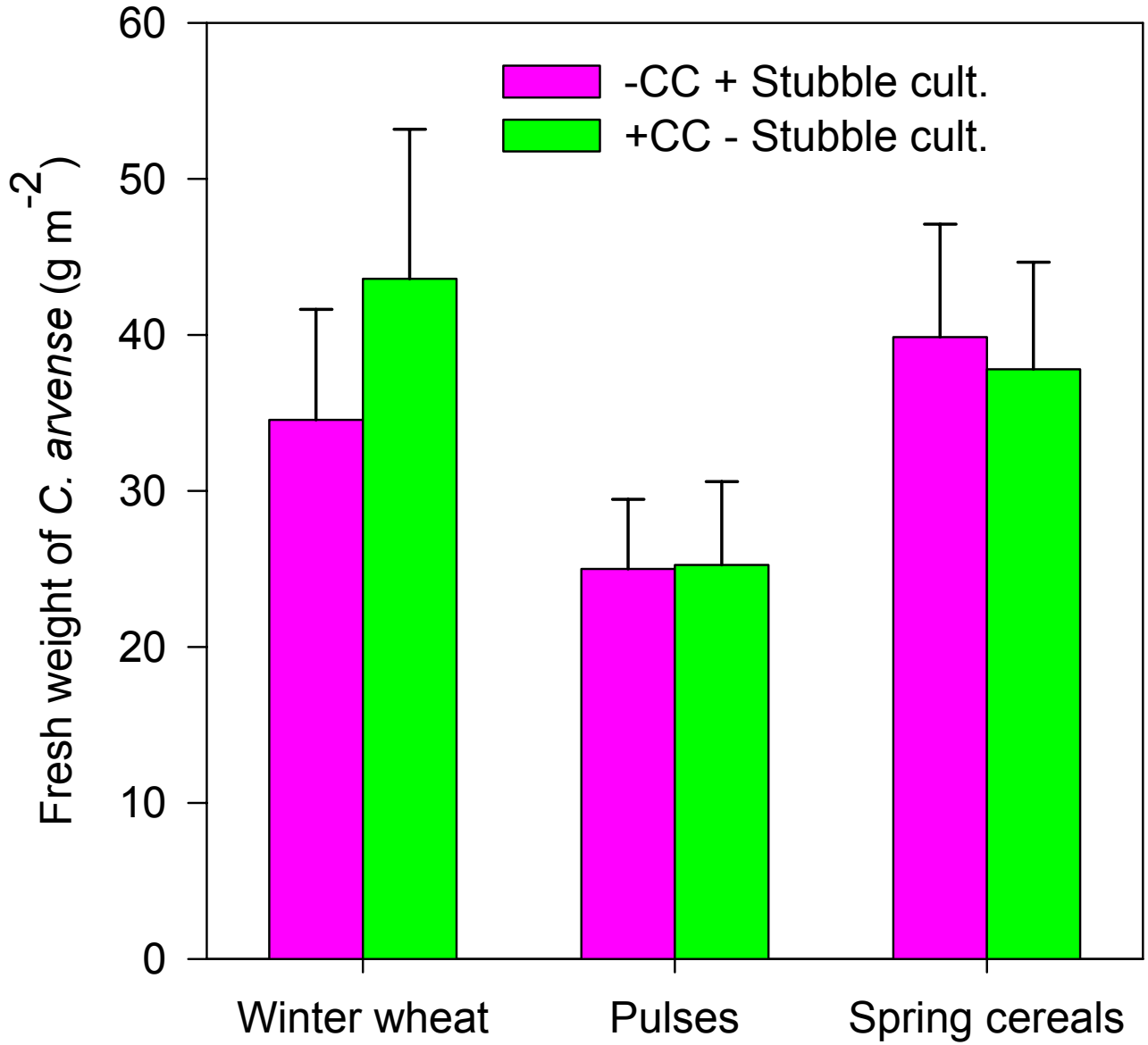
N-leaching on coarse sandy soil with or without catch crops and stubble cultivation



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

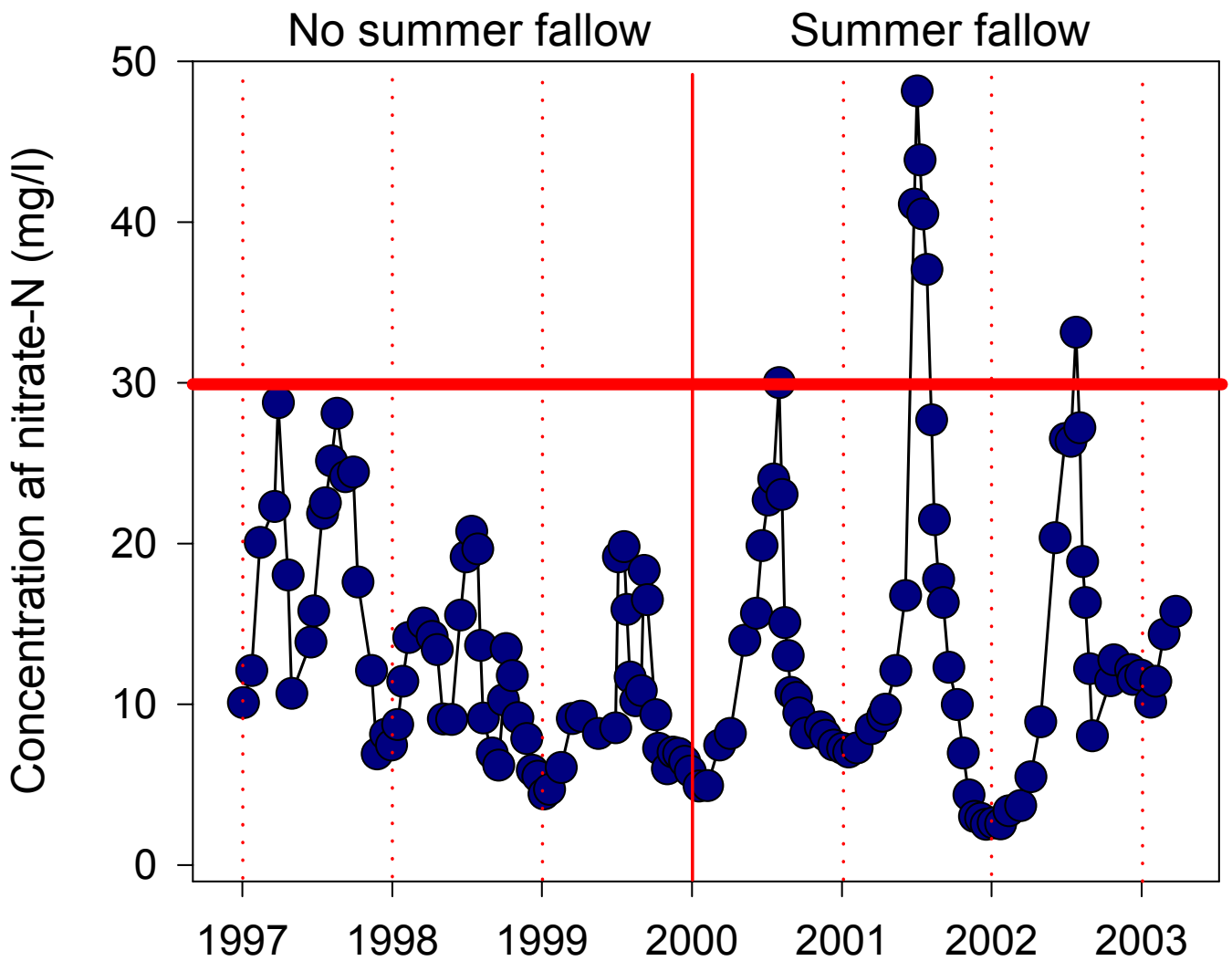


Summary

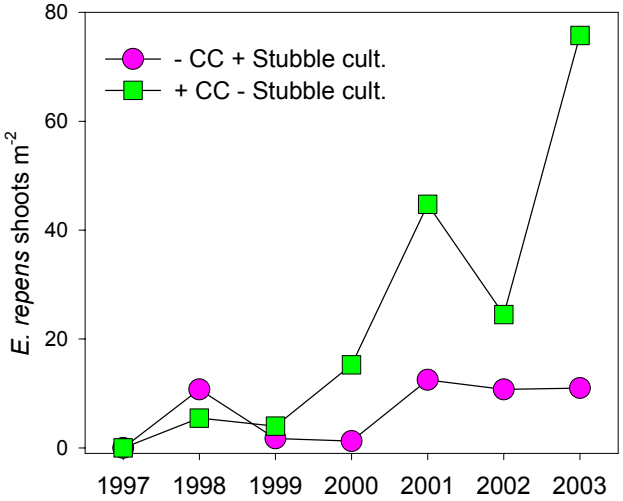
- Catch crops should be included in systems with grass-clover to reduce nitrate leaching when possible, especially on sandy soils
  - but use of catch crops precludes stubble cultivation
- Stubble cultivation should be used to reduce *E. repens* infestations
  - but not after pulses
- Stubble cultivation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

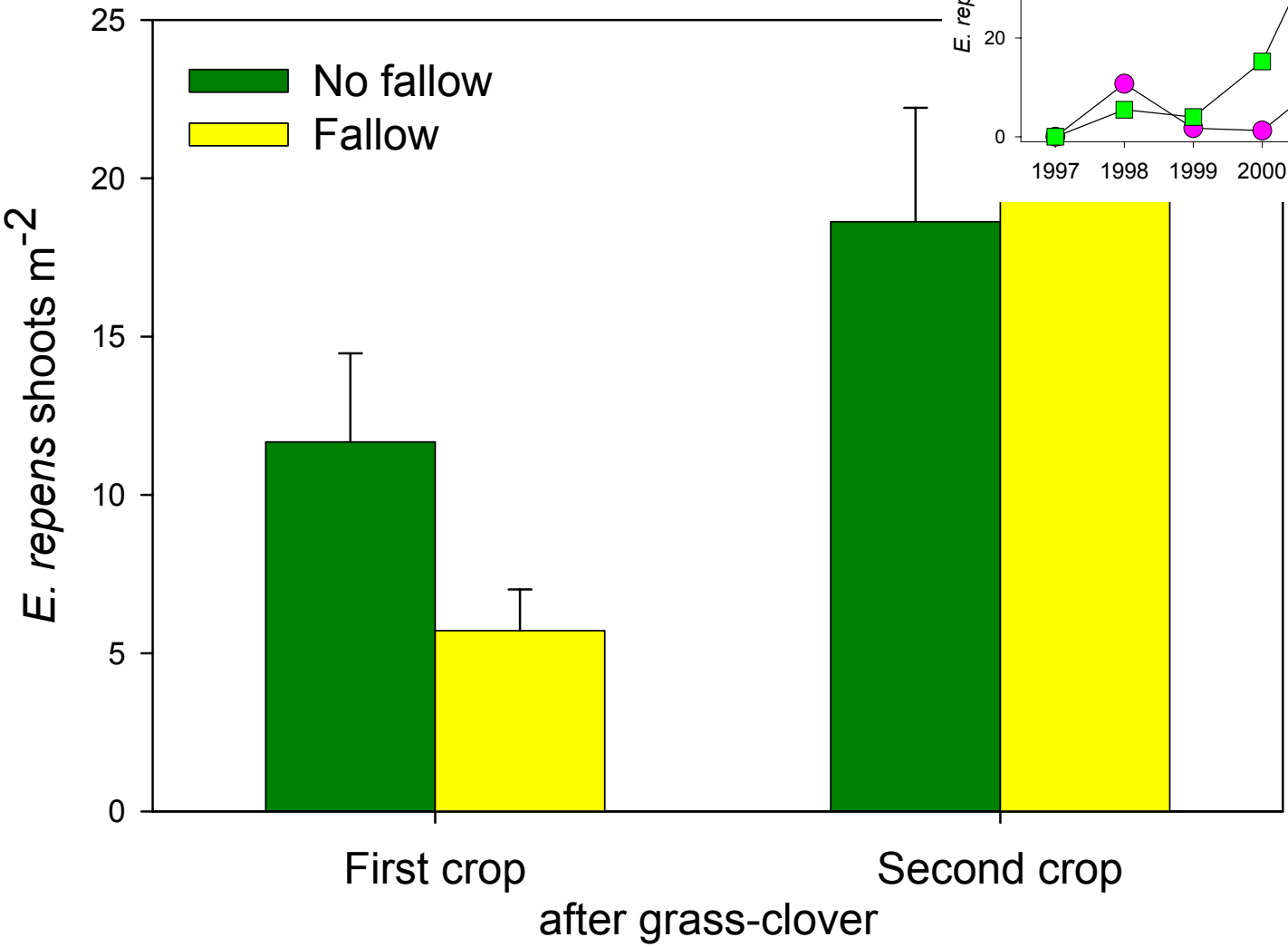
Control of perennial weeds in grass-clover: Summer fallow

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

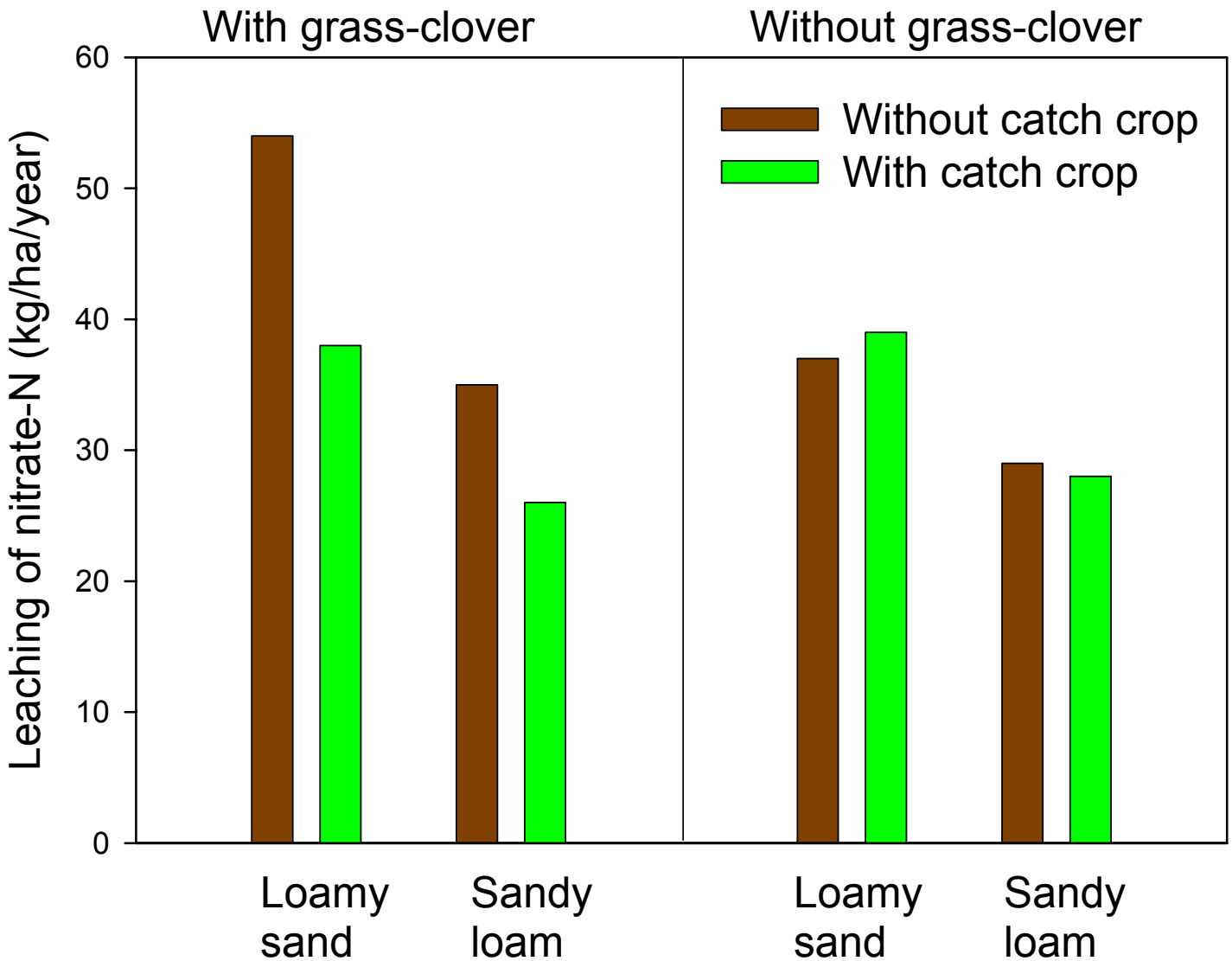




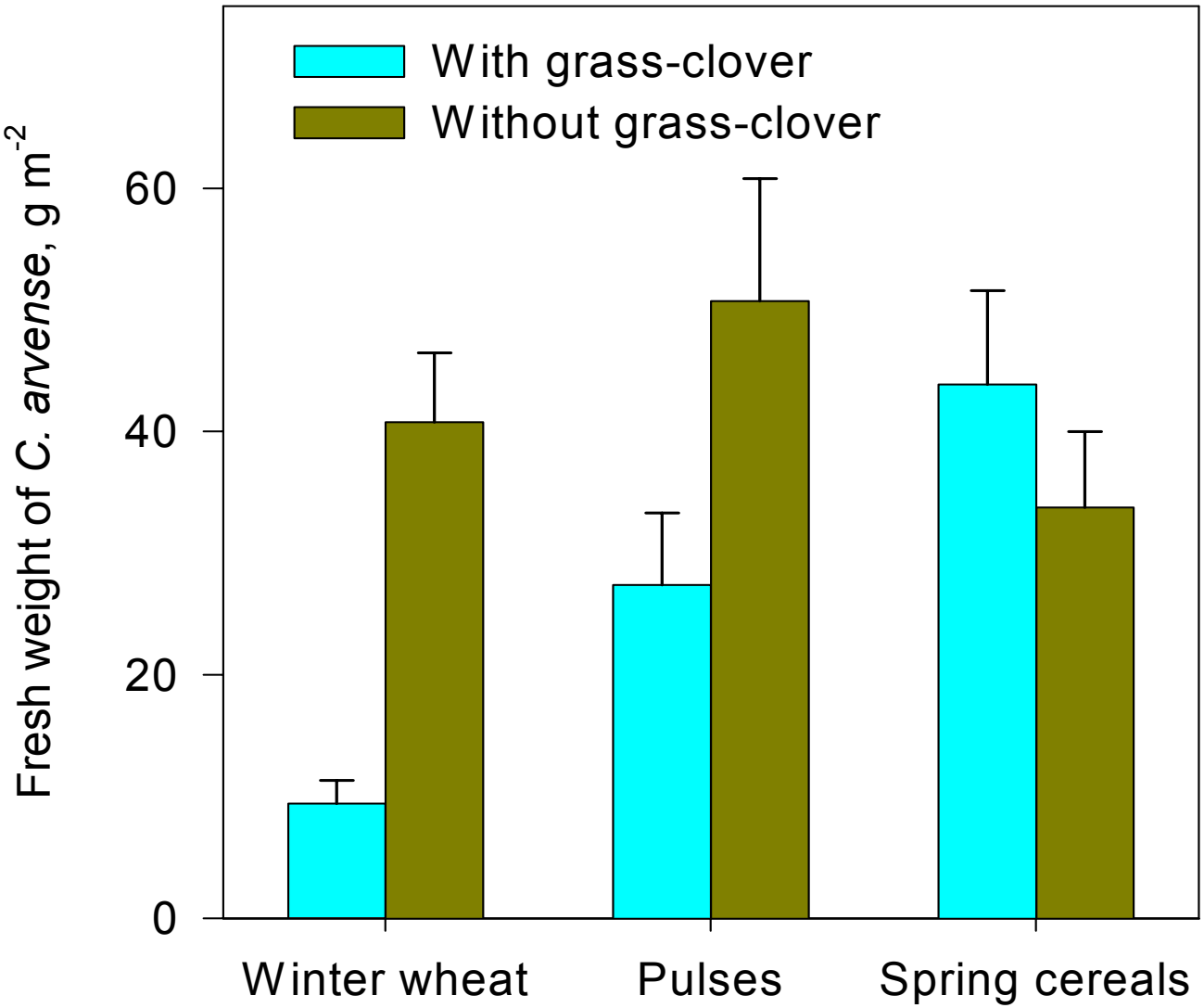
Summary

- 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

This project was funded by Danish Research Centre for Organic Food & Farming - DARCOF

Thank you for your attention!