



Growth and nitrogen uptake of winter and summer cover crops

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Introduction

Winter-killed cover crops do not need herbicide termination. **Summer cover crops** can grow in between two winter cash crops.

Knowledge gaps: their **growth and nitrogen uptake** are not sufficiently studied in temperate regions.

Materials and Methods

✓ Experimental design: randomised block

✓ **Summer cover crop** field trial:

1. *Crotalaria juncea* L. (sunn hemp)
2. *Sorghum bicolor* L. Moench x *S. sudanense* (Piper) Stapf (sorghum)
3. their mixture

✓ **Winter-killed cover crop** field trial:

1. *Avena strigosa* Schreb. (black oat)
2. *Sinapis alba* L. (white mustard)
3. their mixture with *Vicia benghalensis* L.



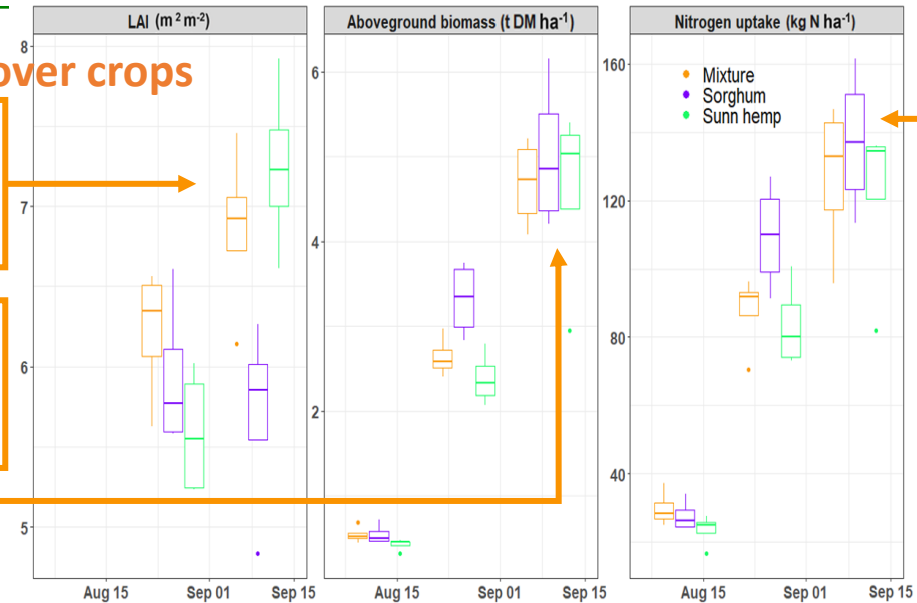
Nitrogen uptake (kg N ha⁻¹) at 107 DAS:
38 (oat)
41 (mixture)
44 (mustard)
0 (control)



Summer cover crops

excellent soil cover

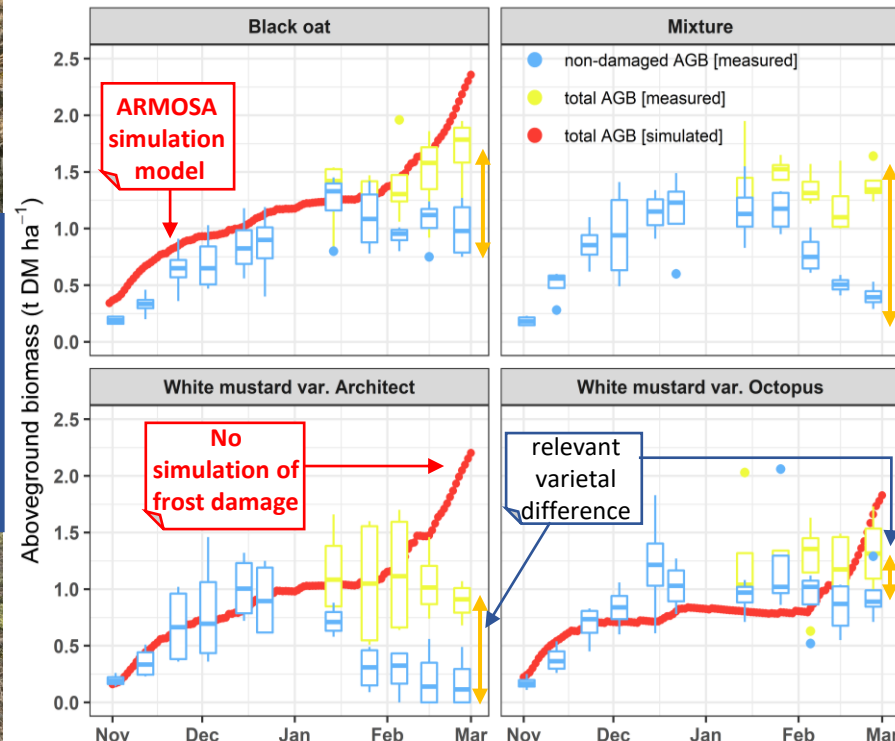
equally productive treatments



Nitrogen uptake at 49 DAS



Winter-killed cover crops



Starting from the onset of frost damage symptoms, **AGB** samples were splitted in:
1. **non-damaged AGB**
2. **frost-damaged AGB**
Total AGB (= 1. + 2.) is simulated by the model

Conclusions

- ✓ Relevant **N uptake** in all treatments
- ✓ **Frost terminates** some cover crops more than others
- ! The model needs to be **integrated** with **frost damage simulation**

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