

# Establishment and first-year yields of clover-grass leys with caucasian clover (*Trifolium ambiguum*)

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## Introduction

Insufficient winter survival restricts the wider use of red clover in longer ley rotations. As a potential alternative, we evaluated the performance of Caucasian clover (*Trifolium ambiguum*) in mixtures with timothy.

## Material and methods

### Sites

- Rådde, Sweden (loam, three harvests)
- Ås, Sweden (silt loam, two harvests)
- Maaninka, Finland (loam, two harvests)

### Seeding rates (ten legume-timothy mixtures)

- caucasian clover 10 kg ha<sup>-1</sup>
- red clover 8 kg ha<sup>-1</sup>
- yellow lucerne 10 kg ha<sup>-1</sup>
- white clover 5 kg ha<sup>-1</sup>
- legume-mixtures: caucasian clover 5 kg ha<sup>-1</sup> with red clover 4 kg ha<sup>-1</sup> or yellow lucerne 5 kg ha<sup>-1f</sup>
- timothy 5 kg ha<sup>-1</sup>

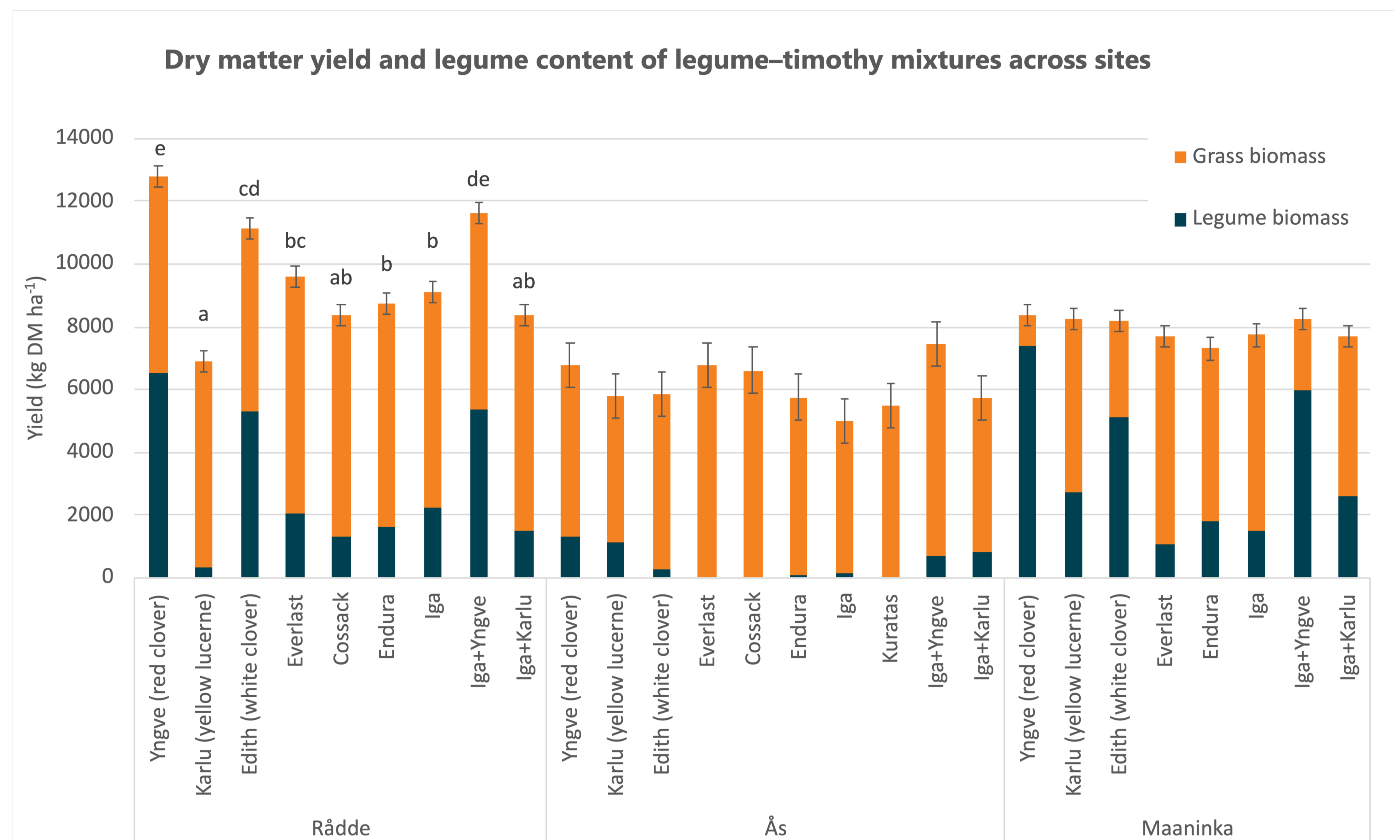
### Fertiliser application

- 50 kg N ha<sup>-1</sup> for the first yield
- 30 kg N ha<sup>-1</sup> for each regrowth yield

### Measurements

- dry matter (DM) yield
- legume content (%)

Caucasian clover's persistence could enable the adoption of longer legume-containing ley rotations in northern climates.



**Figure 1.** Total dry matter (DM) yields of legume-timothy mixtures at two sites (Rådde, Ås) in Sweden and one in Finland (Maaninka) in 2024. All mixtures were sown with timothy. Different letters at Rådde indicate statistically significant differences among entries. No significant differences in total yield were detected for Maaninka and Ås. Error bars represent  $\pm$ SEM within sites. Legume contents are DM yield weighted averages. In Maaninka, legume content was based on fresh weights, giving higher values and preventing direct comparison with Rådde and Ås.

## Results

Establishment was successful with plant densities in spring 2024 ranging from 83-96% in Rådde, 84-90% in Ås and 96-98% in Maaninka (data not shown).

### Rådde

Yngve, Edith and Everlast produced highest total yields exceeding 10 000 kg DM ha<sup>-1</sup> year<sup>-1</sup> (Figure 1).

Legume content in the first cut was very low in caucasian clover and Karlu seed mixtures but improved in Caucasian clover mixtures in subsequent cuts.

### Ås

No significant yield differences were observed among mixtures, and the total yield was low ( $\sim$ 6000 kg DM ha<sup>-1</sup>) due to the absence of a third cut.

Legume content was generally low in the first cut but reached nearly 30% in Yngve and Karlu mixtures during regrowth.

### Maaninka

No statistically significant differences were observed in yields, although caucasian clover tended to have slightly lower yields (average of all  $\sim$ 8000 kg DM ha<sup>-1</sup>).

Herbicide application after the first cut suppressed legume growth and reduced subsequent yields.

## Conclusions

Yield differences were clearer between plant species than among caucasian clover cultivars.

Caucasian clover demonstrated satisfactory performance in both southern Sweden (Rådde) and central Finland (Maaninka), with regrowth legume contents reaching levels considered agronomically desirable.

Results support further evaluation of the potential of caucasian clover as a persistent forage legume in northern ley systems.