

Yield and forage quality of 11 different grass clover mixtures during 5 years

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SEGES Innovation

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Promilleafgiftsfonden for landbrug

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Background

- Temporary grasslands in Denmark are predominantly used for cutting for silage
- Temporary grasslands generally only persists for 2-3 years as the yield typically decreases with age.
- Temporary grasslands consist mainly of recommended seed mixtures of;

Perennial ryegrass (Lolium perenne)	Hybrid ryegrass (Lolium hybridum)	Festulolium	Tall Fescue (Festuca arundinacea)	Meadow fescue (Festuca pratensis)	White clover (Trifolium repens)	Red clover (Trifolium pratense)
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Objective:

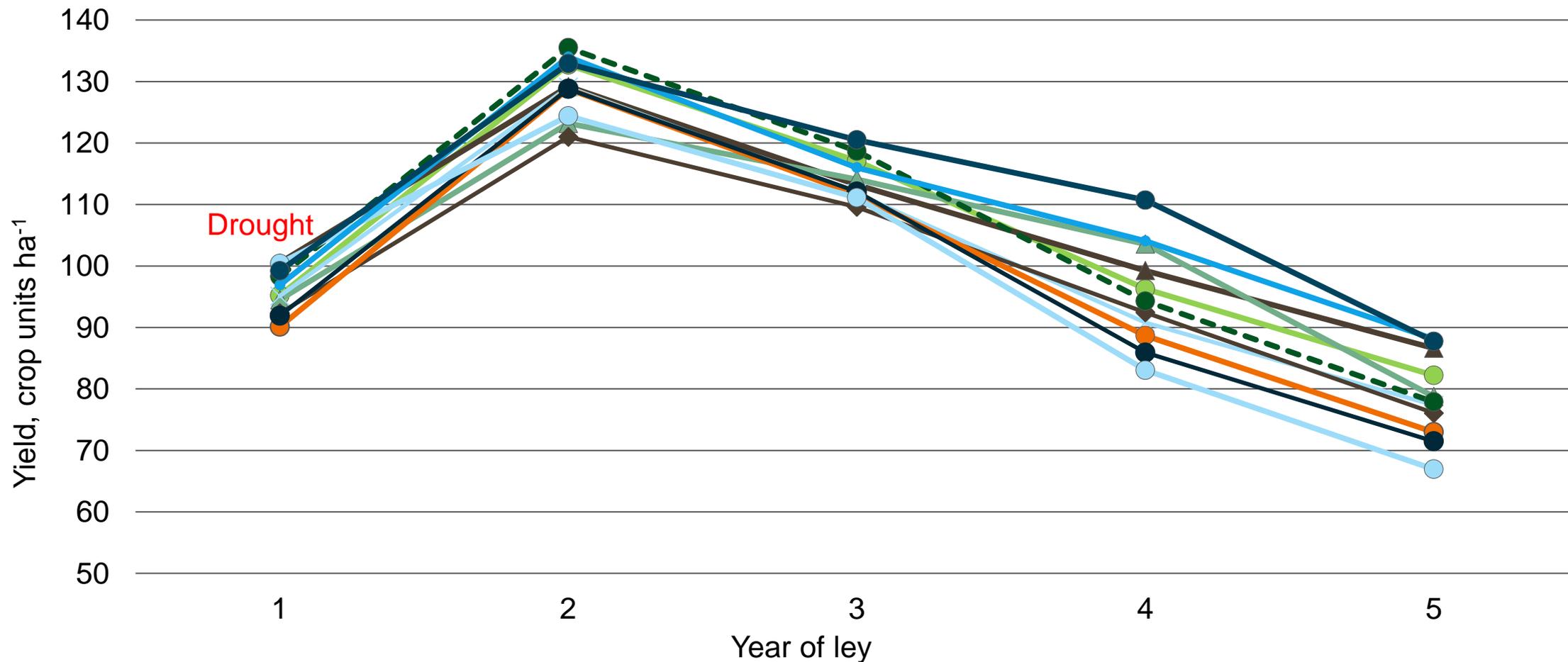
To evaluate yield, persistence and forage quality in 11 different recommended seed mixtures during 5 years (2018-2022)

Materials and methods

- 2 trials were established in 2017 in spring barley.
- Trials placed on non-irrigated sandy soils (clay content: 6 and 12 %).
- Seed rate for each mixture was adjusted according to seed weight of species.
- Split plot trial design with 4 replicates and plot size of 18 m².
- All mixtures were fertilized with inorganic fertilizer in descending amount from 1st to 4th cut;
 - 270 kg N ha⁻¹, 32 kg P ha⁻¹, 268 kg K ha⁻¹ & 68 kg S ha⁻¹.
- All mixtures for this study were harvested 5 times annually at the same time regardless of growth stage with a Haldrup harvester.
- Herbage samples dried at 60 degrees for 48 hours
- Forage quality and legume proportion determined by dry NIRS



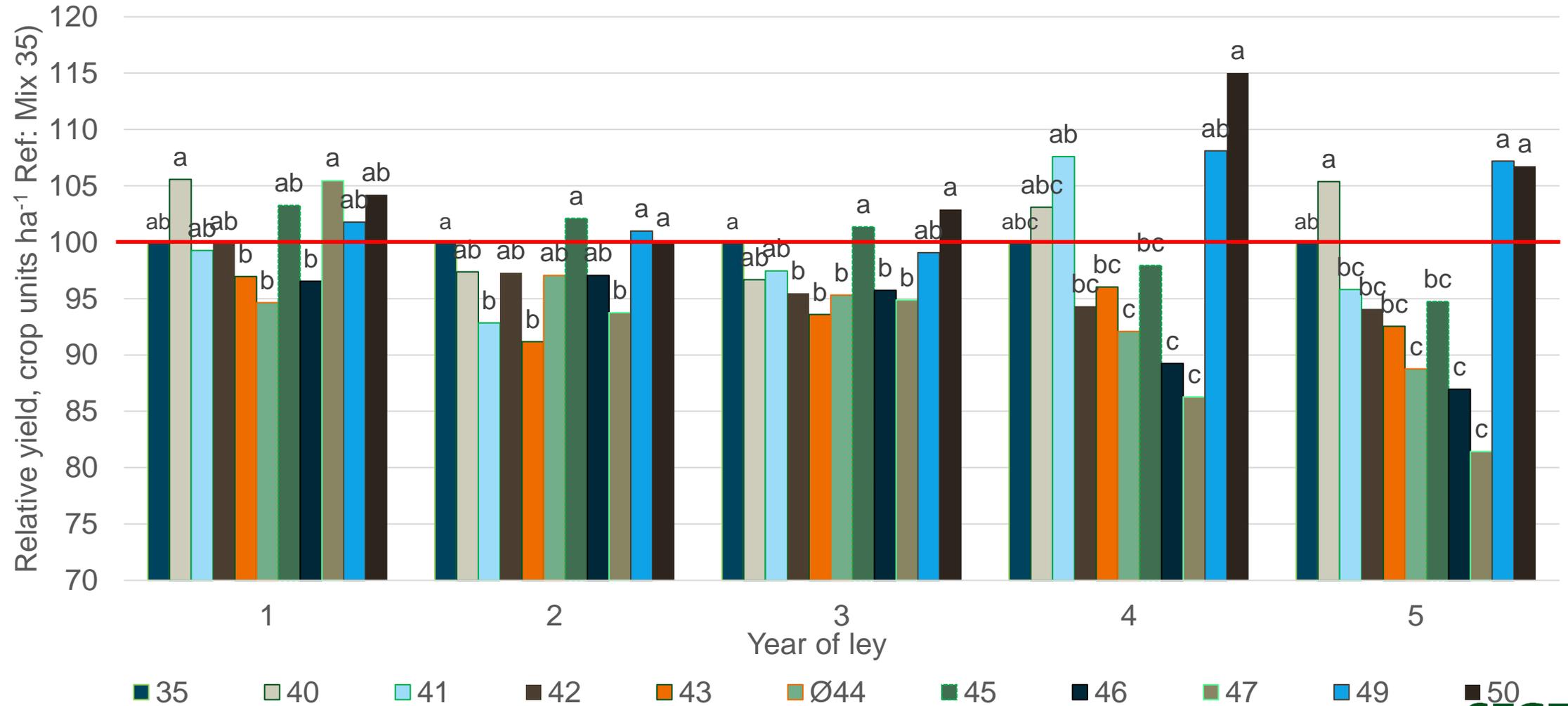
Yield of metabolizable energy 1.-5. year, 2018-2022 (NEL₂₀)



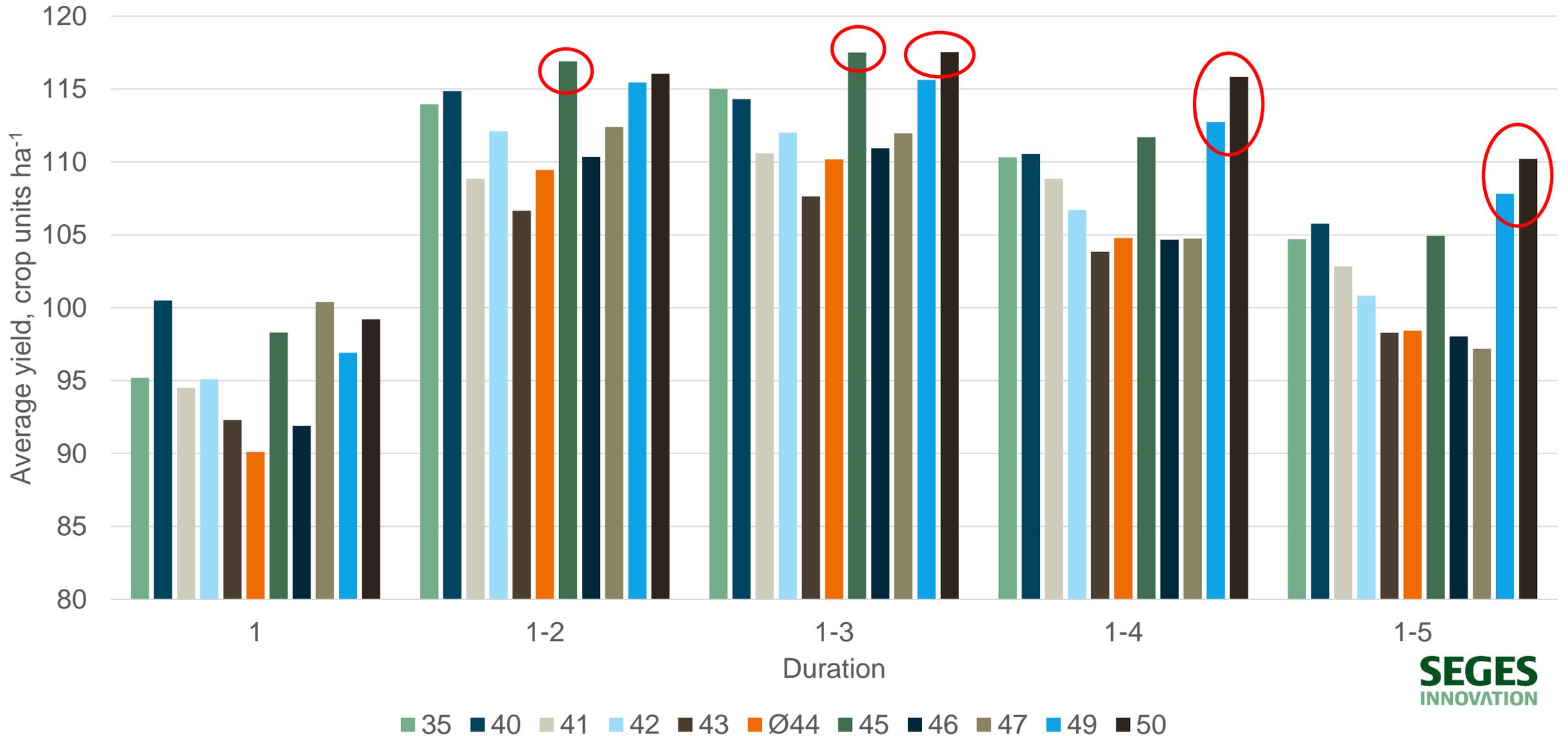
● 35 ▲ 40 ▲ 41 × 42 ◆ 43 ○ 44 ● 45 ● 46 ○ 47 ● 49 ● 50

Relative yield

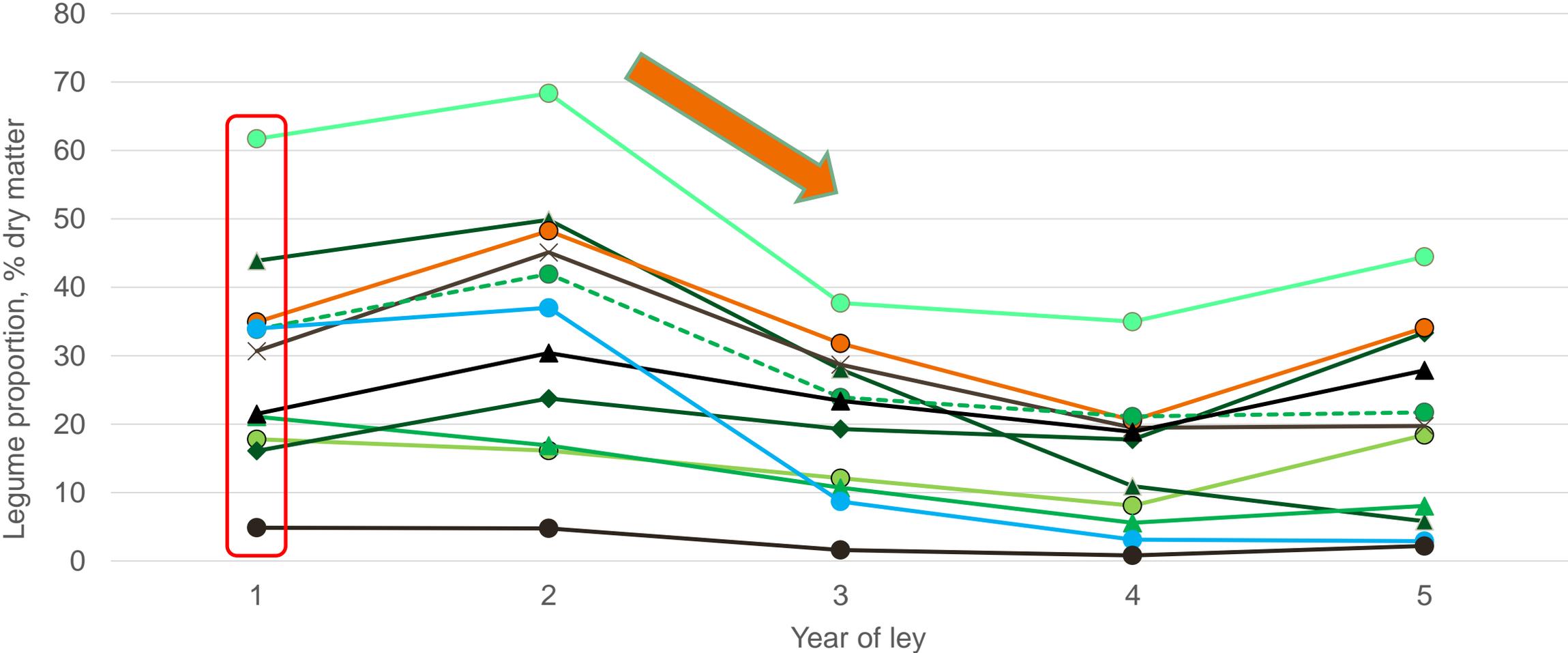
(ref: mix 35)



Average yield with increasing duration

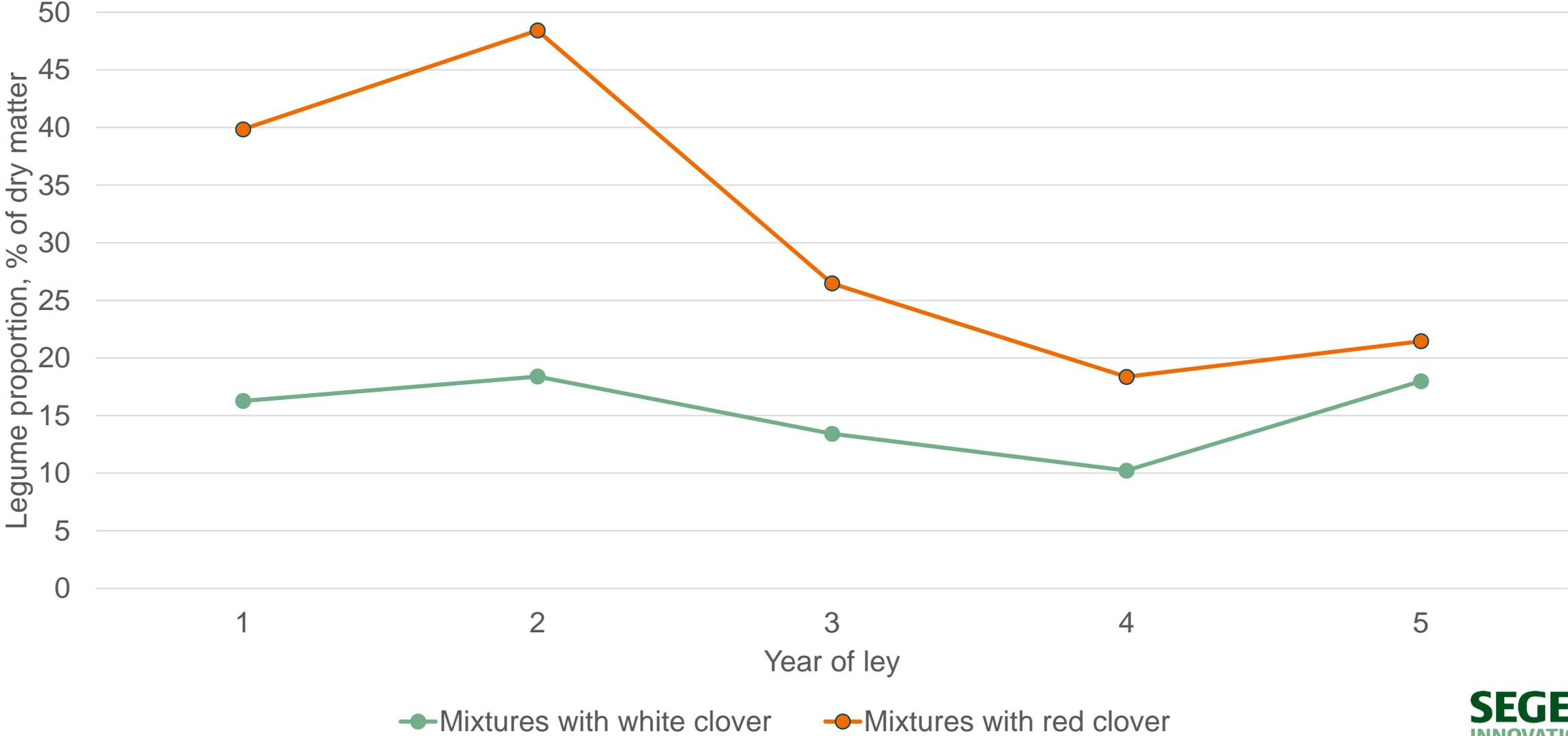


Legume proportion



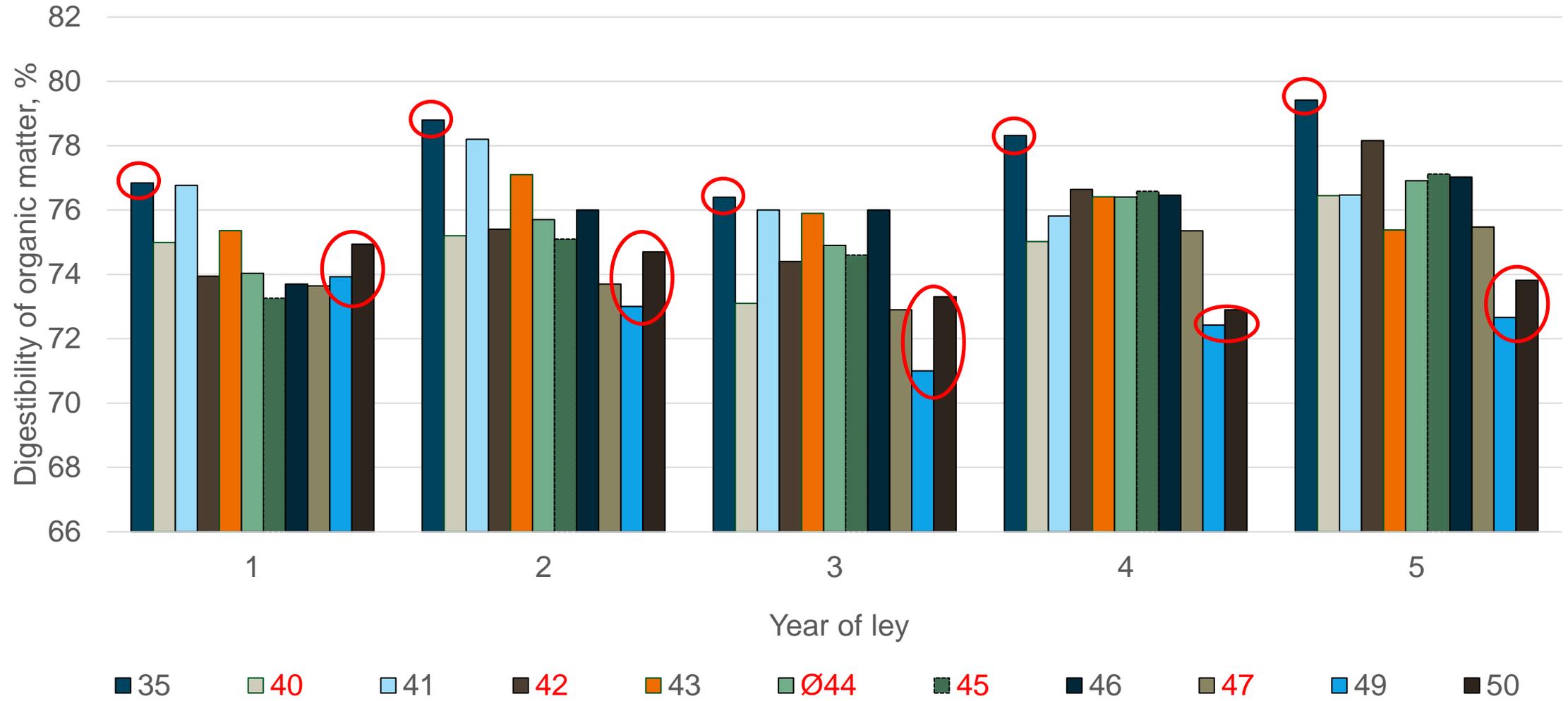
● 35
 ▲ 40
 ▲ 41
 × 42
 ◆ 43
 ○ Ø44
 ● 45
 ▲ 46
 ● 47
 ● 49
 ● 50

Difference in mixtures with white and red clover



Digestibility of organic matter

(Tilley and Terry, 1963)



Conclusion

- For a 2-3 year duration, mixtures containing a large proportion of festulolium or tall fescue showed the highest yield.
- For a 5 year duration, only mixtures containing a large proportion of tall fescue showed the highest yield, while the yield of mixtures with a large proportion of festulolium decreased relatively more in year 4-5.
- The legume proportion was largest in mixtures containing red clover, but the proportion dropped rapidly from 2nd to 3rd year of ley, while it was low for all years in mixtures with a large proportion of tall fescue and white clover.
- The digestibility of organic matter (DOM) was highest in mixtures with white clover and especially in combination with perennial ryegrass. In mixtures with a large proportion of tall fescue, the DOM decreased relatively more with age.

Thank you for your attention !



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