

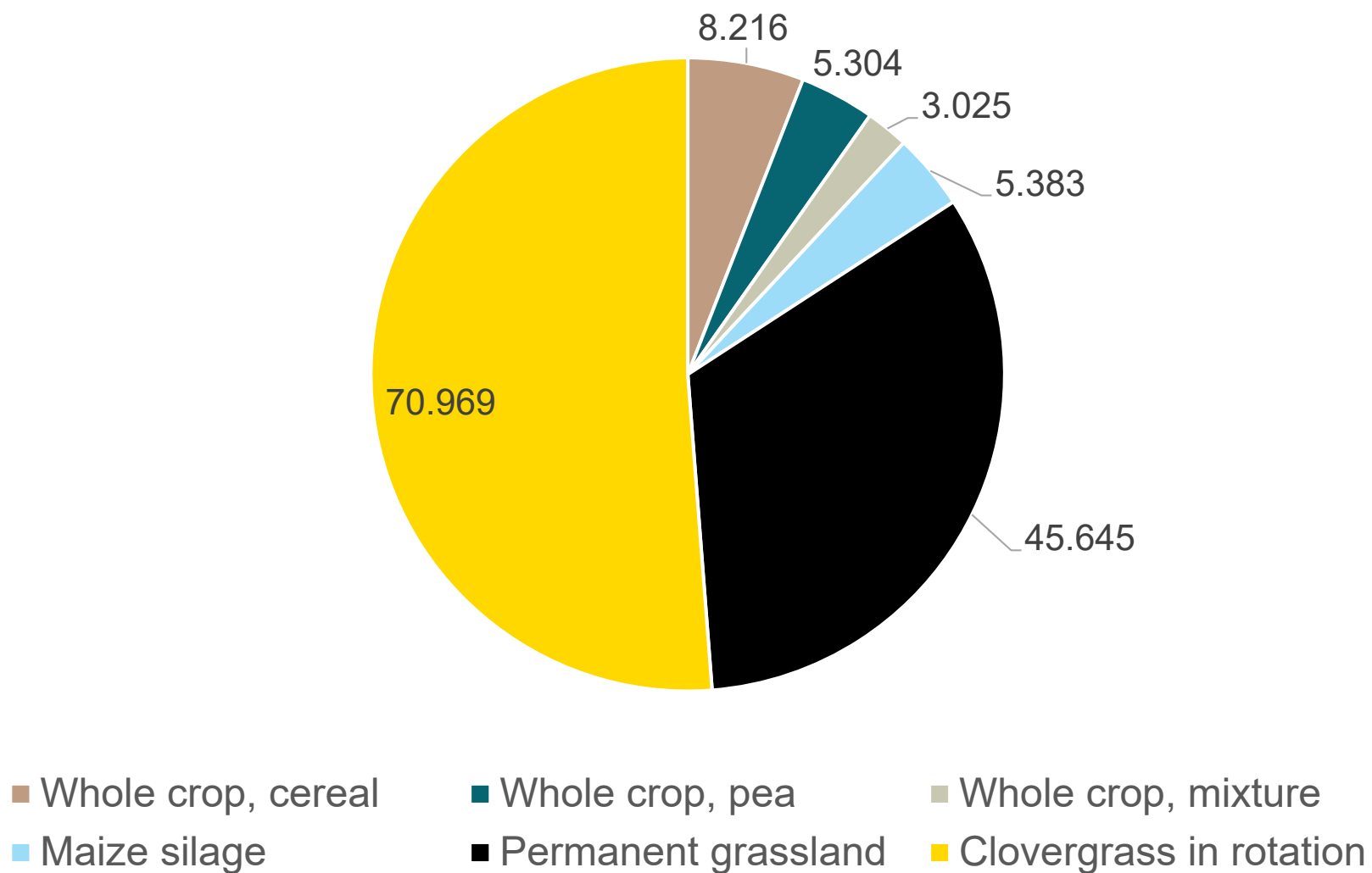


Cultivation of organic forage – how to achieve the highest yield and quality

Chefkonsulent Inger Bertelsen, SEGES Økologi Innovation

Organic milk production in the Nordic countries. 24th to 26th of September 2019.

Organic forage production in Denmark 2018, ha



Clovergrass

- Clovergrass on dairy farms
- Clovergrass for silage
 - Mixtures
 - Fertilizing
 - Strategies for cutting
- Clovergrass for grazing
 - Mixtures
 - Persistence and taste
- Sowing of clovergrass



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Clovergrass mixtures

- For silage
 - Grass species: Perennial ryegrass, festulolium, tall fescue
 - Clover species: White clover (normal leafsize), red clover
- For grazing
 - Grass species: Perennial ryegrass + others
 - Clover species: White clover (normal and smaller leafsize), red clover



Recommended mixtures for organic, 2019

Primær anvendelse			Soil conditions	Earliness	Nr.	Grasses														Legumes					Recommen- ted seed amount, kg/ha ²⁾
						Tall fescue	Festulolium		Hybrid ryegrass	Perennial ryegrass						Timote		Meadow fescue	Red fescue	Kentucky bluegrass	Red clover	White clover		Alfalfa	
til	på arealer	mt. og sildig	rye-grass	tall fescue	T	D	T	D	T	D	T	gra.	cut					normal leaf	smaller leaf			very good or good conditions			
Procent af blandingen på grundlag af kg frø																									
Afgøræsning med stor foderoptagelse		i omdrift	Alm. god	Tidlig	Ø20		20		10				15	24	14					6	11			41	24 - 28
			Alm. god	Middeltidlig	Ø21					25	20		20	10		10					15			29	20 - 25
			Alm. god	Middeltidlig	Ø22							30	27	28							11	4		42	20 - 25
Afgøræsning på variende jordtyper		permanente	Alm. god	Sildig	Ø24**								50		10		10		10		12	8		24	20 - 25
			Fugtig	Sildig	Ø26**							18		16		26	10	10		12	8		21	20 - 25	
Slæt og afgøræsning		i omdrift	Alm. god	Tidlig	Ø31					45			35							10	10			38	20 - 25
			Alm. god	Middeltidlig	Ø35						27	35	25								13			34	20 - 25
			Fugtige/variende	Sildige	Ø36	50							15		11		5	5			14			24	20 - 25
Slæt		i omdrift	Alm. god	Middeltidlig	Ø42				20			42		20						9	9			32	20 - 25
			Alm. god	Middeltidlig	Ø44		25					24		18			15				9	9		34	24 - 28
			Alm. god	Middeltidlig	Ø45		42					40								9	9		35	24 - 28	
			Alm. god	Middeltidlig	Ø47		33					16		16			5		25	5		42	24 - 28		
Specialblandinger til	Drægtige søer	i omdrift	Alm./varieret	Sildig	Ø55								50	15				25				10	24	25 - 30	
	Grise, farefold		Alm./varieret	Sildig	Ø56								30				60				10	16	25 - 30		
	Geder, afgøræsning		Alm. god	Middeltidlig	Ø58				15				24	20		8		5			4	4	20	29	20 - 25
	Geder, slæt		Alm. god	Tidlig	Ø59			20				20		15			7				4	6	28	38	20 - 25

Trials with different species (2008 – 2010)

	1. Year Yield FE pr. ha	2. Year Yield FE pr. ha	1. Year MJ pr. kg dm	2. Year MJ pr. kg dm
Perennial ryegrass + white clover	7070	6920	6,16	6,15
+ festulolium	7780	7390	6,13	6,15
+ tall fescue	7150	7250	6,18	6,13
Perennial ryegrass + white clover + red clover	8120	8270	5,95	5,92
+ festulolium	8540	8420	5,96	5,91
+ tall fescue	8590	8540	5,95	5,90

Festulolium and tall fescue in mixtures

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Proteincontent i 1. cut	1. year	2. year
Perennial ryegrass + white clover	13,5	13,1
+ festulolium	10,5	12,2
+ festulolium + red clover	12,1	14,3
+ tall fescue + red clover	13,6	14,8



Conventional trials average of 1. and 2. year, 2014-2015, 2 trials

	Clover content pct.	Number of cuts	Yield FEN pr. ha	Digestability FK org. matter	Protein g pr. kg DM
Mixture 35	33	4	9140 a	78,1	137
Mixture 35	37	5	9370 ab	79,1	164
Mixture 45	54	4	10450 bc	73,0	154
Mixture 45	50	5	10620 c	76,1	166
<i>LSD</i>			<i>1200</i>		

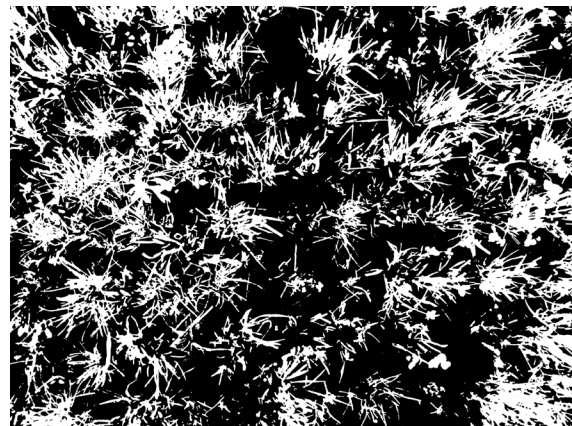
Fertilizer 110 kg N pr. ha.

New mixture for silage in 2017 – Ø44

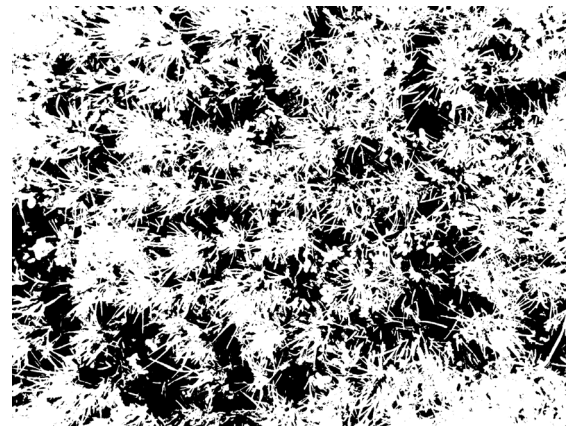
- Alternative to Ø42 and Ø45
- Aim
 - High yield
 - Better persistence
 - More dense – better coverage of the soil
 - Higher diversity



Foto: Torben S. Frandsen



33 pct.



62 pct.

Mixtures for grazing, 5 years of use

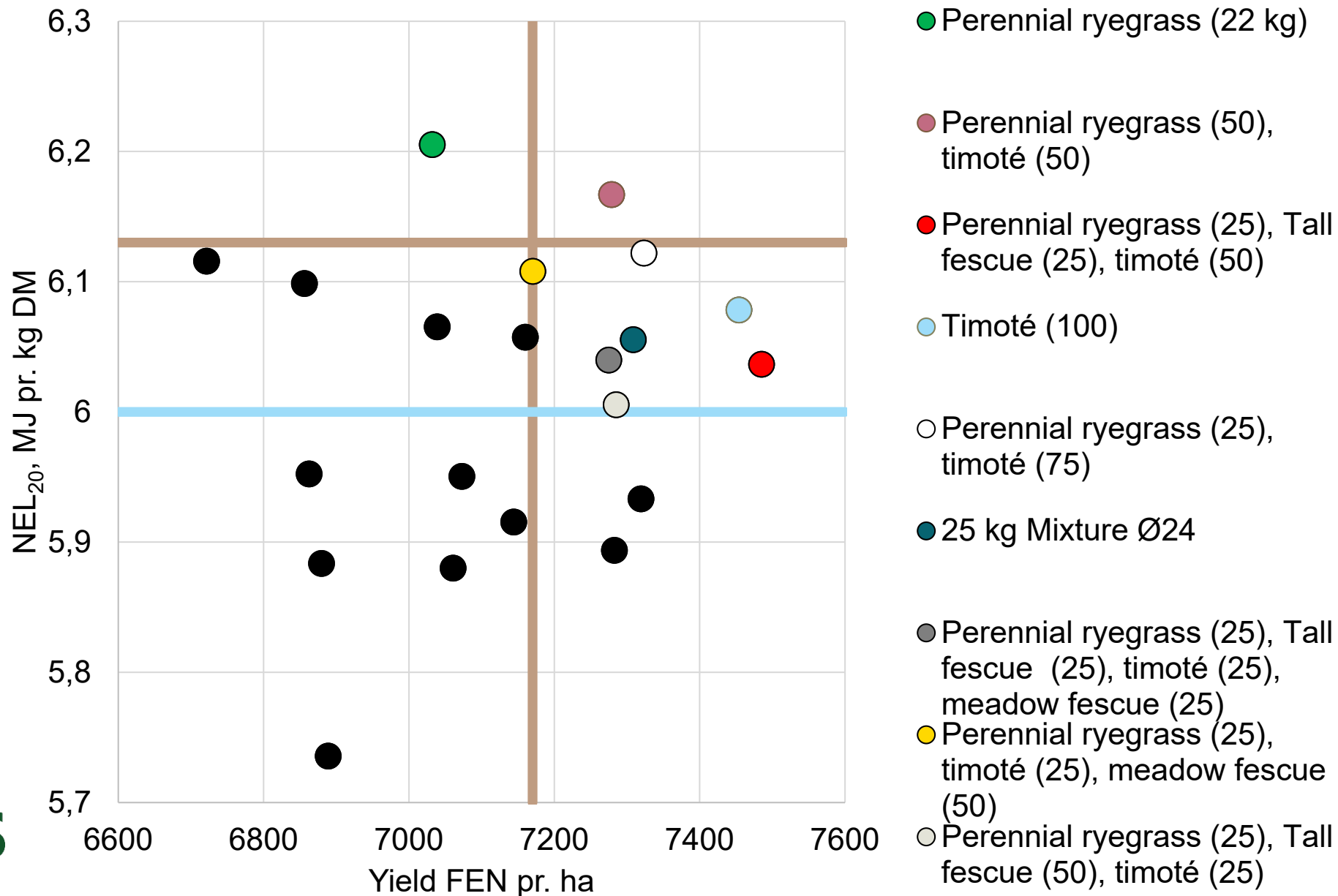
- Exciting mixtures; Ø20, Ø22, Ø24, Ø26, 36
- New mixtures
 - All: 4 kg white clover
 - Grasses
 - Perennial ryegrass, timoté, tall fescue, meadow fescue

Mixtures for grazing, 5 years of use, trials (2013-2018)

Mixtures for clovergrass with five years of use

- Perennial ryegrass
High yield in the first years, high digestibility, tastes good
- Timoté
High yield in all years, medium digestibility, tastes good
- Meadow fescue
Lower yield in the first years, year 4 and 5 yield at the same level as perennial ryegrass, medium digestibility, good ground cover, better clover content
- Tall fescue
Lower yield in all years, lower digestibility, less tasteful

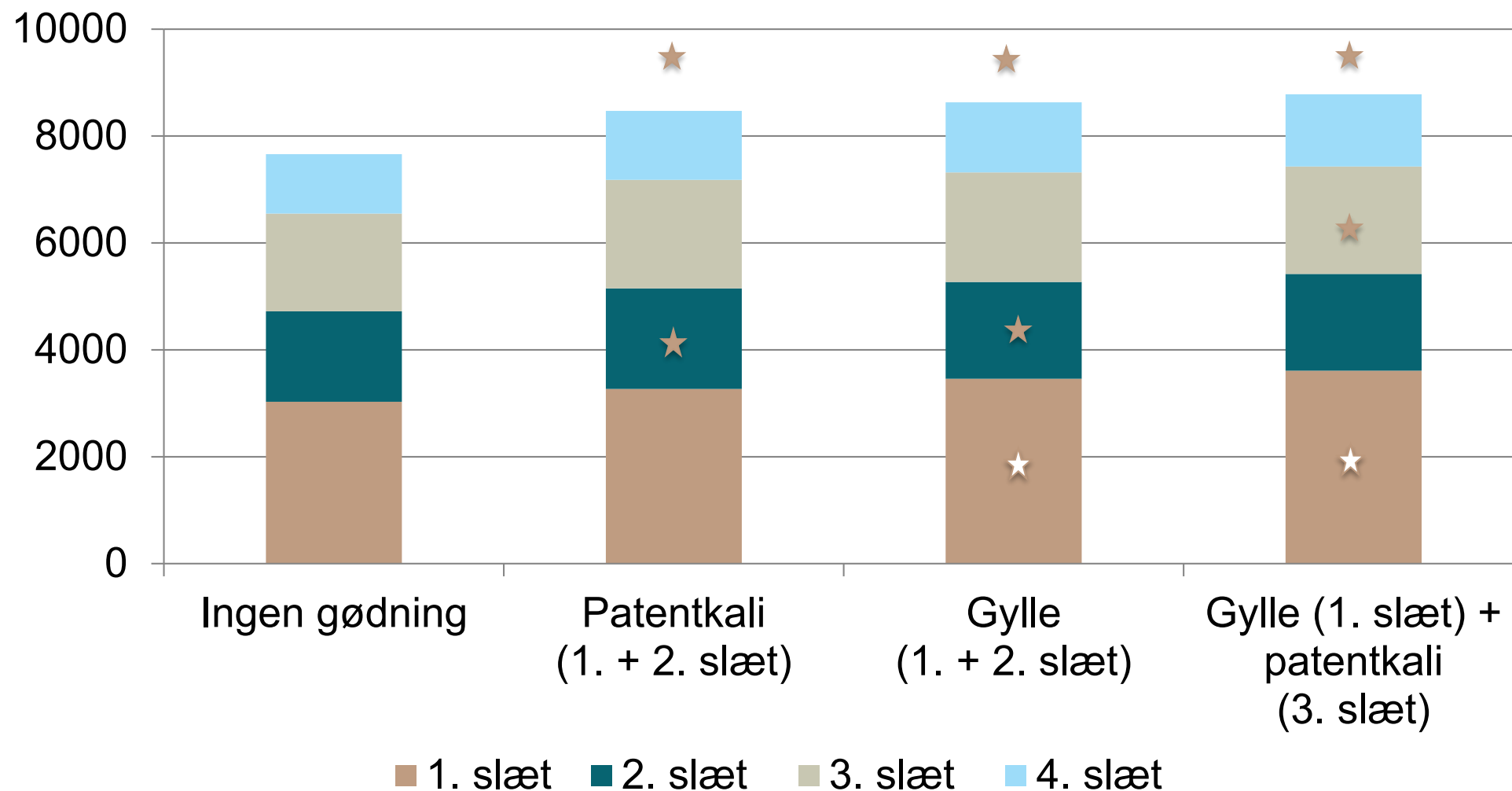
Mixture for grazing, average. 2., 4. og 5. year



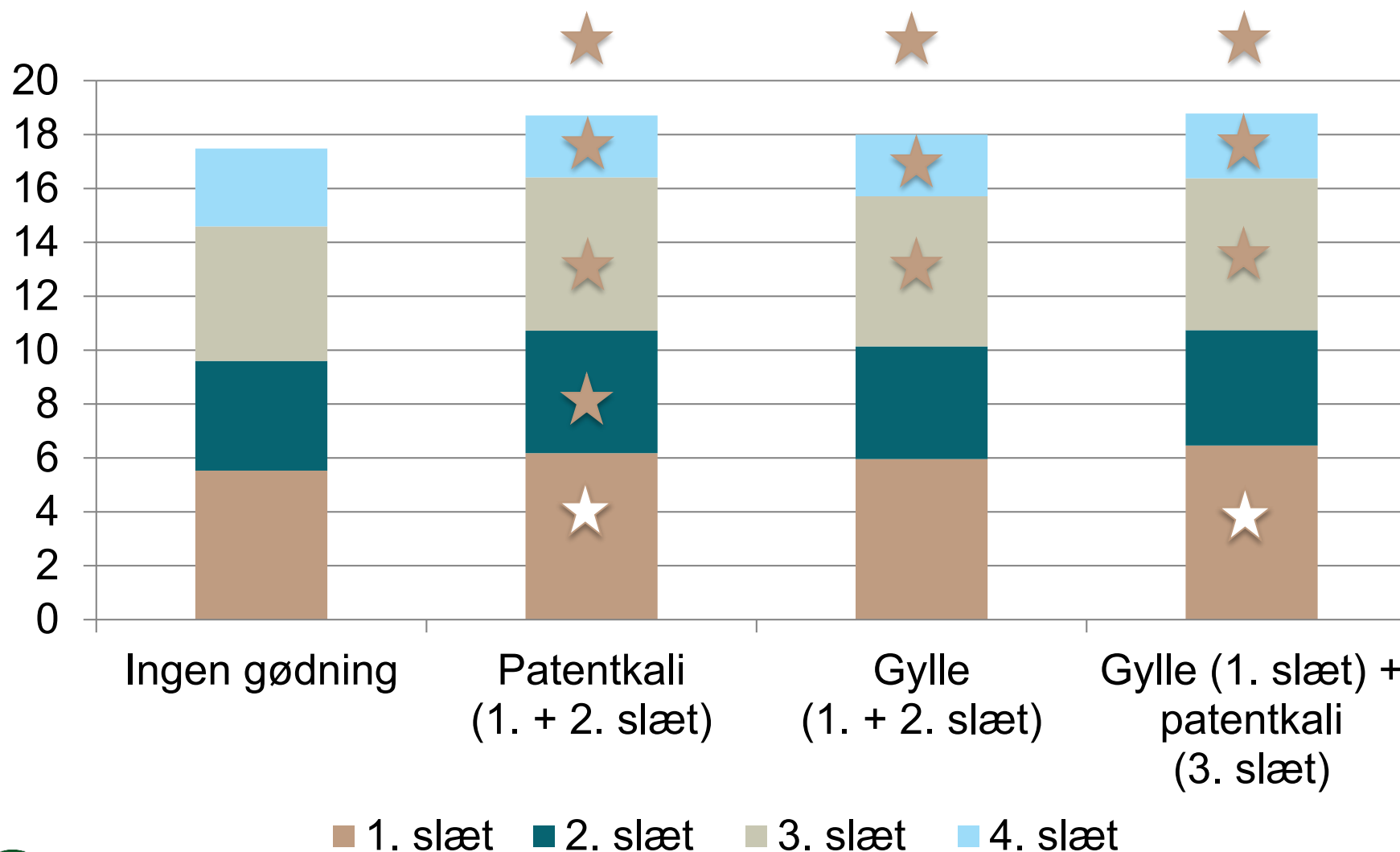
Fertilizing

- Main fertilizer – slurry
- Supplement – potassium and sulphur
 - Vinasse, potassium sulphate
- Supplement – sulphur
 - Kieserite, natural gypsum
- Effect of nitrogen, potassium and sulphur

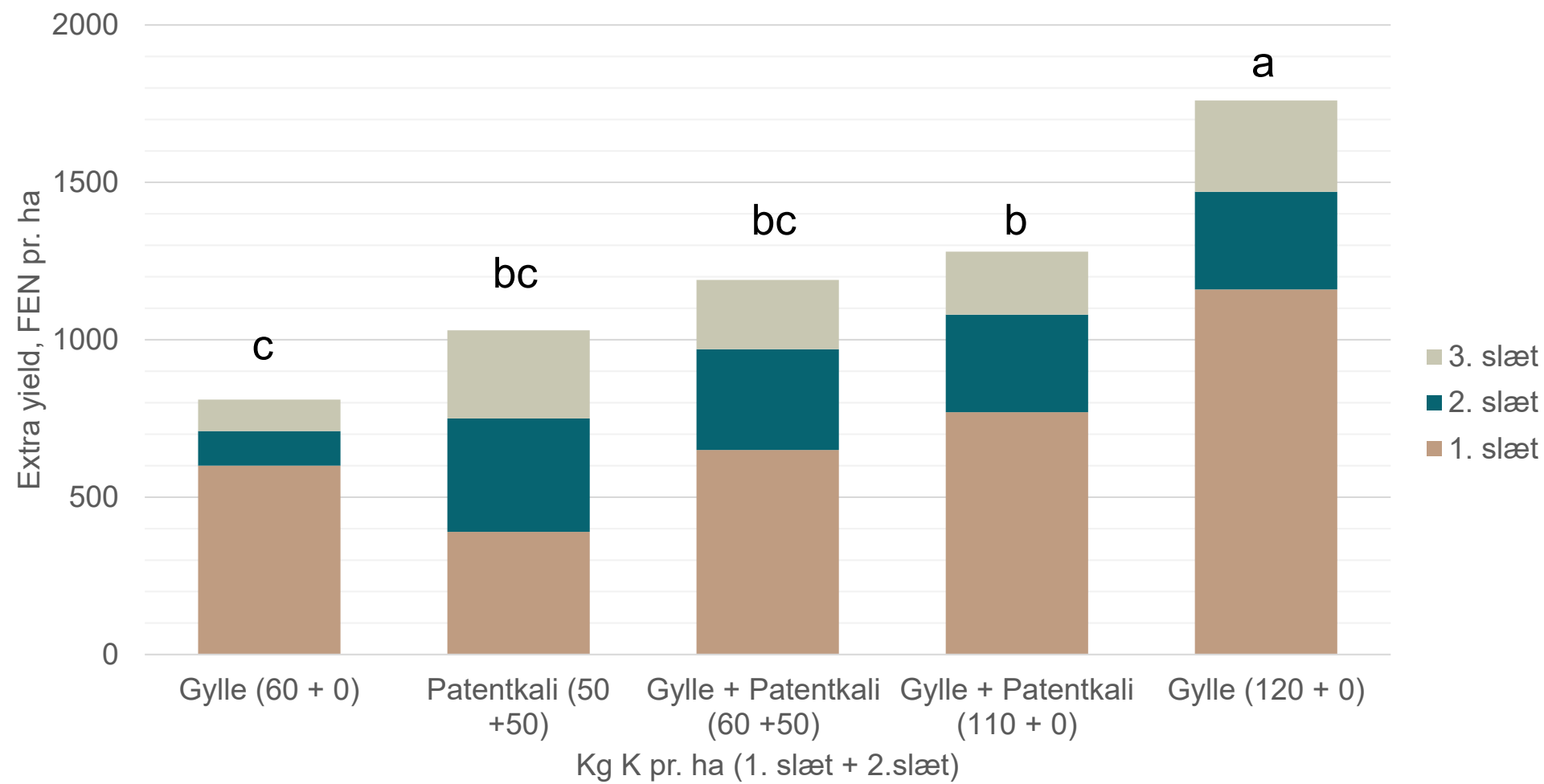
Fertilization of clovergrass, 9 trials 2009 – 2010. FEN pr. ha



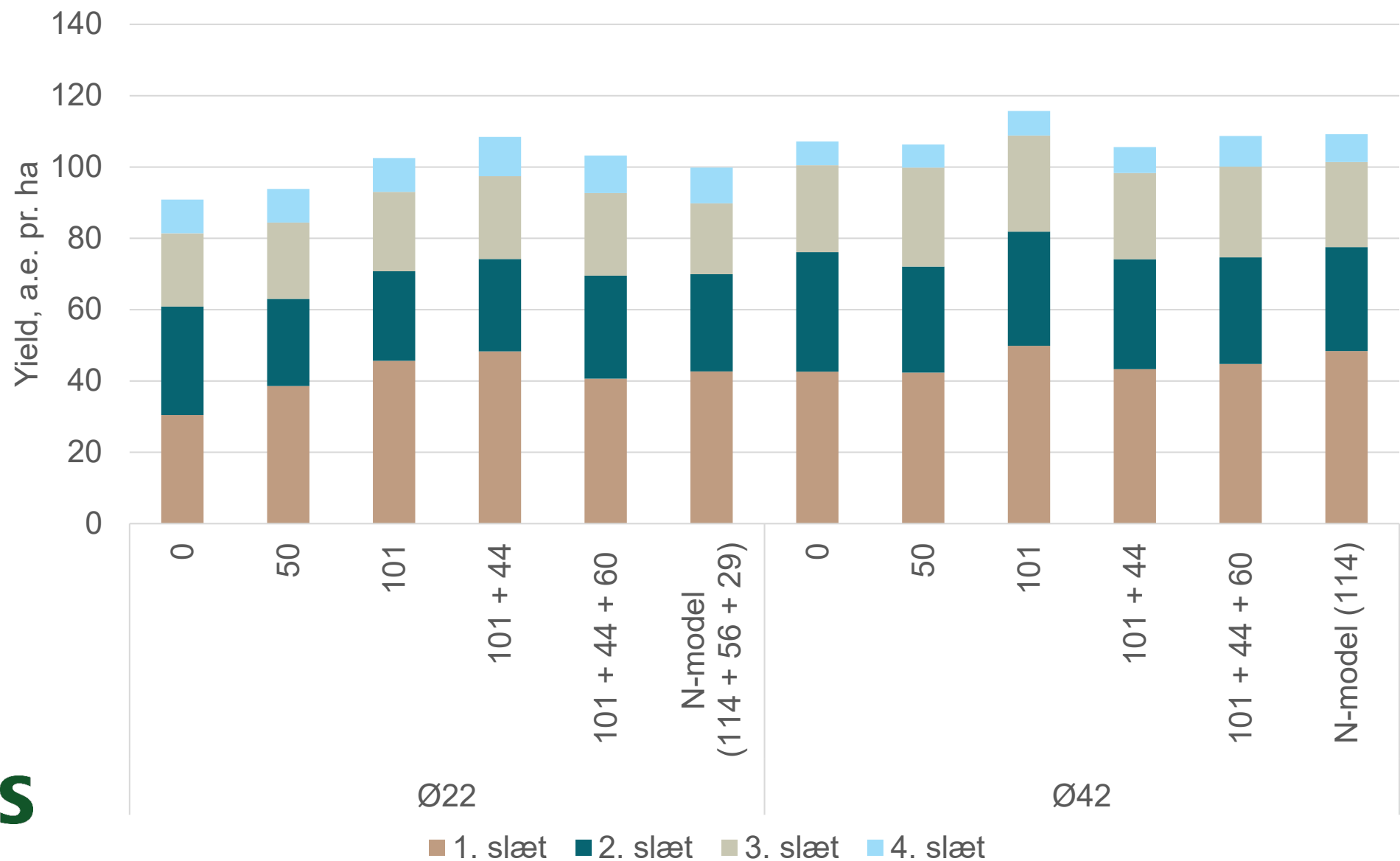
Fertilization of clovergrass, 9 trials 2009 – 2010. Hkg protein pr. ha



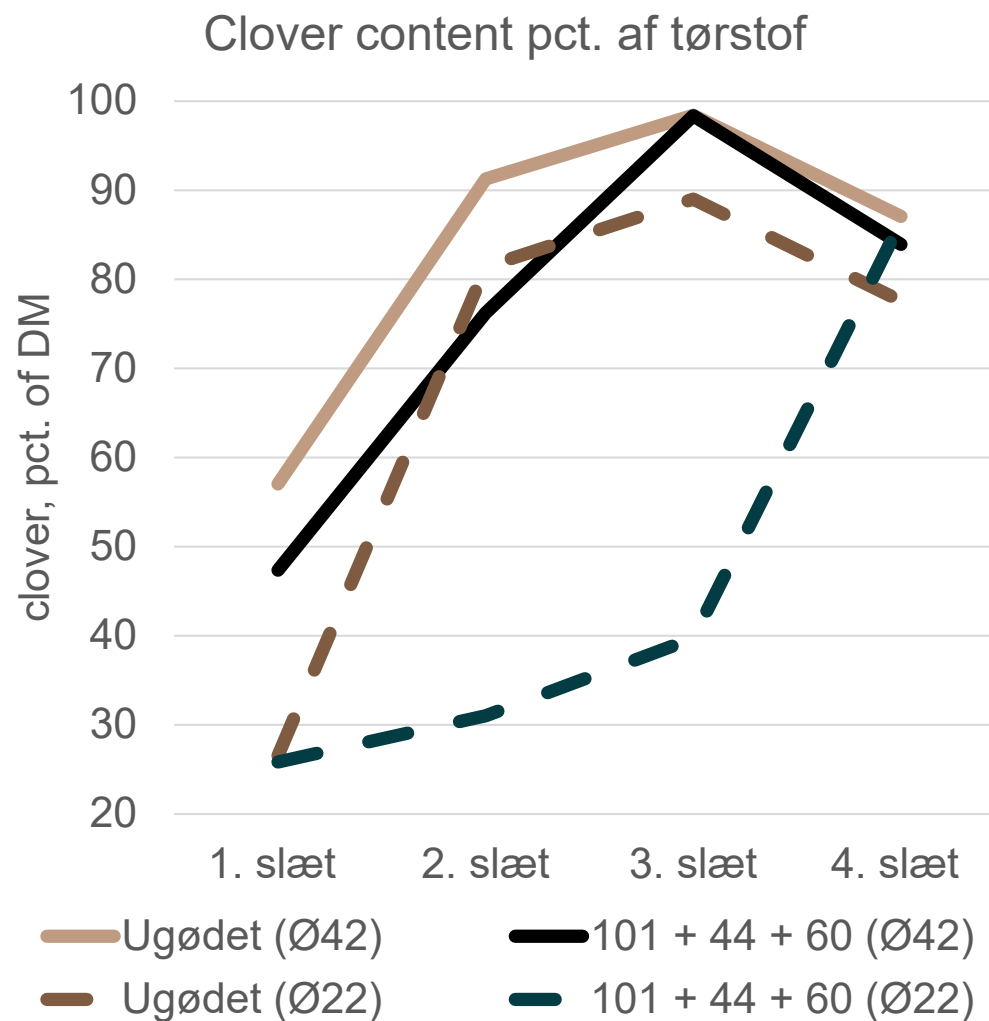
Potassium and sulphur for clovergrass, 3 first cuts. 8 trials 2016 - 2017



Nitrogen and clover content - Smartgrass – 1 organic trial 2018



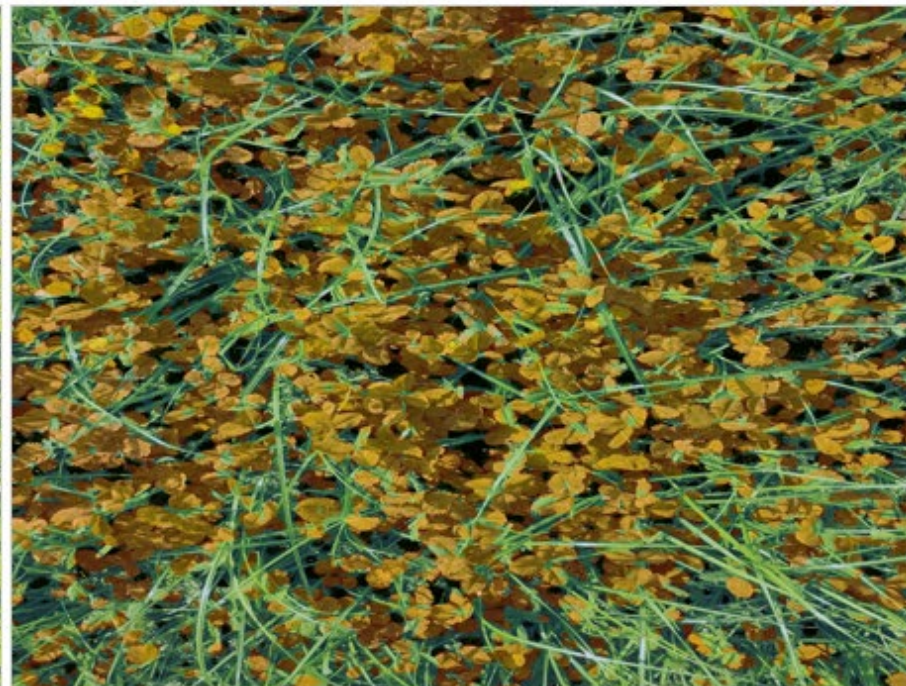
Clover content – repons til fertilization 2018 – 1. year



Cloversense



Original



Annotated

Clover ■ Grass ■ Weed ■ Non-plants ■

Clover: 52.60% ■

Grass: 47.20% ■

Weed: 0.20% ■

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Play Butik: CloverSense Mobile Free

<https://cloversense.net/>



Sowing of clover grass

In spring

- Cover crop 😊
- Without cover crop ☹️

In August

- First half of August 😊
 - With or without cover crop
- Later ☹️
 - With cover crop

Sowing after harvest, 1. cut next year.

	Sådato	Kar. Clover 1. cut 0-10		Yield FEN. pr. ha	
		White clover	Red clover	1. cut	3 cuts
Without covercrop	17. August	5	6	3090	7390
Without covercrop	4. September	3	4	-1330	-1440
Covercrop 50 kg vinterwheat	4. September	3	5	-1050	-1290
<i>LSD</i>				<i>400</i>	<i>600</i>

