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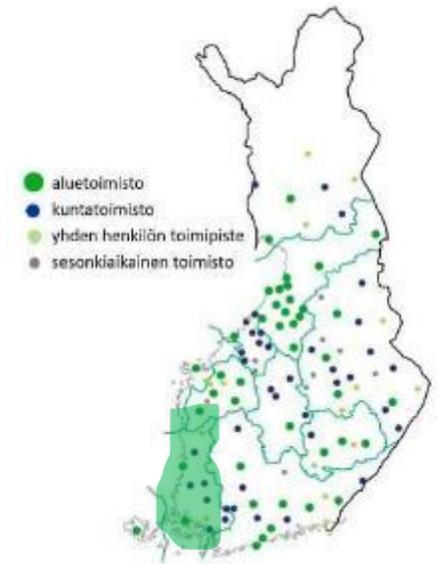
Sustainable Silage

# Silage production in Finland and Finnish pilot farm activities

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ProAgria Western Finland

Sustainable Silage forum in Latvia on 15th of May 2025



# Silage key figures in Finland

	Finland 	Latvia 
Utilised agricultural area (UAA)	2 250 000 ha	1 970 000 ha
Share of UAA of the total land area	7,5 %	30 %
Total silage area	479 000 ha (21% of UAA)	129 000 ha (7% of UAA)
Total silage output	8400 M kg	3900 M kg
Average silage yield (fresh weight)	18 t/ha	30 t/ha

=6 t DM/ha.  
Good farmers  
produce 10 tonnes  
DM/ha



# Mainly grass and grass-legume based silage in Finland

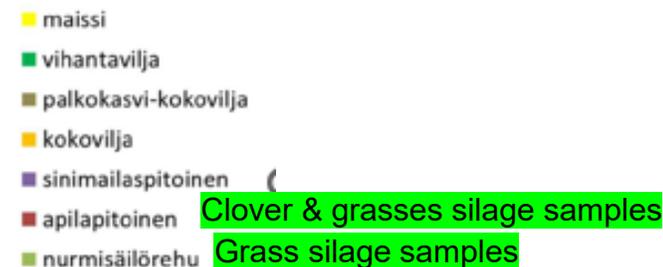
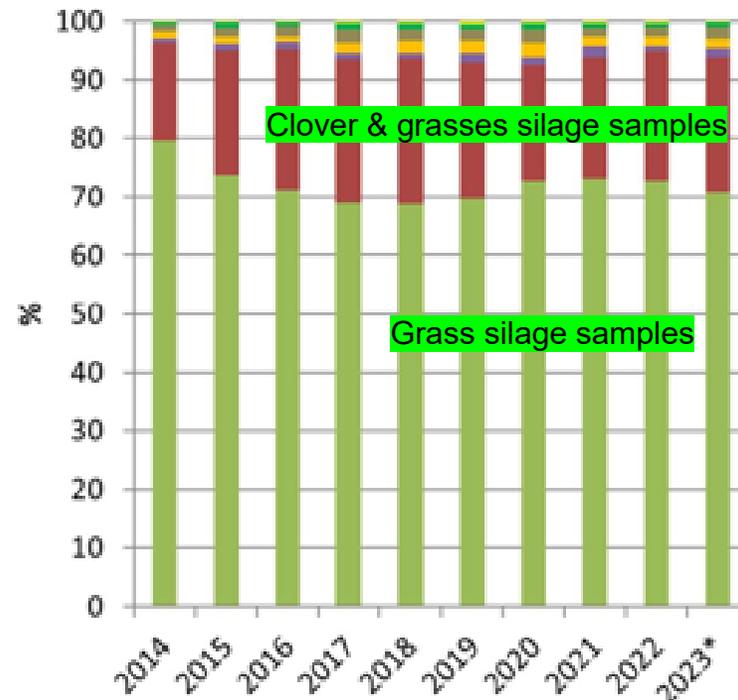
## Valio silage samples comparison in 2023

5.12.2023

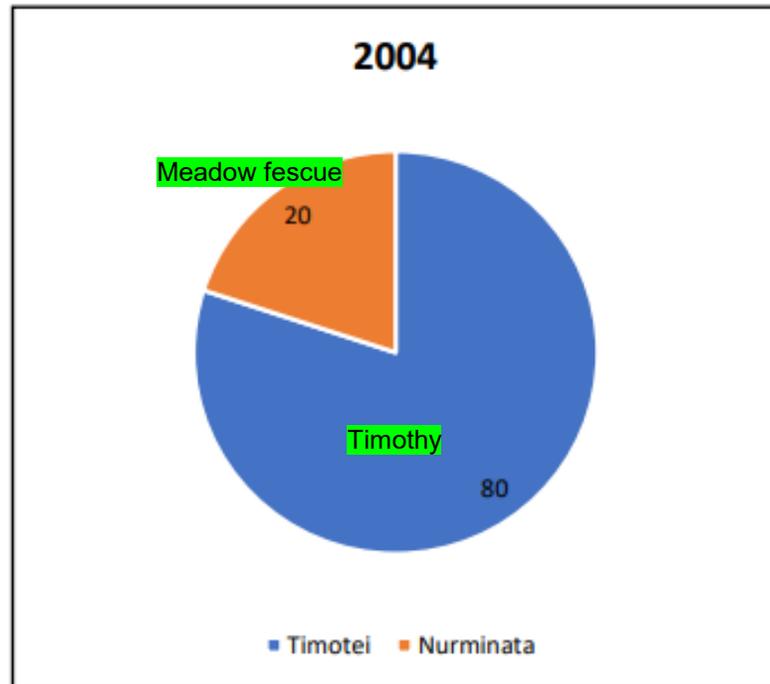


Sato	Grass nurmi	Clover & grasses apilapitoinen	Alfalfa & grasses sinimailaspitoinen	Wholecrop and green chop kokovilja	Corn palkokasvi-kokovilja	Sudangrass vihantavilja	maissi		Kaikki yhteensä
1st cut	4500	1414	66						5980
2nd cut	3123	1075	64						4262
3rd cut	472	154	20						646
4th cut	1	4	1						6
Ei tietoa	150	24	14	200	233	87	16	4	728
All cuts together	8246	2671	165	200	233	87	16	4	11622
%-osuus	71	23	1,4	1,7	2,0	0,7	0,1	0,03	

Source: Valio Artturi

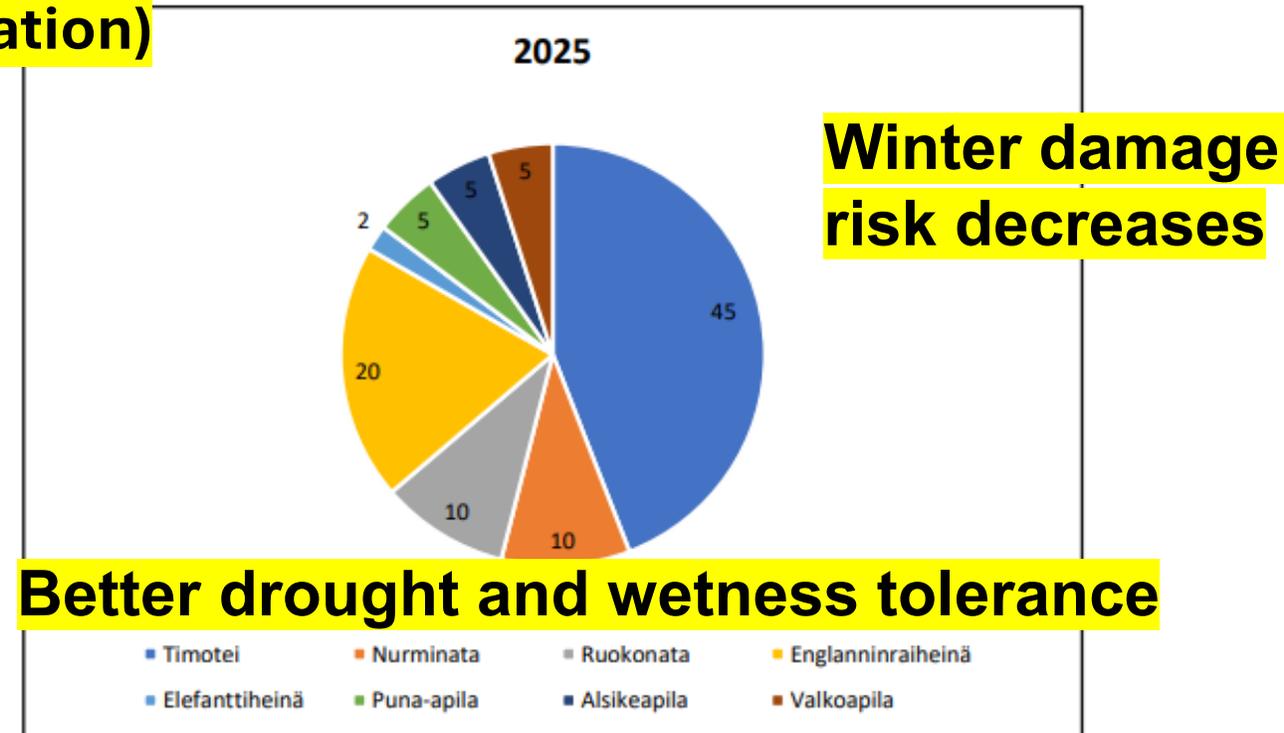


# Multispecies grass mixtures = Finland



**Versatile rooting system (+biological N fixation)**

**Better crop density & higher yield**

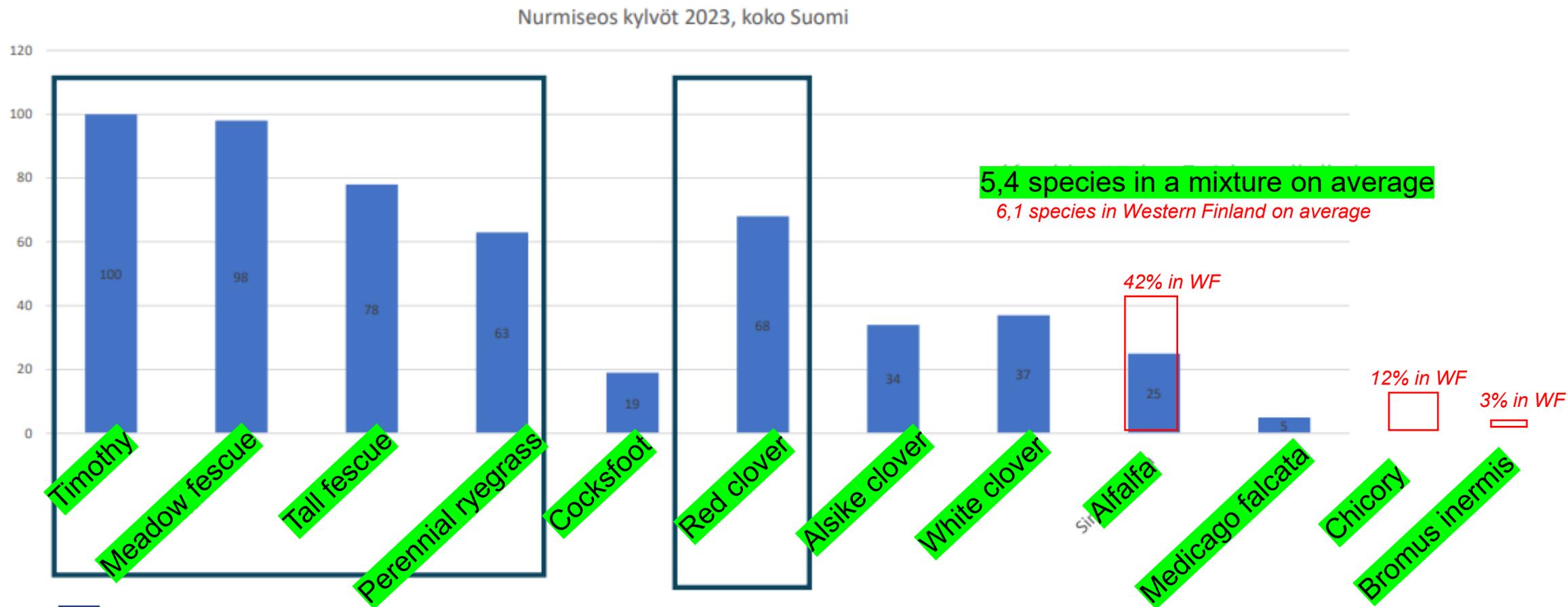


**Winter damage risk decreases**

**Better drought and wetness tolerance**

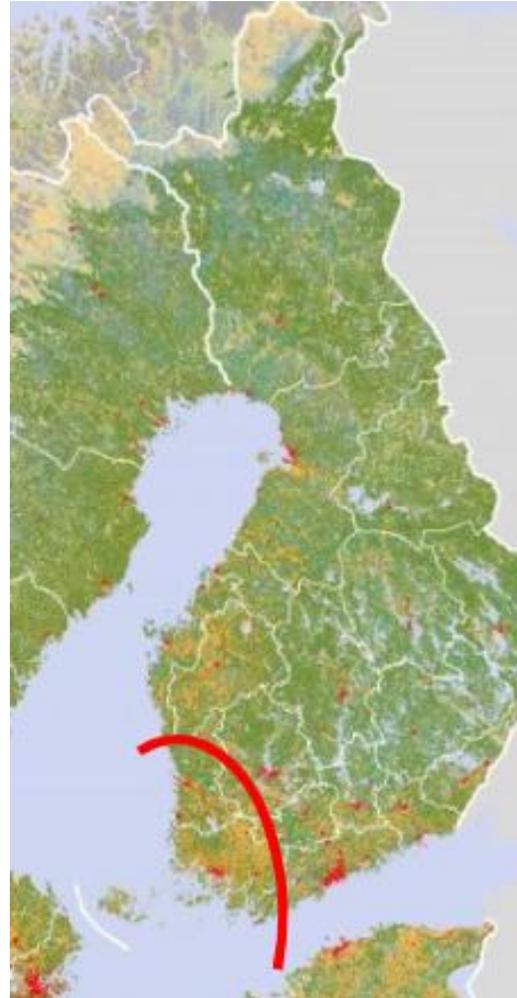
# Establishment of silage grasslands in Finland in 2023

- The most popular grass species are **timothy and meadow fescue**, but the grass mixtures contains typically 4-8 different species



# Grasslands in Western Finland

- 1st cut in the beginning of June-mid June
- 2nd cut about 6 weeks later
- 3rd cut in September
- 4th cut a norm in the future?
- **Discussion group members' average yield in 2023 was 8800 kg DM/ha (3 cuts in total)**

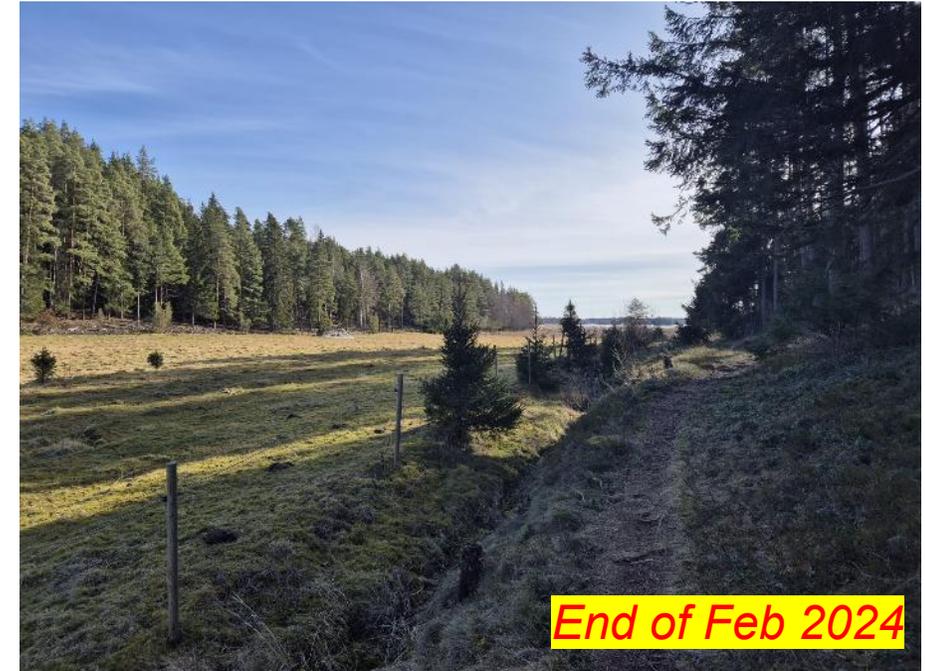


Source: Anu Ellä

- More unpredictable weather conditions
- Autumns have become longer and the snow is melting earlier -> the risk of ice/frost damages increases in grasslands.



8th of Feb 2024

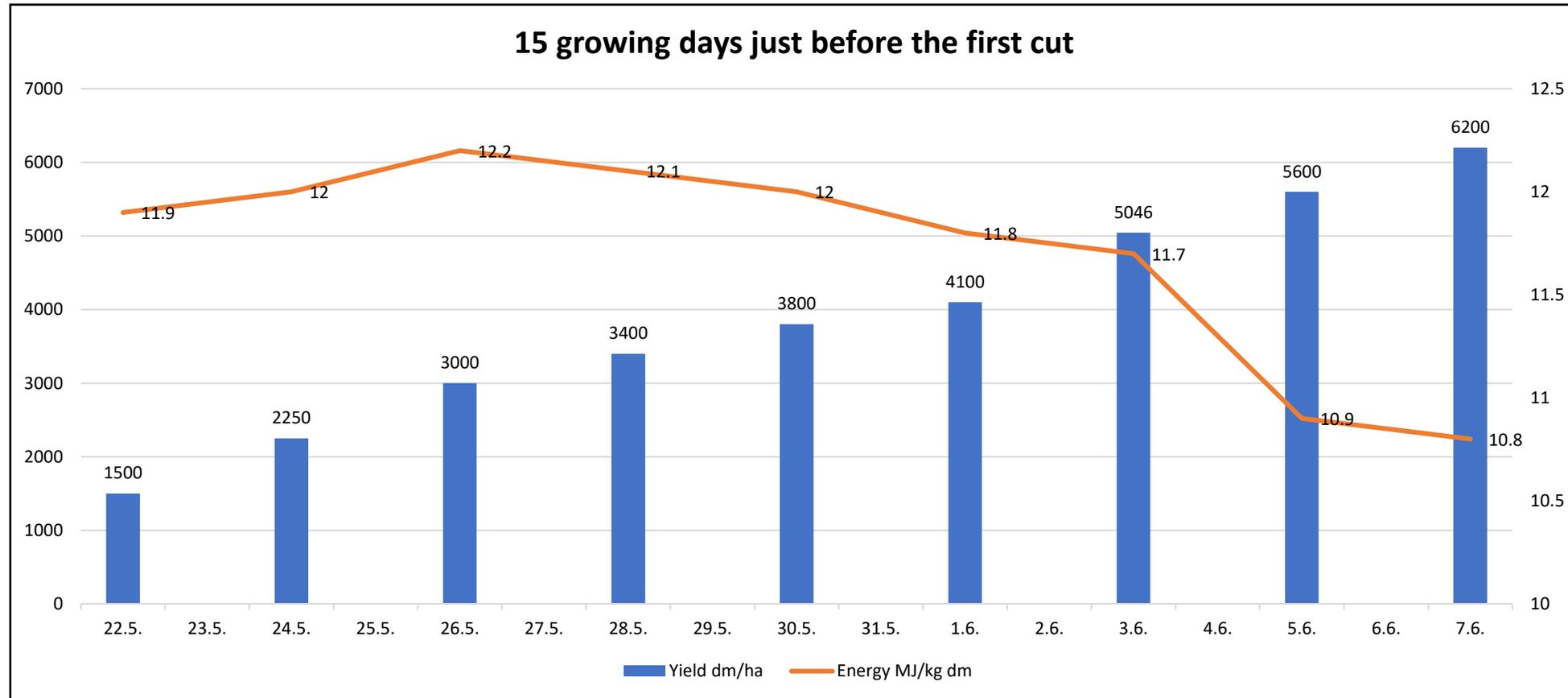


End of Feb 2024



20th of Dec 2024

# 4700 kg DM growth in 15 days = 313 kg DM/ha/day and 2 cm/day



Example field in 2023, 1st cut (Suni MTY): timothy, meadow fescue, tall fescue, perennial ryegrass

# Bright Summer nights: 4 weeks and a few days before the first silage cut

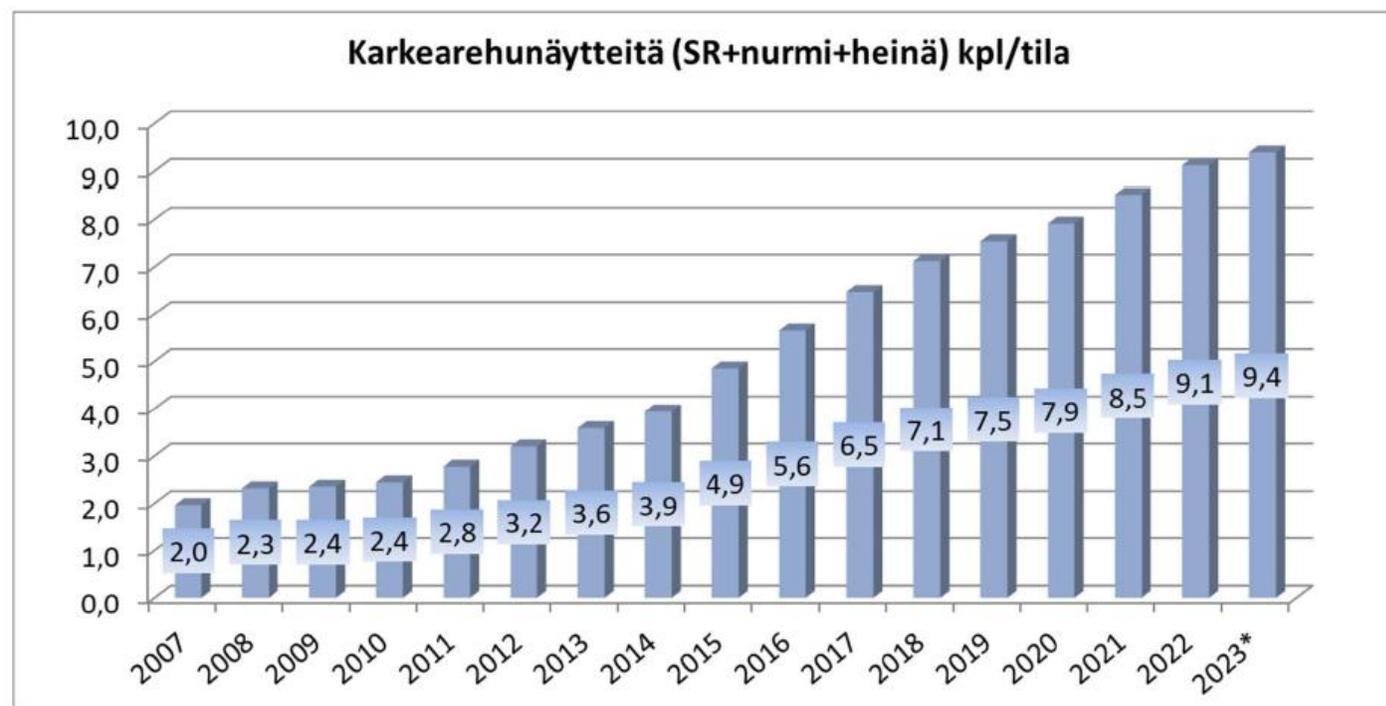


# Number of samples (grass, silage and hay) taken on average per dairy farm

5.12.2023



## ARTTURI®-KARKEAREHUNÄYTTEET/ MAITOTILA



\* Tammi-marraskuu 2023

Huom! Näytemäärätilastot kalenterivuositain, rehujen laatutilastot satokausittain

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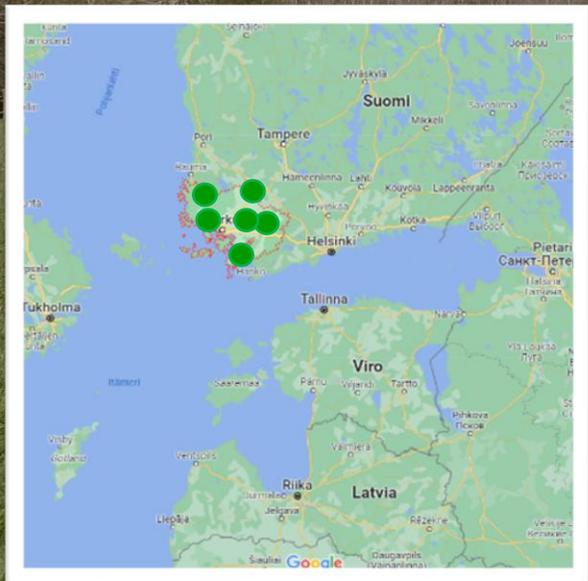


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# PILOT FARMS IN FINLAND

Central Baltic Programme

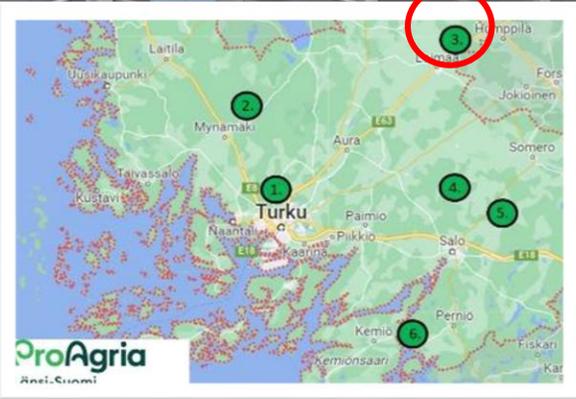
## Sustainable Silage



ProAgria  
Länsi-Suomi



# Koliha OY



- *Approx. 800-900 bulls in calf-to-beef system*
- ***Silage area:** 170 ha (3 cuts)*
- ***Silage type:** grass silage with variety of legumes*
- ***Average silage yield:** 7-8 t DM/ha*
- ***Annual silage production:** approx. 1300 t DM*
- ***Machinery in silage making:** butterfly mower + rake + forage harvester*
- ***Silage storage:** bunker silos*
- ***GTK:** Mostly rented land in use*

# Koliha OY

## **CHANGE IN FARMING PRACTICES: more legumes to improve soil structure and protein self-sufficiency!**

- Establishment of three different clover and alfalfa dominated grass stands in spring 2023 on rented land with poor soil structure → alfalfa died, clovers did better!
- Recommendation: Use 25-30% of legumes in the mixture and include many different kind of clovers and alfalfa or medicago falcata
- Clovers' impact on soil structure were already visible in 2024 (video made 27<sup>th</sup> of Aug)



**Sustainable  
Silage -hanke**  
Koliha Oy

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**Sustainable Silage**

ProAgria

# Koliha OY

## **CHANGE IN FARMING PRACTICES: Perform regular crop walks and field/soil observations!**

- In the spring, estimate how many of the legumes have survived the winter and adjust the fertilization accordingly.
  - During the growing season it's recommended to do a follow-up to check whether biological nitrogen fixing is actually working.
  - The farm also started to use inoculated clover seed to reinforce biological nitrogen fixing.



# Koliha OY

## **CHANGE IN FARMING PRACTICES: Take more extensive micronutrient samples of your crops and soils!**

- Very low levels of S + lack of Zn, Mn were detected in grass samples at this pilot farm.
- Farm started to use fertilizers that contain sulphur.
- Lack of sulphur can negatively affect the protein formation. Elevating crude protein levels has been one of the farmer's targets.

Analyysit	Tulos	Ohjearvo	Tulkinta
Fe (mg/kg dm)	140	50	Normaali
Zn (mg/kg dm)	29.0	37.0	Matala
Cu (mg/kg dm)	7.0	6.0	Normaali
B (mg/kg dm)	11.0	6.0	Normaali
Mn (mg/kg dm)	29.0	50.0	Matala
S (g/kg dm)	1.70	3.00	Hyvin matala
Ca (g/kg dm)	6.70	3.80	Normaali
Mg (g/kg dm)	2.20	1.90	Normaali
K (g/kg dm)	27.00	30.00	melko matala
P (g/kg dm)	2.60	3.50	Matala
N (g/kg dm)	24.10	35.00	Matala

# Koliha OY

## **CHANGE IN FARMING PRACTICES:**

### ***Finetuning of the silage making process***

- Earlier harvest time of the 3rd cut and a wider rake CLAAS Liner 4900 was purchased
  - **Longer prewilting time for the fodder**  
→ higher DM & less effluent



## Koliha OY

- The process of unloading the grass mass with a forage wagon was pretty good (rather even layer of grass)
- Unloading could happen more on the sides of the silo instead of in the middle (aim: convex shape) → continuous packing of one side of the silo at the time (3 unloadings to the same side)  
→ This would speed up the spreading process and allow more efficient compaction

Laakasiilossa  
reunoille nouseva  
muoto helpottaa  
tiivistämistä



# Koliha OY

- Unloading the grass mass with a trailer wagon  
→ The unloading should happen all the length of the silo



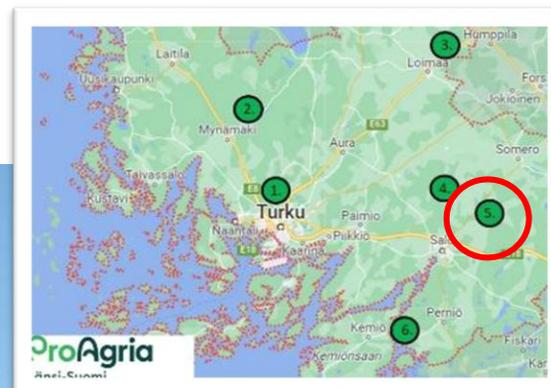
## Koliha OY

- Telescopic handler will be equipped with a fork instead of a loader bucket in order to improve the quality of spreading.
- It is also recommended that spreading the grass mass evenly at the silo happens not by reversing but pushing the grass mass forward instead.
- More weight should be added into compaction equipment!



# Herrakunnan Lammas Oy

- 150 ewes and 30 suckler cows, organic farm
- **Silage area:** 80 ha (2 cuts)
- **Silage type:** grass silage with variety of legumes
- **Average silage yield:** unclear
- **Annual silage production:** 700 round bales per year
- **Machinery in silage making:** a mower - rake - baler
- **Silage storage:** round bales
- **GTK:** many fields next to the river



# Herrakunnan Lammas Oy

## **CHANGE IN FARMING PRACTICES: Establishing herbal leys for better nutrient efficiency and soil structure!**

- Potential option especially on areas where manure is spread (chicory can catch efficiently P → minimizing nutrient runoff risks)
- Seed mixture: **chicory**, **plantain**, red clover, alsike clover, timothy, meadow fescue and kentucky blue grass
- Best establishment style was without a nurse crop (oats-pea mixture – shadowing effect → poorer growth of herbal plants in the spring)



Keväällä sikurin juuristo teki vahvaa työtä kuivassa maassa.



Herbal ley (1st harvest year) in May 2024

Yrttiseospelto toukokuussa vuonna 2024.



Herbal ley (1st harvest year) in August 2024

Yrttiseospelto elokuussa vuonna 2024.

# Pilot field of Herrakunnan Lammas Oy



In this herbal ley pilot field SpectraCrop samples revealed that especially **chicory catches nutrients efficiently.**

Grass samples showed Mn deficiency -> Mantrac application!

This block did not have the same topsoil compaction as other similar blocks, which was probably due to chicory's taproot aerating the soil.

***If there is compaction in the top soil structure --> try chicory!***

P: **3,8** g/kg DM  
K: **39** g/kg DM  
Ca: **13** g/kg DM  
Mg: **3,1** g/kg DM  
Mn: **19** mg/kg DM (min.50)  
*Grass sample taken 4.8.2024*

**Conclusion:** It is recommended to use herbal plants but in small amounts due to poor winter hardiness & bitter flowering stem from 2nd harvest year onwards if not mowed/grazed early enough.



# Herbs as part of a grass seed mixture

- Catch nutrients efficiently
- Improve fodder palatability and animal health
- Improve drought tolerance
- Create more air in the soil and improve topsoil structure (better growing conditions also for the grasses)
- Fast regrowth in rotational grazing
- Chicory and plantain were most featured herbal species in EGF





*Thank you!*

