Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

Limiting livestock production to pasture and by-products in a search for sustainable diets

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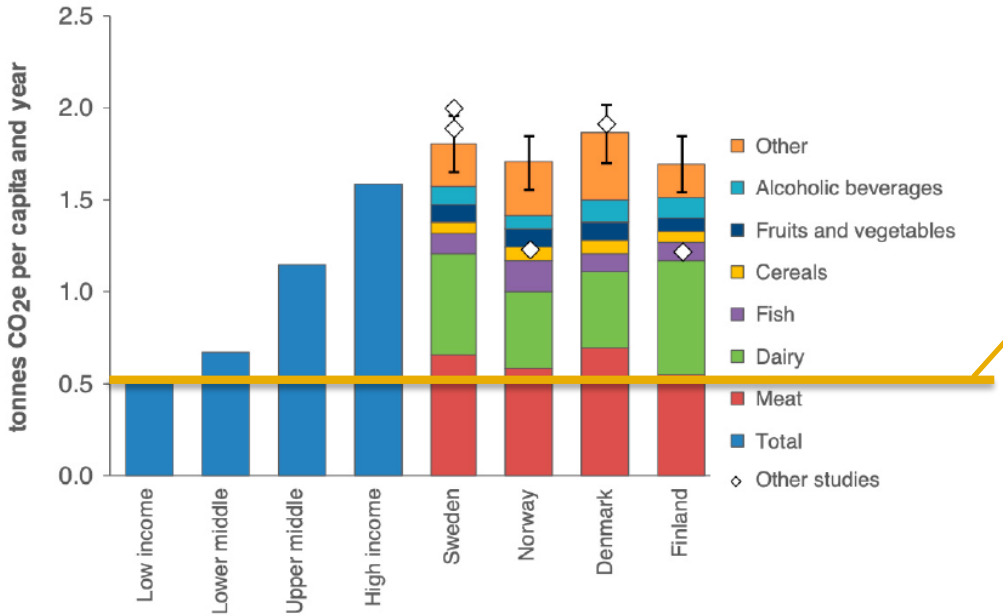
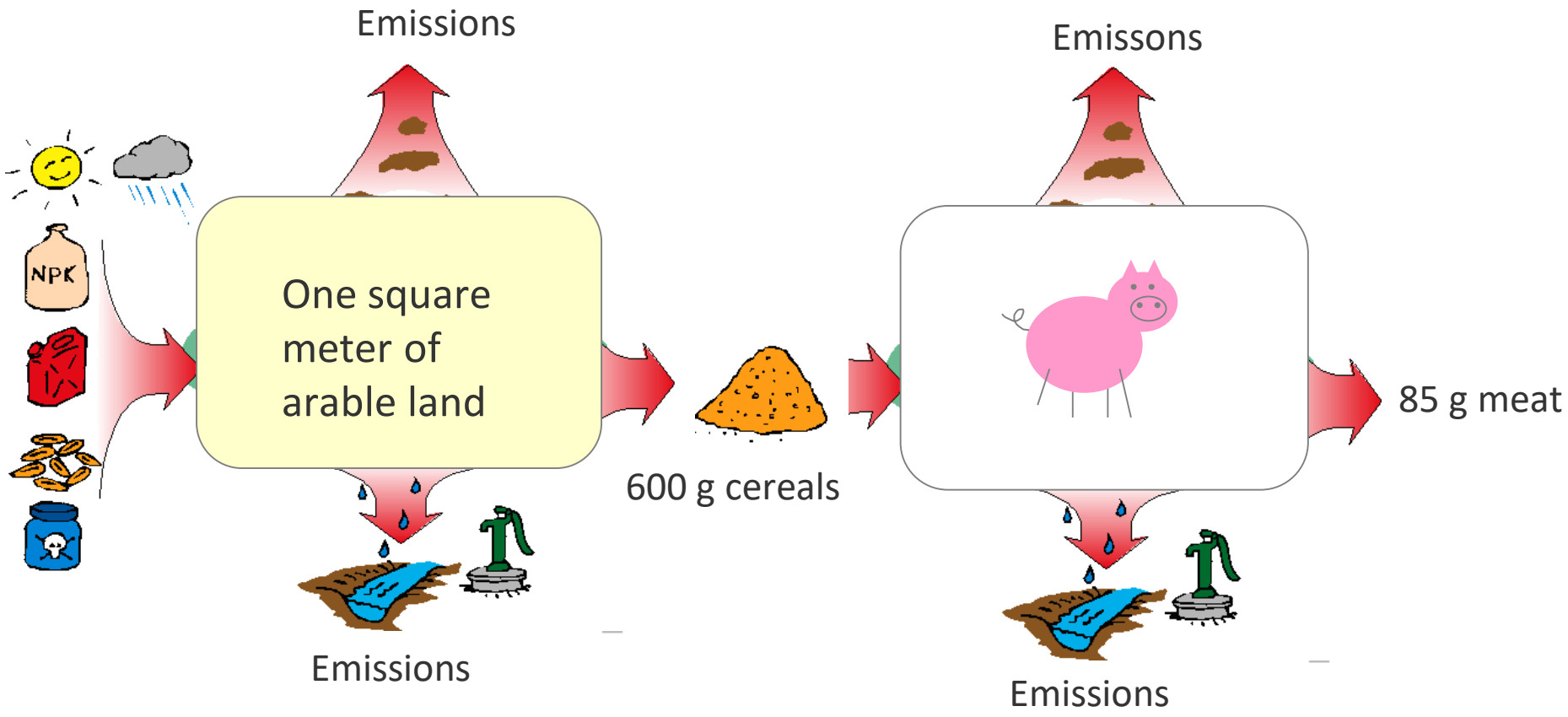
Current Nordic diets are clearly unsustainable



Sustainable level

Figure 14. Climate impact of average Nordic diets (per-capita) in comparison with the climate impact of average diets of low-, middle- and high-income country populations. Based on consumption for the years 2011-2013 and average carbon footprints of different food items. The error bars show the standard deviation due to variations in estimated carbon footprints of different food items.

Producing food using livestock that eat what we can eat



Grazing cattle on the other hand can turn ’nothing’ into food

Photo: Adam Arnesson, Jannelunds gård, Örebro.

What if we limited livestock production to available pastures and by-products?

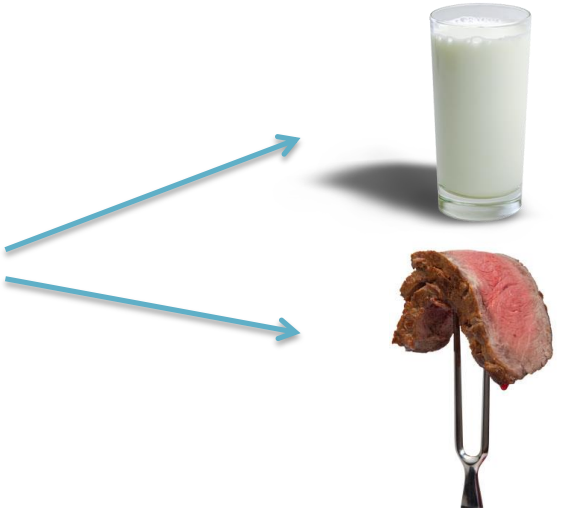


Photo: Adam Arnesson, Jannelunds gård, Örebro. iStockPhoto.

Principles for sustainable livestock production

1. Arable land should be used for the production of plant based food for humans
2. Livestock should be fed biomass not suitable or not wanted by humans
3. Grasslands should be used for livestock production if grazing can be motivated by other reasons than meat and milk production e.g. for biodiversity conservation or providing livelihood for poor

Source: Röös et al. 2016. Limiting livestock production to pasture and by-products in a search for sustainable diets

The case of Sweden: Milk and/or meat production on semi-natural pastures

400,000 ha of semi-natural grasslands left – approximately 1% of total Swedish land area

Photo: Jan Jennersten, WWF.

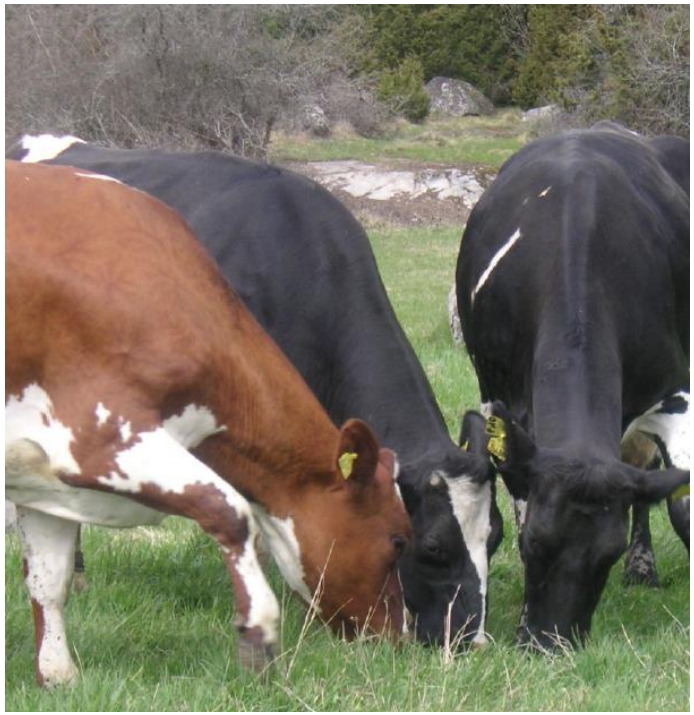
By-products used for feed

- Wheat bran and bakery waste
- Whey
- Rape seed cake
- Beet fibre
- Potatoes and other roots
- Brewers grain
- Legume residues

Extensive dairy production

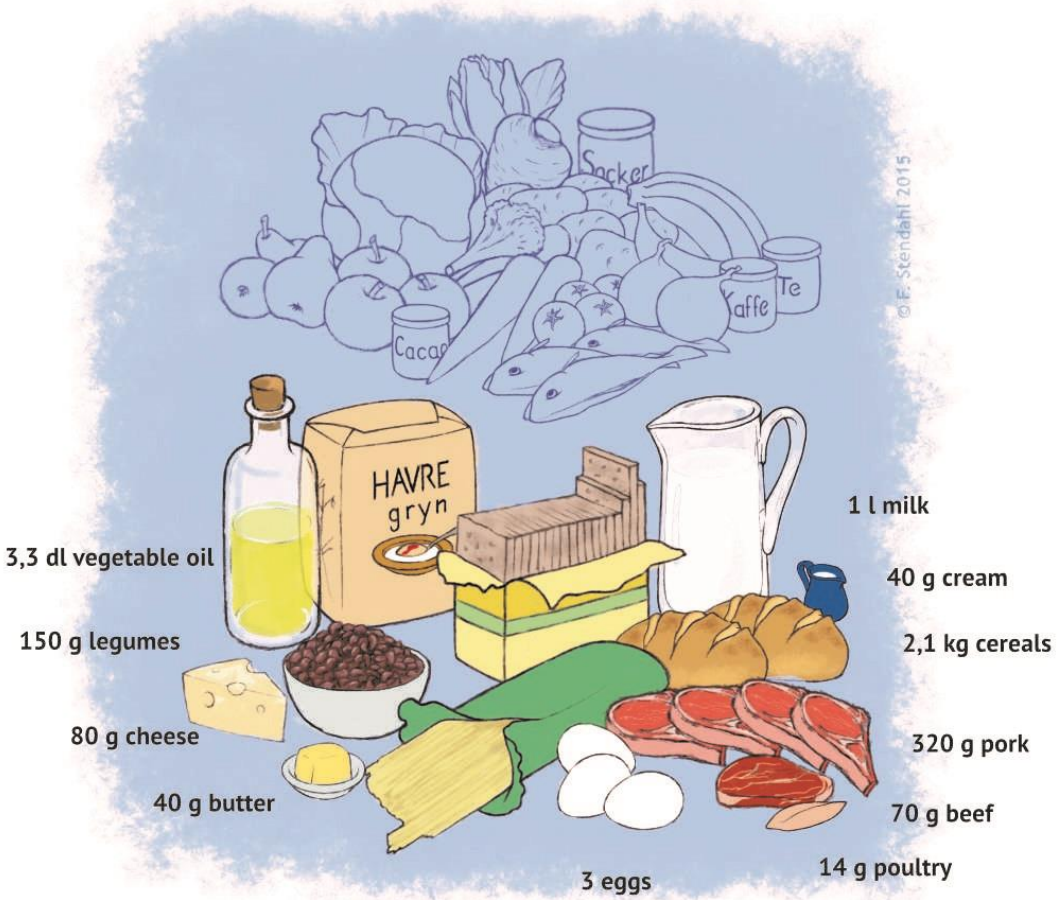
”Ruminantes should eat forage!”

➡ Dairy cows, heifers and steers graze pastures.



Källa: Röös et al (2016) Limiting livestock production to pasture and by-products in a search for sustainable diets

This gives this weekly diet



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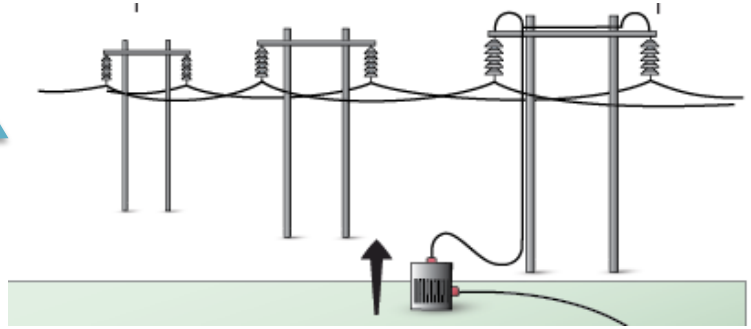
Agriculture self-sufficient in energy

Spared land



Climate impact

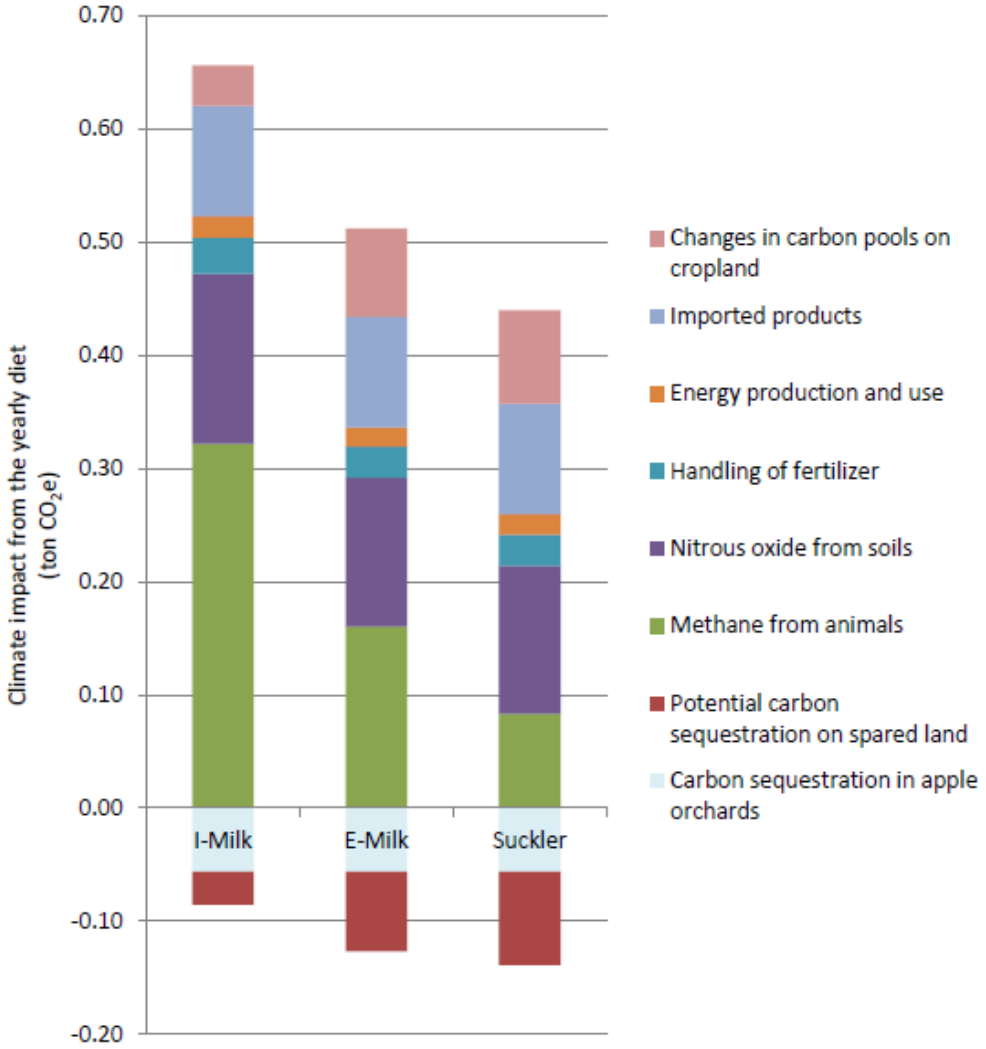
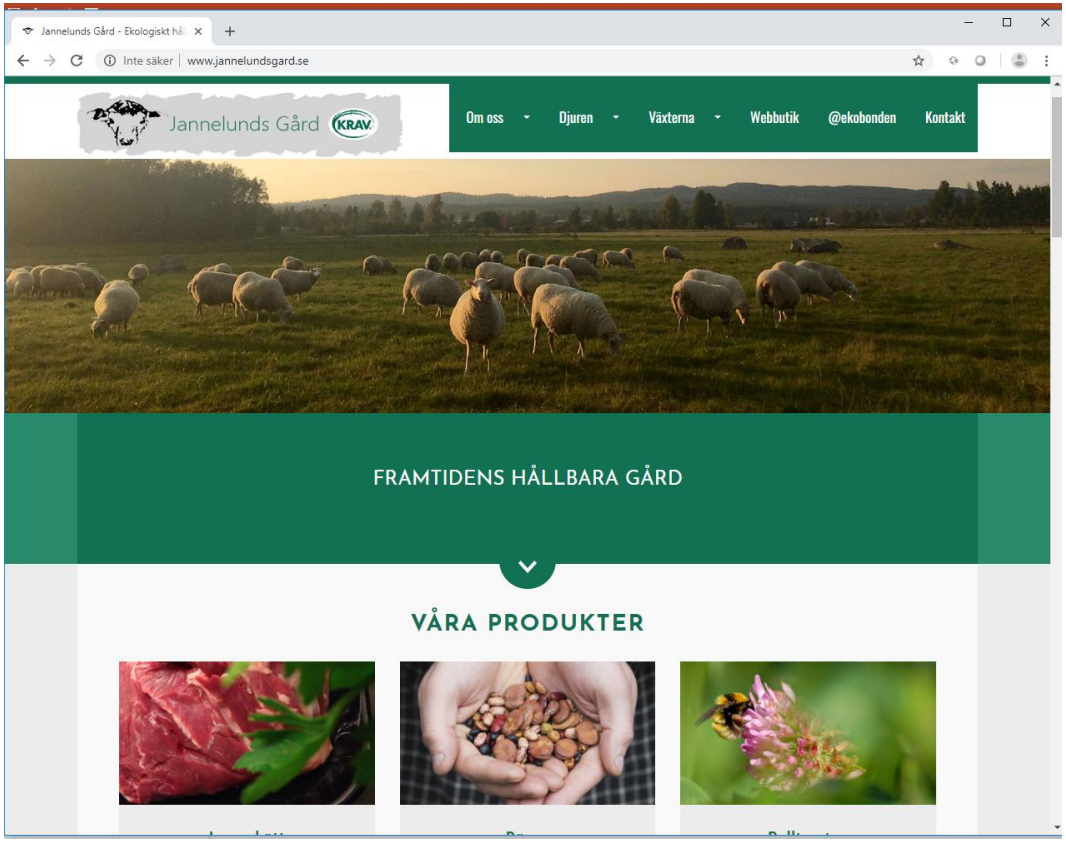


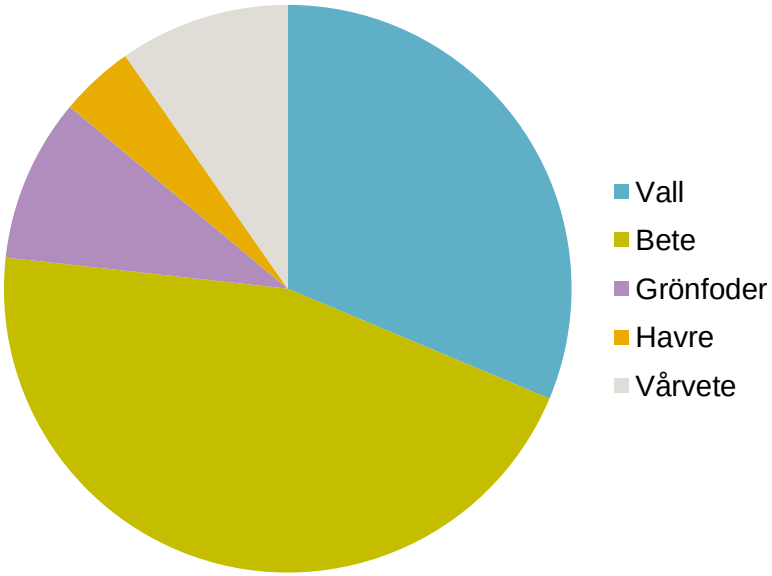
Fig. S7.1. Climate impact from the production of the food in the diets.

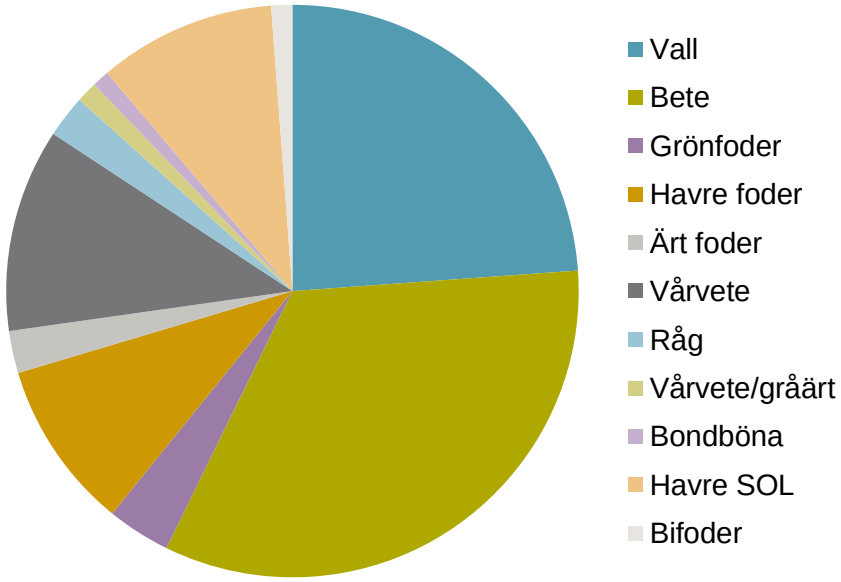
What can this mean for farmers?



”In order to develop sustainable food production, we believe that meat consumption must generally decrease. … Animals are at the centre of Jannelund’s Farm today, and will continue to be so in one way or another. But instead of intensifying and expanding our animal production, we see the cultivation of ***plant protein for human consumption*** *as a great opportunity.”*

Diversification!





Key indicators

	2015	2016
Energy per ha (million kcal)	0,84	2,1
Protein per hectare (kg)	21	68
People fed per hectare	0,9	2,3
Climate impact per kcal (kg CO_2e)	1,8	0,8

Work continues in an EU project with 10 farmers

UNISECO

https://uniseco-project.eu/

The role of livestock

- In organic farming grazing livestock can play an integral role for utilizing grass biomass from pastures and leys in crop rotations
- But this would not supply the amount of meat consumed currently in the Nordic countries
- Specilisation has been strong also in organic farming
- Diversification of organic ruminant farms towards the production of both feed for the on-farm animals and food for human consumption provides a pathway for re-establishing the agro-ecological role of livestock.

Read more:

Sweden:

Röös E, Patel M, Spångberg J, Carlsson G, Rydhmer L (2015) Kött och mjölk från djur uppfödda på bete och restprodukter – ger det en hållbar kost? Here >>

Röös E, Patel M, Spångberg J, Carlsson G, Rydhmer L (2016) Limiting livestock production to pasture and by-products in a search for sustainable diets. Food Policy 58:1-13. http://dx.doi.org/10.1016/j.foodpol.2015.10.008

The Nordics:

Karlsson J et al (2017) Future Nordic Diets. Exploring ways for sustainably feeding the Nordics. Here>>

Karlsson J, Carlsson G, Lindberg M, Sjunnestrand T, Röös E (2018) Designing a future food vision for the Nordics through a participatory modeling approach. Agronomy for Sustainable Development, 38:59. https://doi.org/10.1007/s13593-018-0528-0

Karlsson JO, Röös E (2019) Resource-efficient use of land and animals—Environmental impacts of food systems based on organic cropping and avoided food-feed competition. Land Use Policy 85, 63-72. https://doi.org/10.1016/j.landusepol.2019.03.035

Global:

Röös E, Bajželj B, Smith P, Patel M, Little D, Garnett T (2017) Greedy or needy? Land use and climate impacts of food in 2050 under different livestock futures. Global Environmental Change 47:1-12. https://doi.org/10.1016/j.gloenvcha.2017.09.001

Röös E, Bajželj B, Smith P, Patel M, Little D, Garnett T (2017) Protein futures for Western Europe: potential land use and climate impacts in 2050. Regional Environmental Change 17: 367. http://dx.doi.org/10.1007/s10113-016-1013-4

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Thank you!

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