Future trends in livestock production in the Nordic countries with a changing climate

B. A. Åby, J. Kantanen & T. Meuwissen

29.01.2014
Outline

• Nordic livestock production & current trends
• Future production conditions
  – climate change
• Possible future trends
• Summary
Nordic livestock production

• Increased total production (pig and poultry)

• Increased per capita meat consumption (poultry)

• Fewer, but larger farms

• Net importers, increasing (some exceptions)

• High degree of self-sufficiency, decreasing
  – imported feed (and energy) excluded
Nordic livestock production II

- Increased efficiency + increased concentrate use - marginal areas for natural grazing, vegetables & by-products
- Increased import of high quality feed ingredients – total: 30% – fat: 48% – Protein: 60%: soymeal

Future trends in livestock production in the Nordic countries with a changing climate

Norwegian University of Life Sciences
Future conditions for Nordic livestock production

• Climate change

• Political goals:
  – food security
    • keep today’s degree of self-sufficiency
    • livestock production increase in same rate as human population growth (+20% by 2050)
    – sustainable production increase
    – reducing GHG-emissions (8-15%)

• Climate smart agriculture
Global climate change

• Reduced and variable annual yields
  – uncertain supply of food and feed and price increases

• 2010 drought:
  – Russian export restrictions on wheat → price increase
  – New Zealand: decline in mutton and lamb exports

• Current Nordic trend of increased import of food and feed vs. food security
Climate change- Nordic countries

• Temperature 🚀
  + longer growing season, increased production potential
  + plant cultivation boundaries moving north
    – summer drought
    – more freeze-thaw cycles, overwintering of plants
    – insect pests, plant diseases and weeds
Climate change- Nordic countries II

• Precipitation
  – flooding
  – erosion
  – leaching of nutrients
  – compaction of soil
  – complicate harvest

• Extreme weather
  – reduced quality and quantity on crops
Future consumption

• Immigration may drive changes to consumption
  – diet restrictions
  + poultry
  + beef
  – pork?
Future trends to adapt to climate change

• Restrictions on use of imported feed?
  – productivity increase?
• Domestically grown feed sources
  – alternative protein sources: peas, rape, fava beans
  – more favorable conditions due to climate change
Future trends......

• Concentrates limited resource
  – prioritize concentrate use for poultry and pig production?
  – roughages, pastures & by-products for dairy and beef production
    • yield?
    • GHG emissions?

• Research
Future trends.....

• Horticultural practices
  – more favorable conditions and larger areas suitable for production of cereals, maize, legumes & high quality forages
  – adjustments in agronomical practices
  – investments in irrigation & drainage
  – increased fertilizer & pesticide use
    • legumes
  – plant breeding goals
    • drought and disease resistance
Future trends.....

• Animal husbandry
  – longer grazing season
  • reduced indoor feeding, need for feed storage, concentrates
  – improved ventilation of animal housing
  – vaccination
  – new breeding goal traits
  • lower quality diets, disease resistance & heat tolerance
  – use of genetic resources
  • breeding strategies
Summary

• Nordic livestock production:
  – high efficiency - high input
  – high degree of self-sufficiency
  – reliant on imported feed (and energy)

• Climate change (both globally and locally) will drive changes to Nordic livestock production
  – reduced import of feed, emphasis on domestically grown feeds
  – adjustments in animal husbandry and horticultural practices
  – more research needed

Thank you for your attention!