

# Växtförädling och cerealier

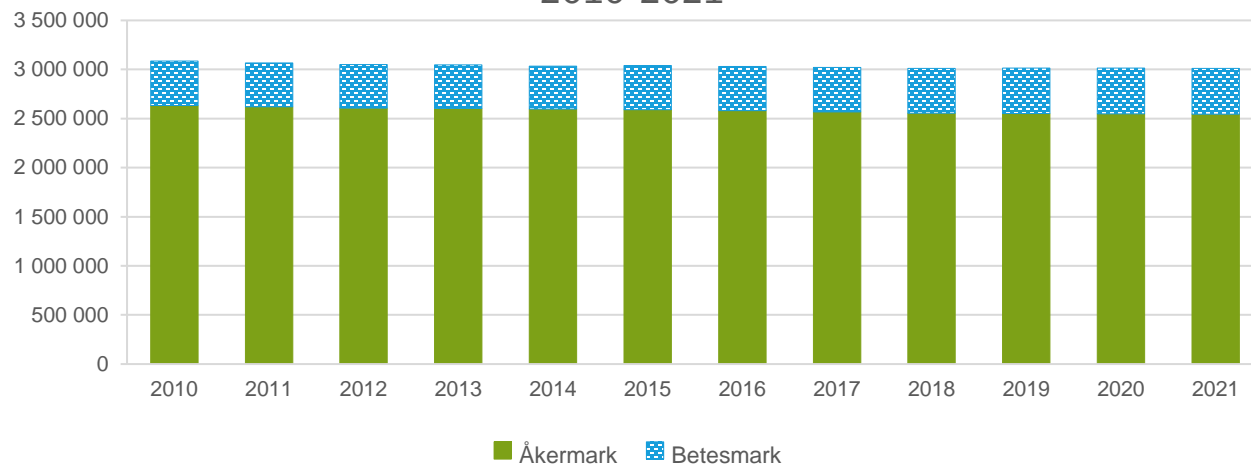
## Framtidsspaning och behov

SLU Grogrund & SLU Partnerskap Alnarp, 20 October, Torna Hällestad



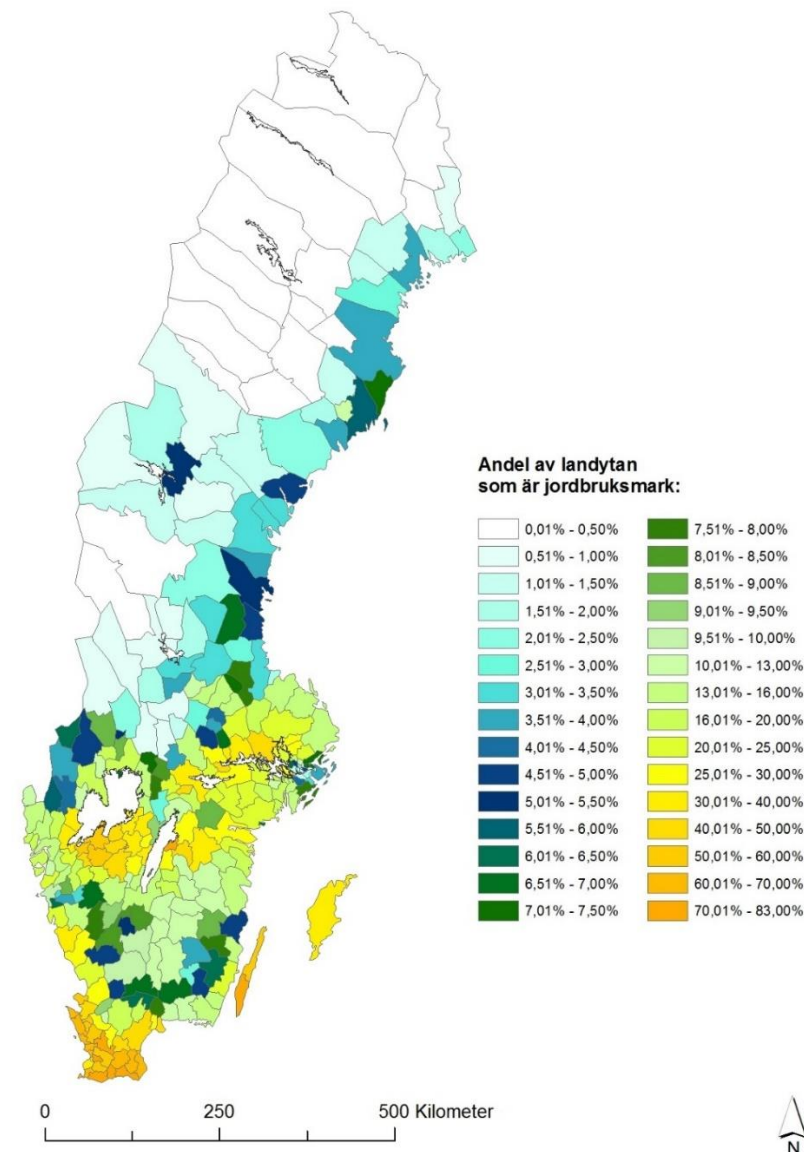
# Svensk jordbruksmark

Total jordbruksmark (ha) i Sverige,  
2010-2021



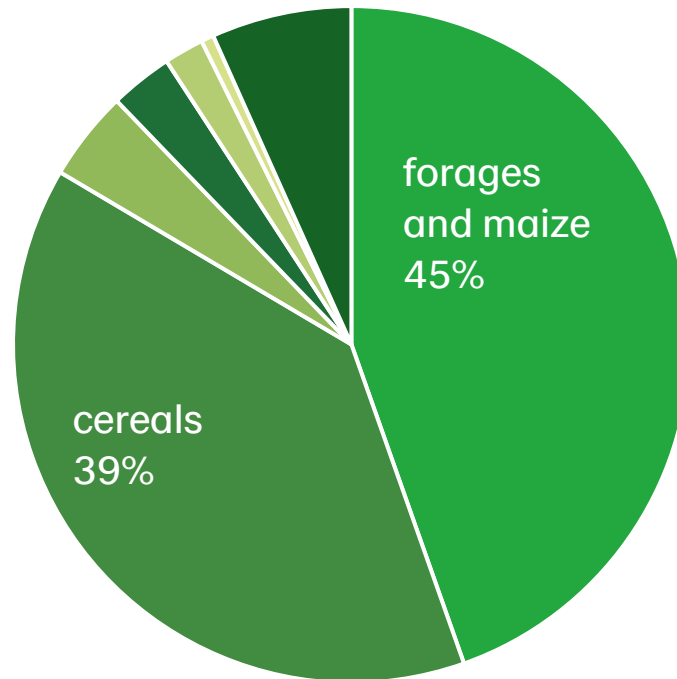
Landareal som används som jordbruksmark i Sverige har sedan år 2010 minskat från 3 085 365 ha till 3 010 166 ha år 2021. Det är en nedgång med 75 199 ha, motsvarande knappt en hektar i timmen. År 2021 var fördelningen av jordbruksmarken:

- 85 %, 2 545 943 hektar åkermark (arable land)
- 15 %, 464 223 hektar betesmark (pasture)

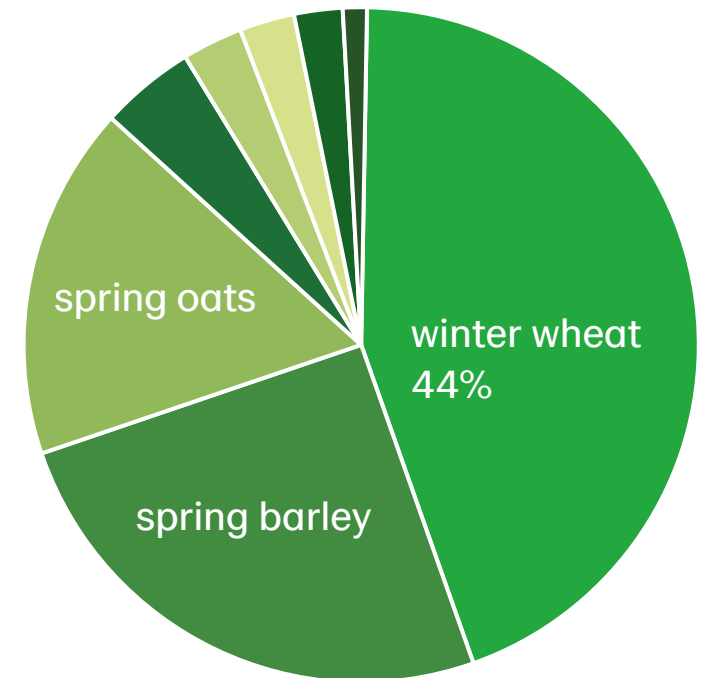


# Swedish arable land and cereal crop distribution

- forages
- cereals
- oil crops
- potatoes and sugar beet
- pulses
- horticultural crops
- other



- winter wheat
- spring barley
- spring oats
- spring wheat
- winter triticale
- winter rye
- winter barley
- other





## Mission and targets

Using **research, education and collaboration** within plant breeding, SLU Grogrund is to contribute to the **development of food crops** for the Swedish horticulture and agriculture industries. This is to contribute to a **reinforced competitiveness and increased Swedish food production**. SLU Grogrund's operation shall be characterised by a **long-term perspective**, resource efficiency and relevance to business and society.

### Some targets

- Competitive agri-food industry
- Support environmental targets
- Increased production
- Increased self-sufficiency



# Cereal grain production must increase despite serious challenges

- Climate change
- Reaching environmental targets
- Reducing agricultural land



# Climate changes

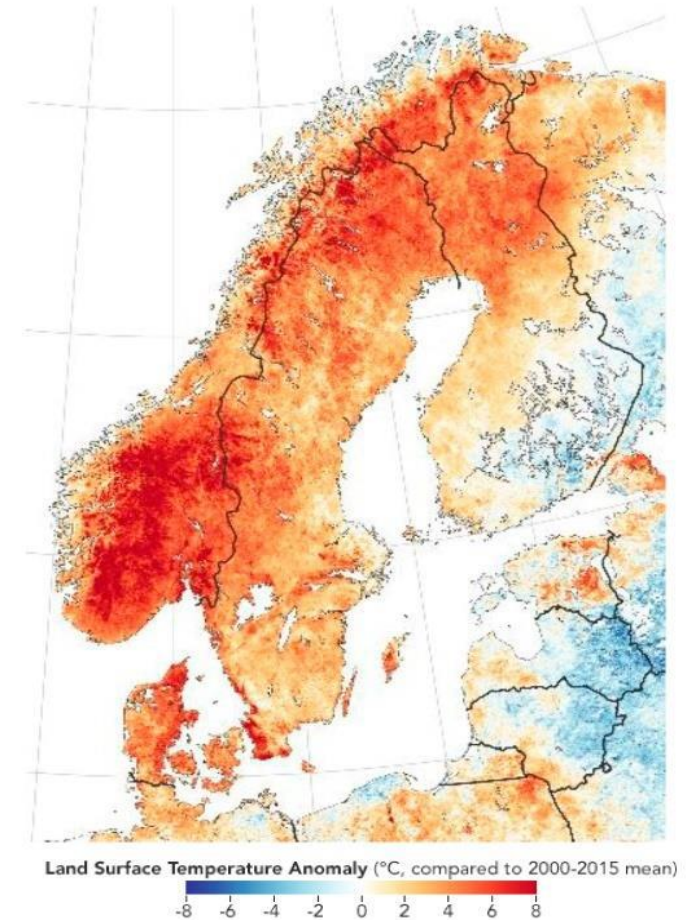
## Some challenges and opportunities

### Challenges

- Higher temperatures
- Increased/changed disease and insect pressure
- Changes in precipitation patterns
- More frequent extreme weather events

### Opportunities

- Longer growing period
- Borders move north



Temperature deviation first half of July 2018  
compared with same period av. 2000-2015  
Source: Nordic Council of Ministers, Report, 2019



# Profitable and sustainable production in a changing climate

## Proposed focus areas

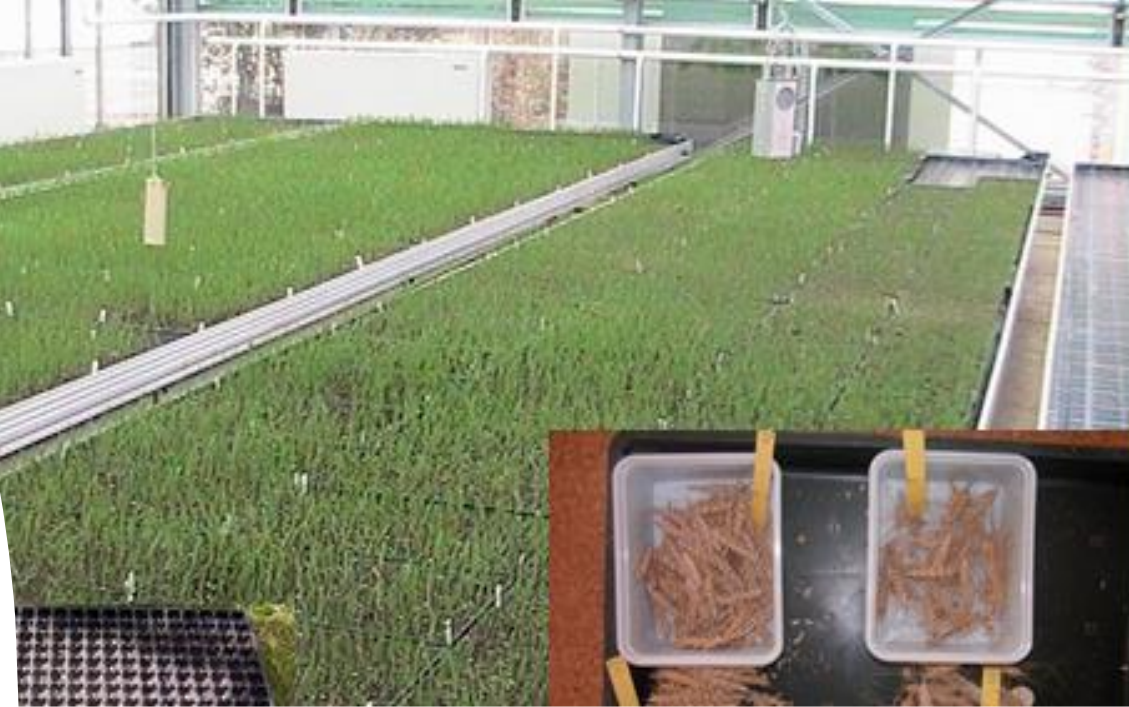
- Yield and yield stability
- Tolerance against extreme weather situations (drought, heat, fluctuating winter temperatures, freeze-thaw)
- High nutrient efficiency
- Resistance towards diseases, insects and nematodes



# Breeding R&D - Proposed focus

## PRODUCTION CAPACITY

- New crop for Sweden : winter oats
- Functional genomics
  - Drought and heat tolerance (response to irrigation)
  - Winter hardiness
  - Nutrient efficiency
  - Biotic stress tolerance
- Research on root systems
- Genetic resources, new traits and gene editing
- Tools
  - Markers & phenotyping systems
  - Machine learning and prediction modelling





# What about product quality?

- New qualities linked to health & nutrition or to production processes; e.g., relating to
  - Fibers
  - Protein content and quality
  - Oil quantity and quality
  - Functionalities
- Ingredients and side flows
- Outputs :
  - Trait discoveries and health claims if relevant
  - Breeding tools



# Other important elements

- Education - Industrial PhDs and students
- Interdisciplinary collaboration
- Pre-competitive
- Long-term
- Other funding bodies



## Cereal R&D Concluding remarks

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New innovative products are desired – but for cereals it is crucial to secure grain production capacity and stability

More research, collaboration and education are essential

Long-term investments are important



**Tack!**