Adapting cereal varieties to climate change in the Nordic countries

– which traits can plant breeding work with and which ones are much more difficult?
Lantmännen has a yearly investment of 100 MSEK in Swedish plant breeding

- Lantmännen Plant Breeding:
- 10 breeding program
- 3 breeding stations
- Large investment in new infrastructure-climate chambers and genotyping facilities
Why Swedish plant breeding?

- Adaptation to Swedish agricultural practices
- Adaptation to day length
- Lowering environmental impact
- Increased value for Swedish farmers
- Increased export
- We are a small country and nobody else will do it....
Lantmännen has the whole value chain

- Plant breeding
- Grain
- Mills
- Industry
- Consumer products
We work with a large number of crops

Cereals
• Winter wheat
• Winter triticale
• Spring barley
• Spring oats

Forages
• Forage grasses
• Forage legumes

Pulses
• Faba beans
• Peas

Potatoes

Salix
Our plantbreeding stations

**Svalöv**
- Winter wheat
- Winter triticale
- Spring barley
- Spring oat
- Peas
- Field beans
- Forage grass
- Forage legumes
- *Salix*

**Lännäs**
- Spring barley
- Forage legumes
- Forage grass

**Emmeloord**
- Triticale
- Potatoes
Climate change in short and the long run - can plant breeding meet the challenges?

- Plant breeding is a powerful tool to create value
- Plant breeding slowly but surely follows climate change and adapts the varieties
- Plant breeding creates robust varieties and on farm security for farmers
In the short run

- adding of more locations with different environmental challenges,
- use of more selection for root traits and development of methods for this
- Use of new methods for selecting for stress tolerance,
- Use of new markers for stress tolerance - development of these
- Use of new image analysis methods in the evaluation and selection process
- Use of genomic selection together with speed breeding and marker selection to speed up the development
- In the long run,
In the long run

• New crops
• New characters
• New resistances
Växtförädling 3.0 – Precisions fenotypning
Växtförädling 3.0 – Genomik