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Future Agriculture
FRAMTIDENS LANTBRUK

crises?
Vulnerabilities and resilience at farm level in Swedish agriculture

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Background

- Since Sweden deregulated agriculture in 1990 there are no quantitative targets for food production. Since EU accession in 1995 there are no state storages of food items or inputs. There are no policies for food supply security involving primary production (unlike e.g. Finland).

- The restructuring of agriculture has continued. Intensified mechanisation and use of IT-technology on farms as well as new high-tech equipment such as precision farming techniques and automatic milking robots creates new vulnerabilities.

Research questions

- How does vulnerabilities and resilience differ between production systems, e.g. if the farm is small-scale or large-scale, ecological or conventional, labour intensive or machine intensive?

- How is food production affected by different supply crises, e.g. fuel shortages, electrical faults, delivery of fodder or other inputs?

- How is production of chicken, pork, beef, dairy and grain affected by different supply crises at farms with different production systems?

Data collection

- 20 farms in Västra Götaland selected to generate a broad selection: large-scale, small-scale, organic, conventional, different production systems (dairy, grain, beef, pork, chicken, horticulture)

- Interviews carried out in Feb-March 2016 (together with MSc-students Josefin Heed and Sofia Sollén Norrlin). Questions covered included farm history, production, organisation, dependencies, vulnerabilities, thoughts on how to adapt to crisis

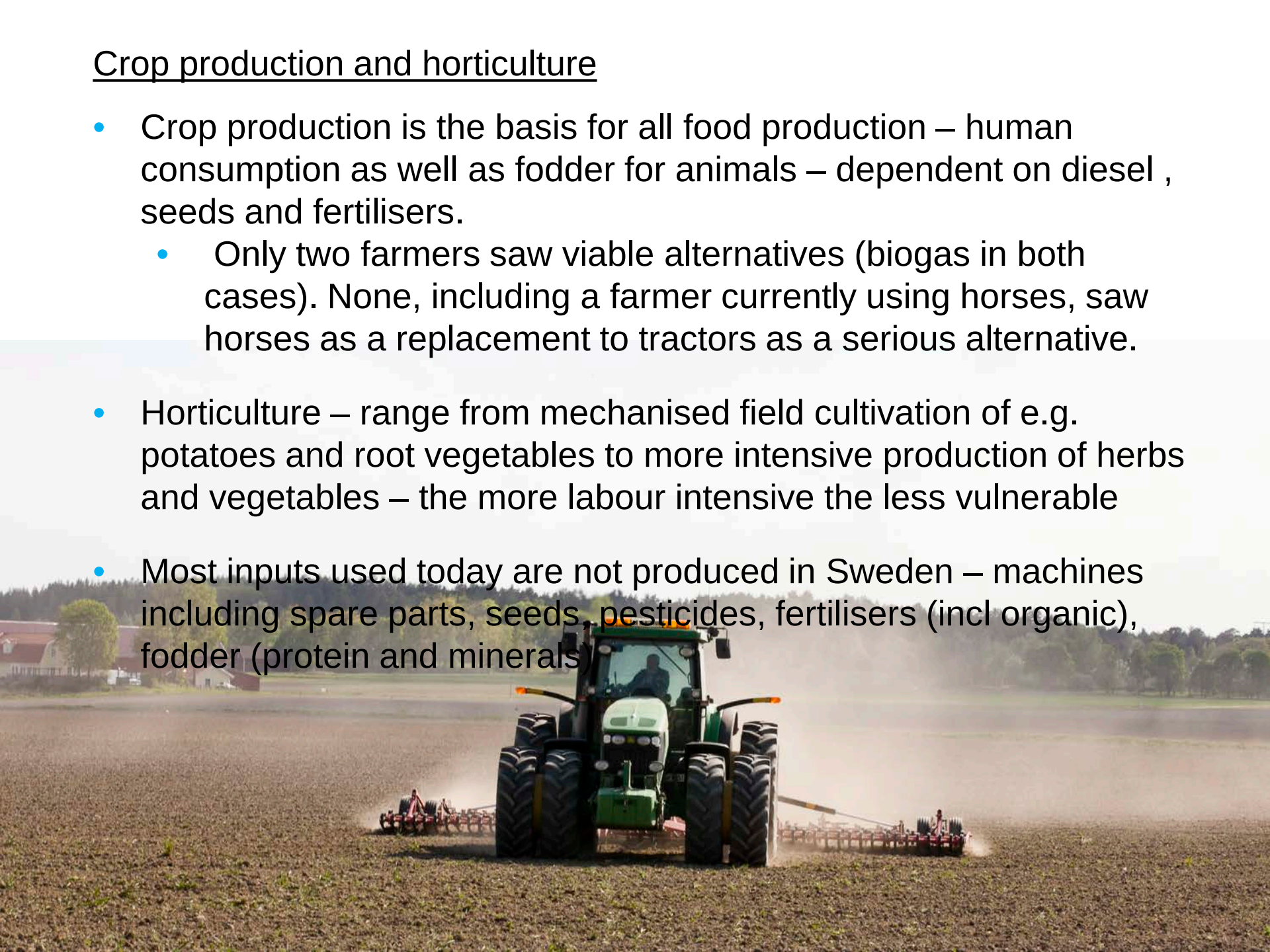
Illustration: Per-Arne Klasson, 2016

Crop production and horticulture

- Crop production is the basis for all food production – human consumption as well as fodder for animals – dependent on diesel , seeds and fertilisers.
  - Only two farmers saw viable alternatives (biogas in both cases). None, including a farmer currently using horses, saw horses as a replacement to tractors as a serious alternative.

- Horticulture – range from mechanised field cultivation of e.g. potatoes and root vegetables to more intensive production of herbs and vegetables – the more labour intensive the less vulnerable

- Most inputs used today are not produced in Sweden – machines including spare parts, seeds, pesticides, fertilisers (incl organic), fodder (protein and minerals)



Chicken farms and pig farms

- The most vulnerable to short-term disturbances – acute animal health issues. In a long term crisis, production is most likely abandoned.
- Sensitive to disruptions in electricity supply:
  - ventilation
  - water
  - fodder processing machinery

Dairy and beef farms

- The least vulnerable animal production from an animal health perspective, as animals can graze and find water in pastures (fodder management still dependent on tractors)
- Dairy farmers store the annual consumption of hay, silage and grain
- High milk production closely linked to high protein fodder – most commonly soy bean.
- If not milked milk cows will suffer health problems within a day or so

Farmer's attitudes

- All farmers interviewed think food contingency planning is important
- Most farmers think the state should take responsibility
- Farmers feel little responsibility to produce food in times of crisis or war

Among solutions discussed by farmers

- Biogas – on farm or in close cooperation. Biodiesel (off-farm) also mentioned.
- If no diesel or diesel substitutes - distribute land plots to households who want to go into subsistence farming
- (Low quality) seeds can be produced on farm
- Lack of pesticides can be handled but harvests will decrease and e.g. raps might be abandoned.
- Phosphorus difficult to replace , nitrogen easier (through cultivation of e.g. peas or other legumes)

Generally low redundancy. A “might be nice to have” strategy finally pays off…

Next step

- Follow the civil defense planning that started last year, with a focus on Västra Götaland County Administrative Board

- Interesting questions to continue thinking about

  - Increasing vulnerabilities in other parts of the food chain, as a result of concentration of food retailers as well as the agricultural industry

  - Comparisons with other (Nordic) countries – how is contingency planning dealt with for food supply security? What role is assigned to farmers?

  - The dismantling of the food supply security system as part of a wider dismantling of the state. The on-going process to take up civil defense planning could be seen as a ”rediscovery” of an autonomous state

Product	Production, ton		Self-sufficiency rate	
	1995	2012	1995	2012
Beef	143 000	125 000	89,2%	49,6%
Pig	309 000	233 000	98%	66%
Poultry	79 000	117 000	104%	65,4%
Lamb	3 490	5 030	59,7%	25,4%
Eggs	104 000	122 000	104%	95,4%

Source: Swedish Board of Agriculture, 2013