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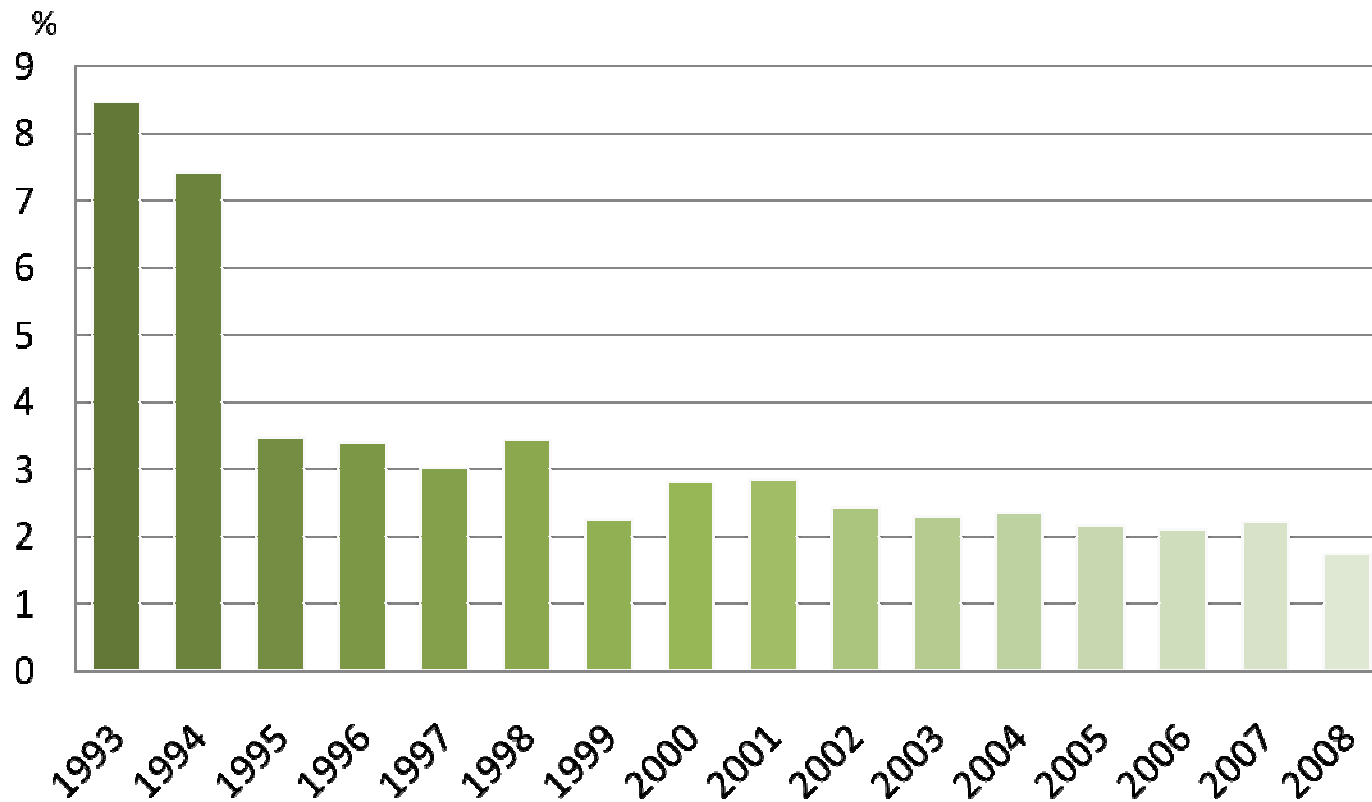
# Changes and current situation of plant production, agricultural land use and farming practices in Estonia

Alar Astover, Helis Rossner

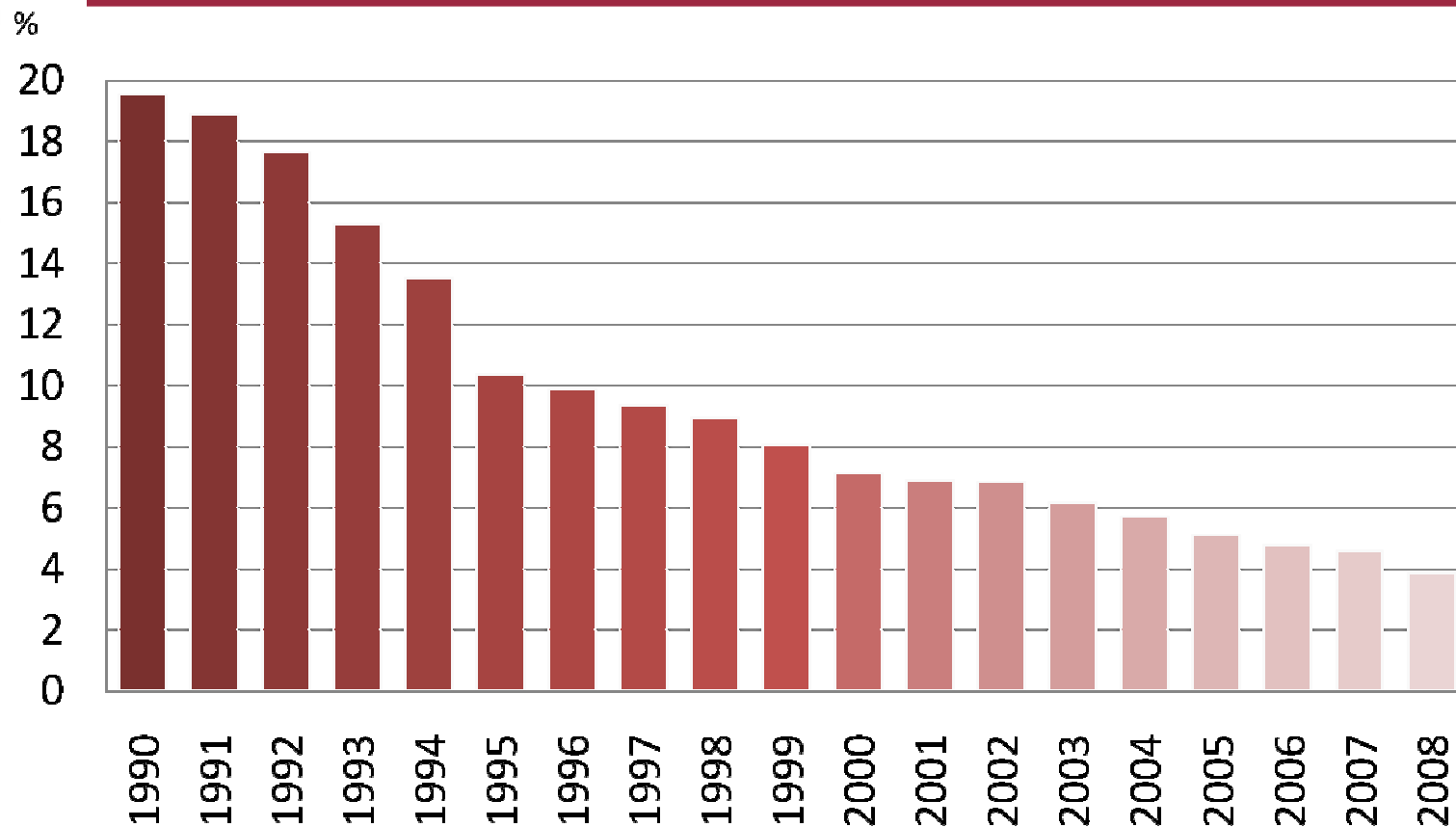
ENPOS seminar 20-22.01.2010, Estonia - Otepää



## The share of agriculture in GDP, %

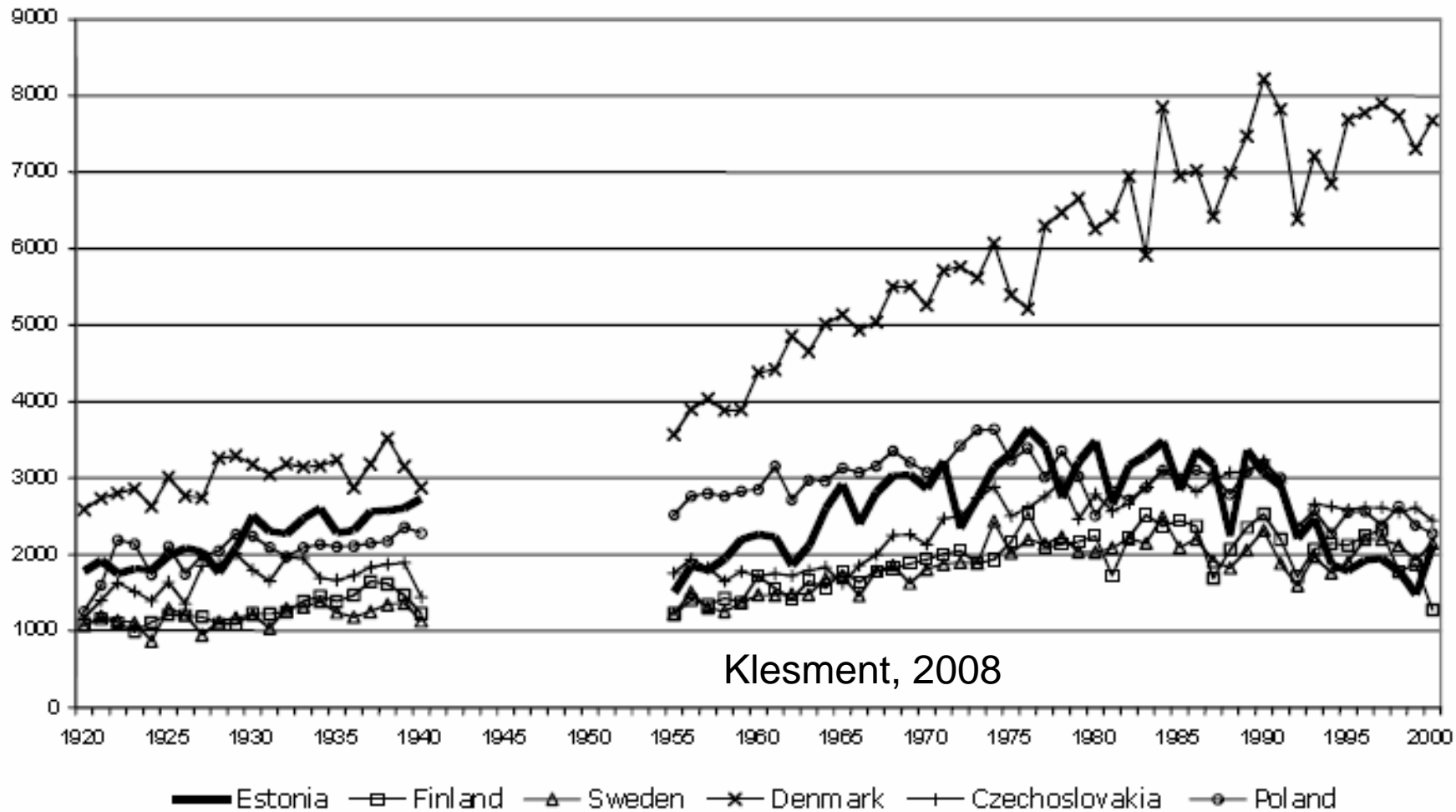


## The share of agricultural workers in total employment

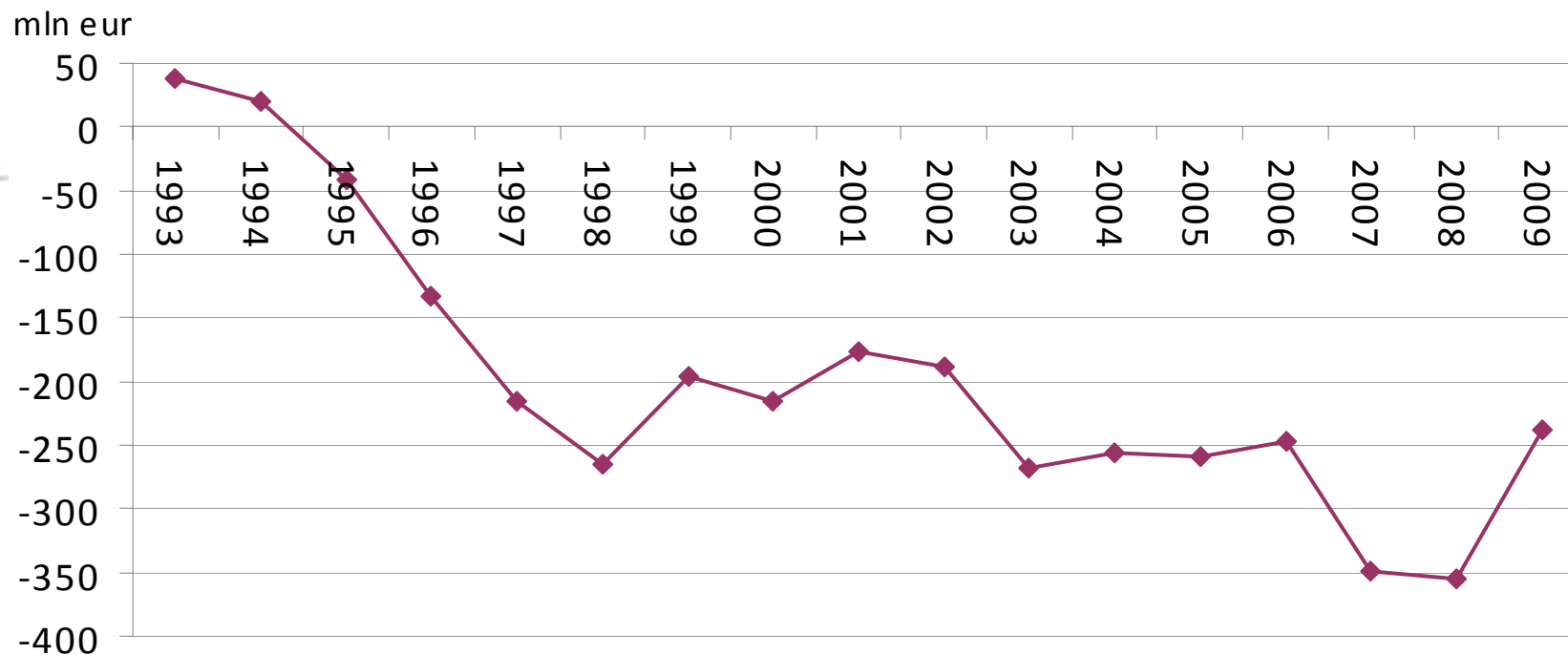


# Grain, potato, meat and milk production per capita (thous. kcal)

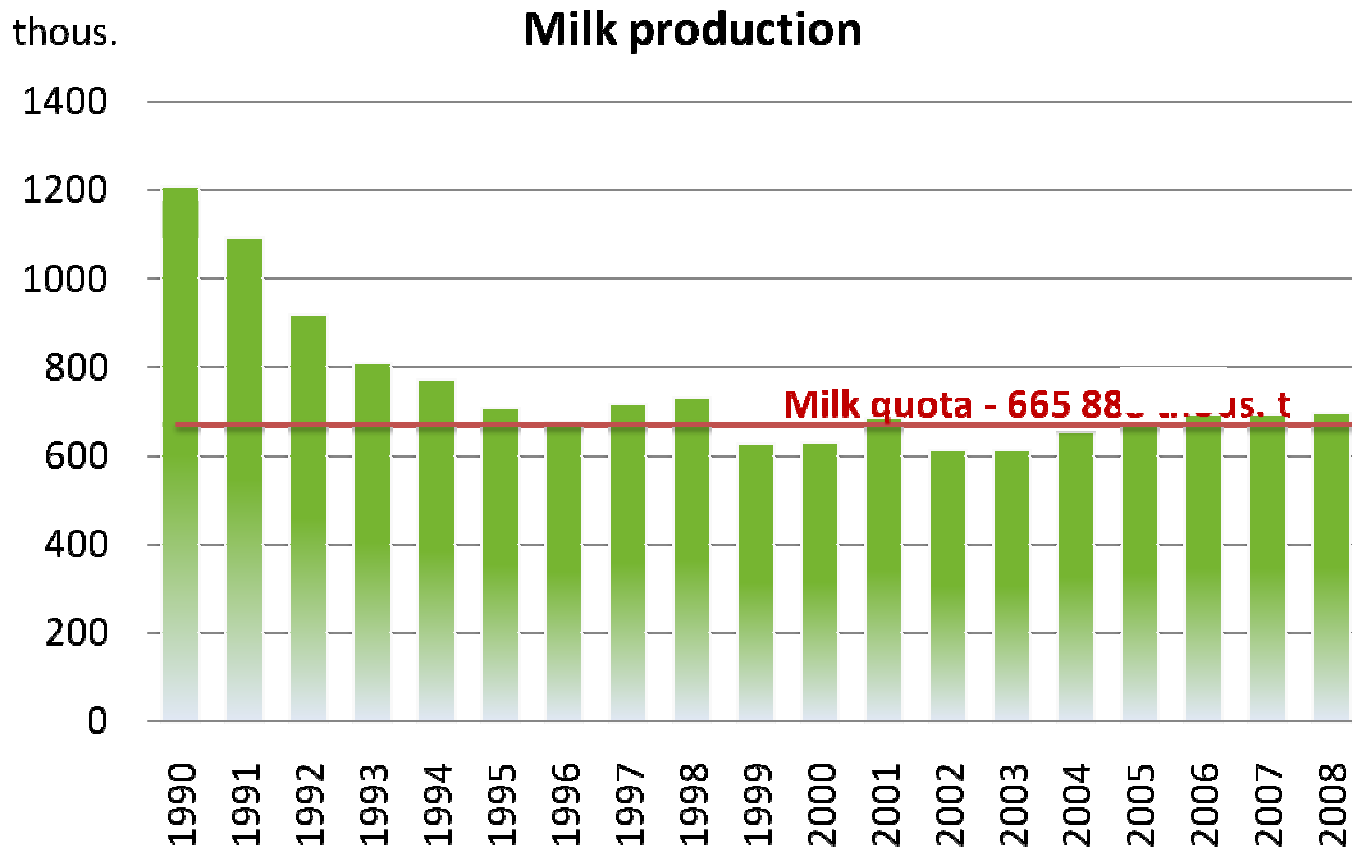
## Back in 1920!



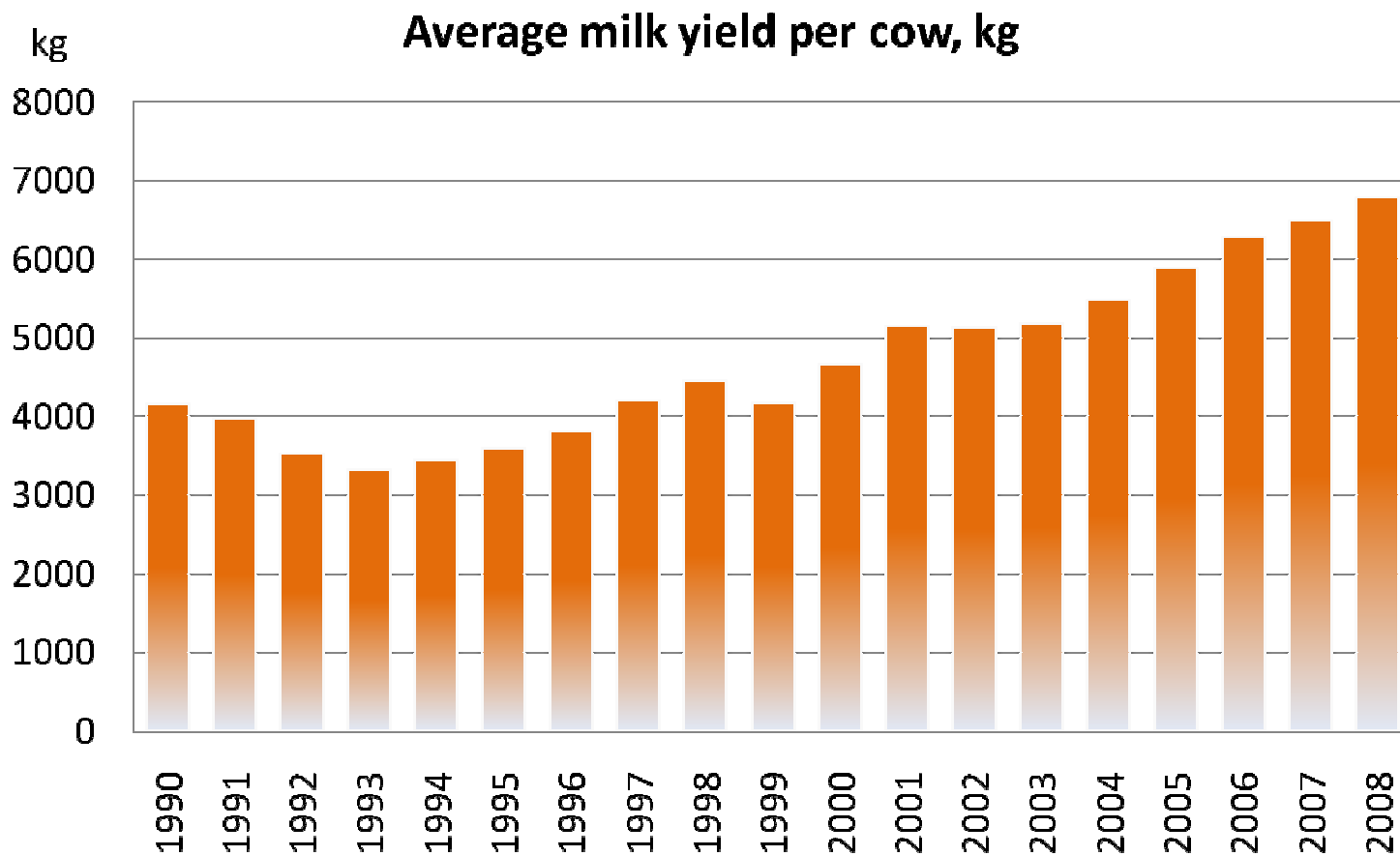
## Trade balance of agricultural products and food



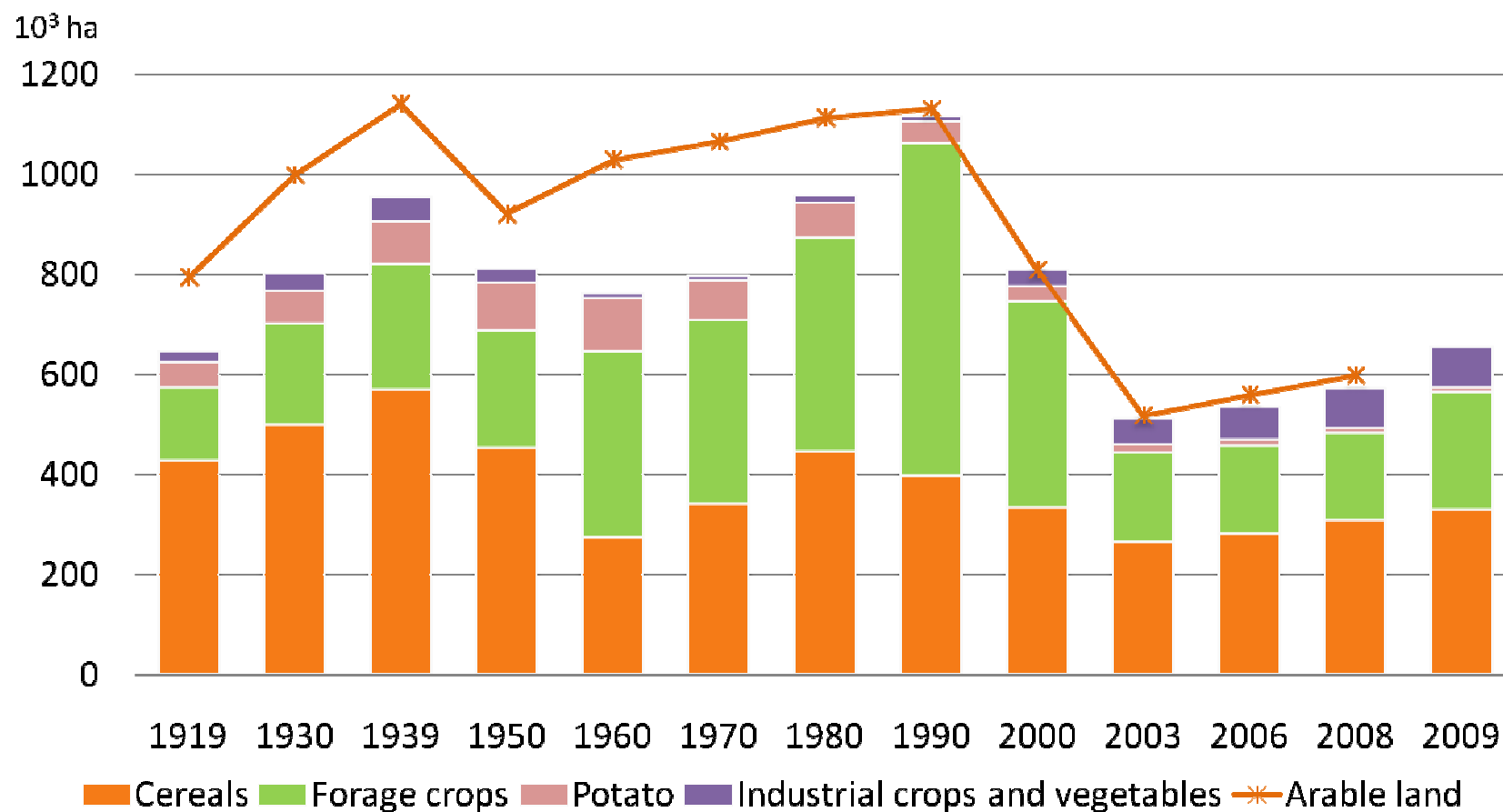
## Milk production, thous. t



## Average milk yield per cow, kg/year

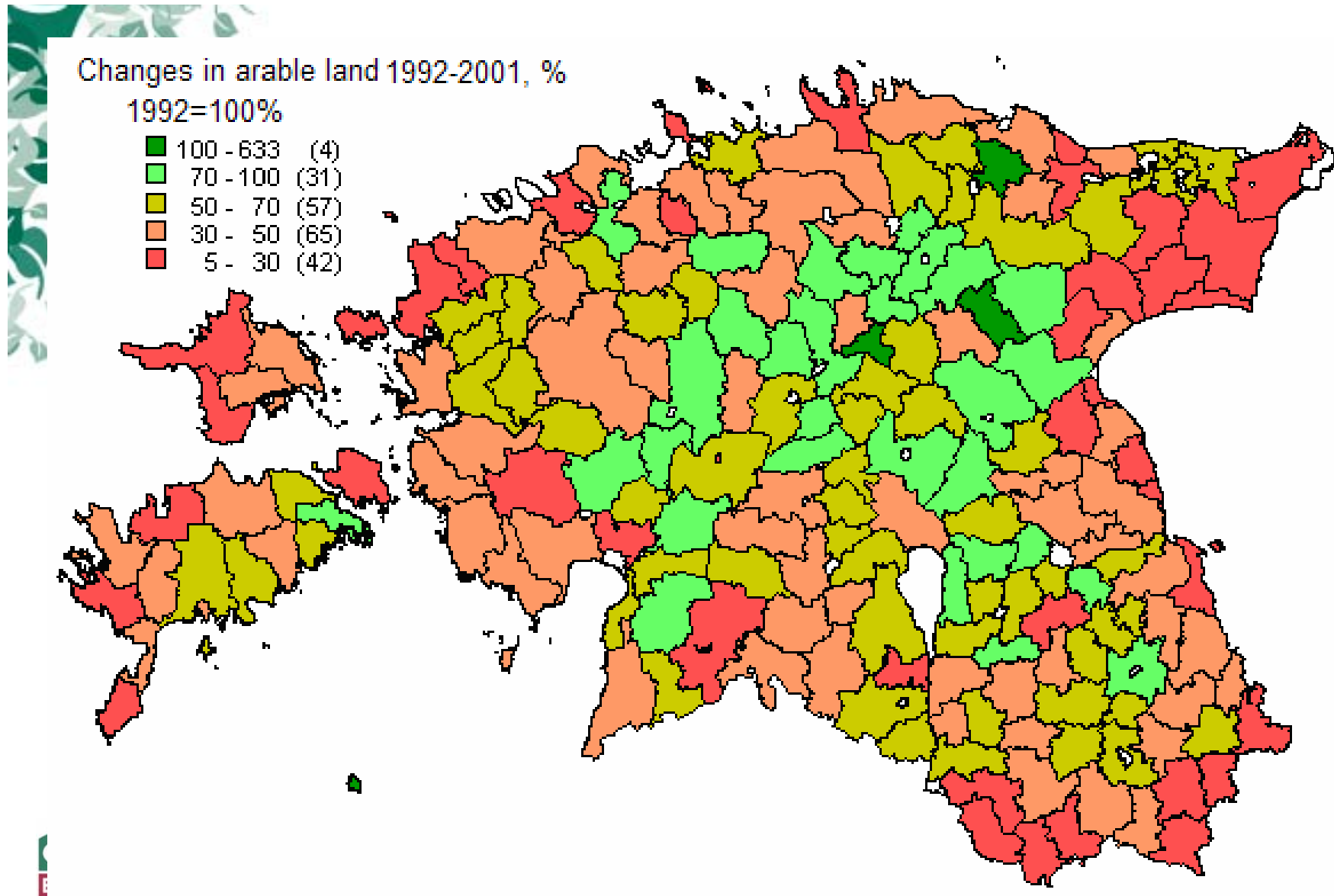


# Arable land use





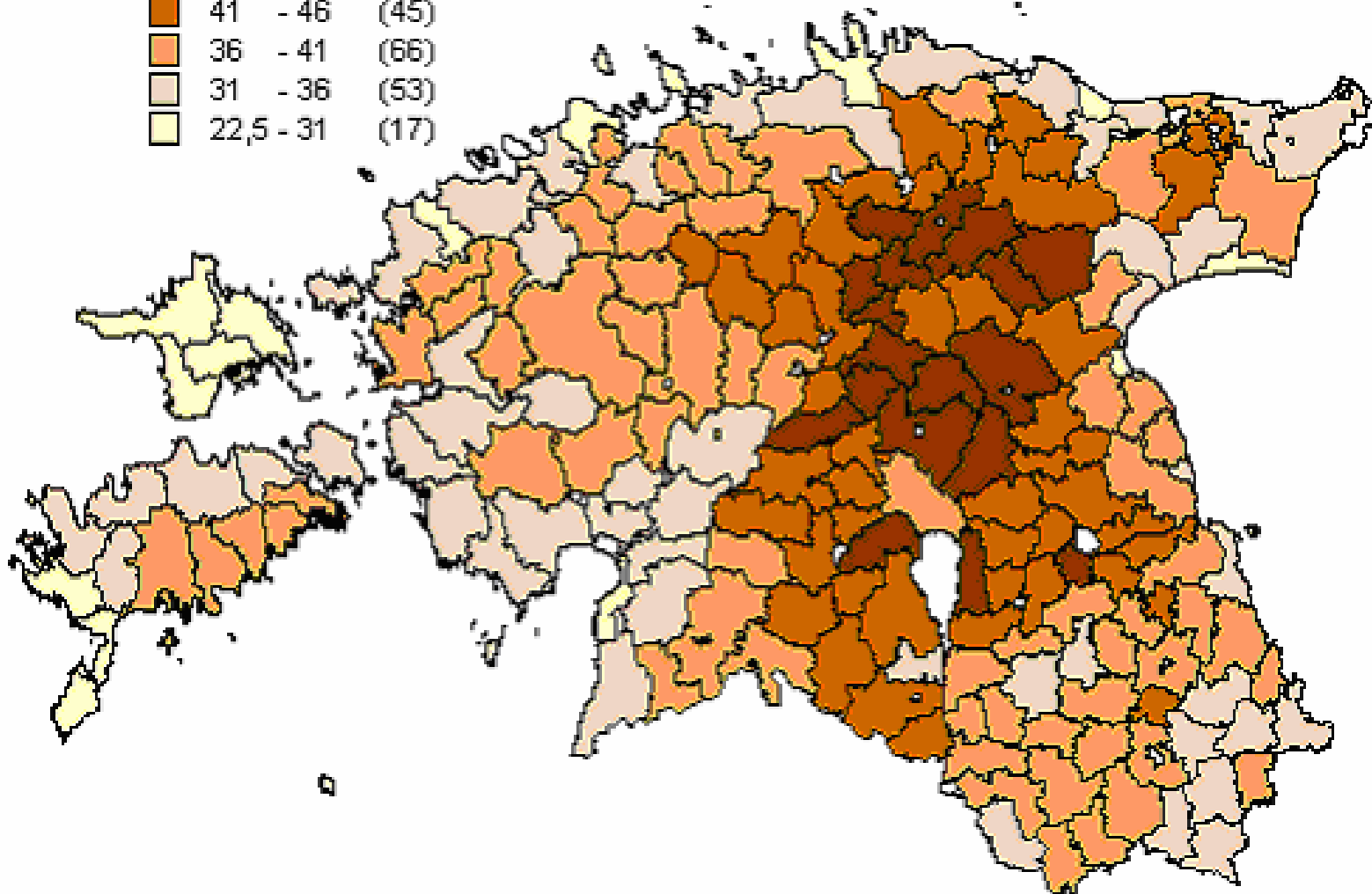
There are huge regional differences of changes in agricultural land use.



Regional differences of changes in land use are caused beside socioeconomic alteration by pedoclimatic conditions.  
Map of soil quality (100-point scale).

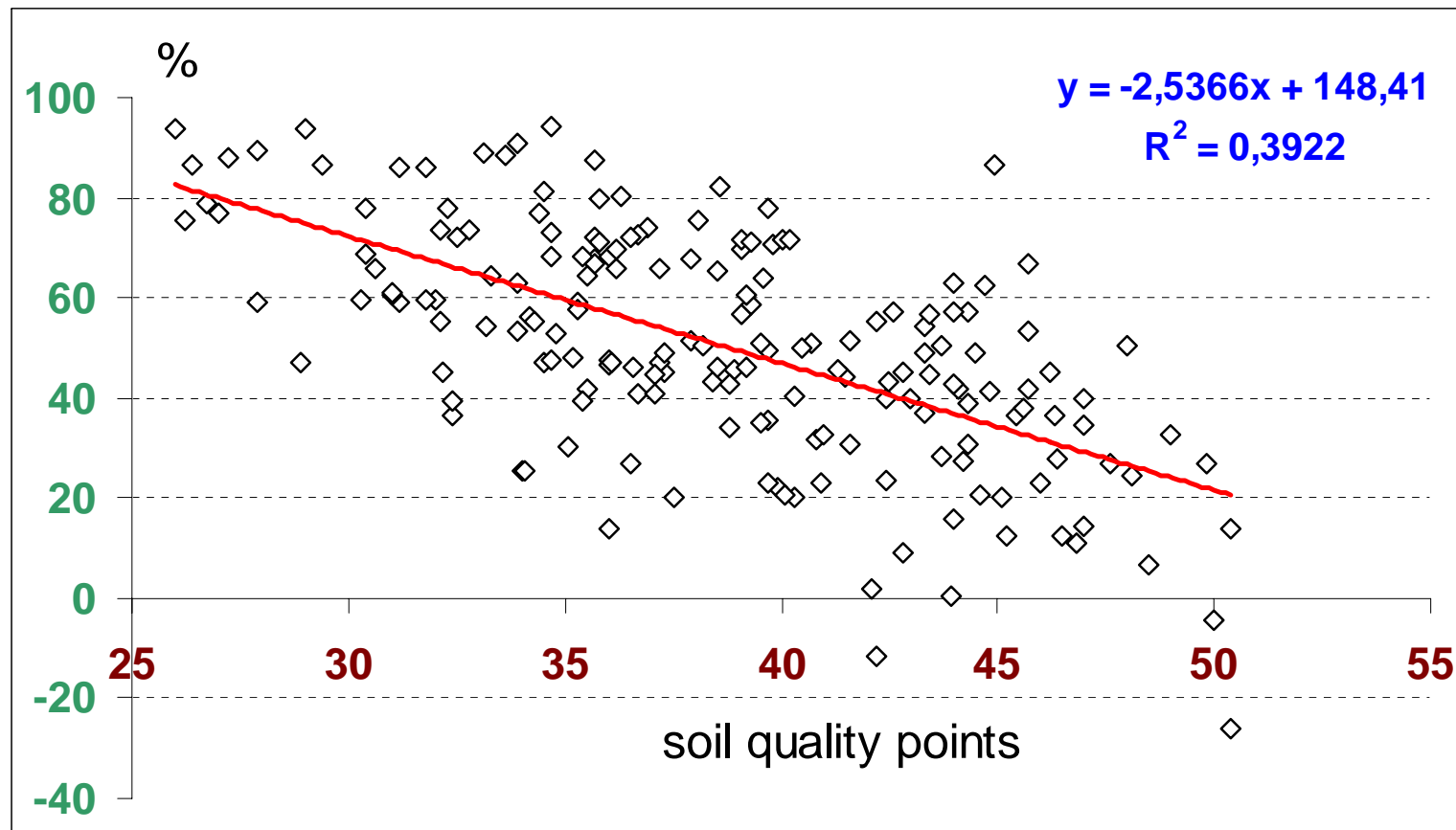
Soil quality points

■	46 - 50,4	(18)
■	41 - 46	(45)
■	36 - 41	(66)
■	31 - 36	(53)
■	22,5 - 31	(17)



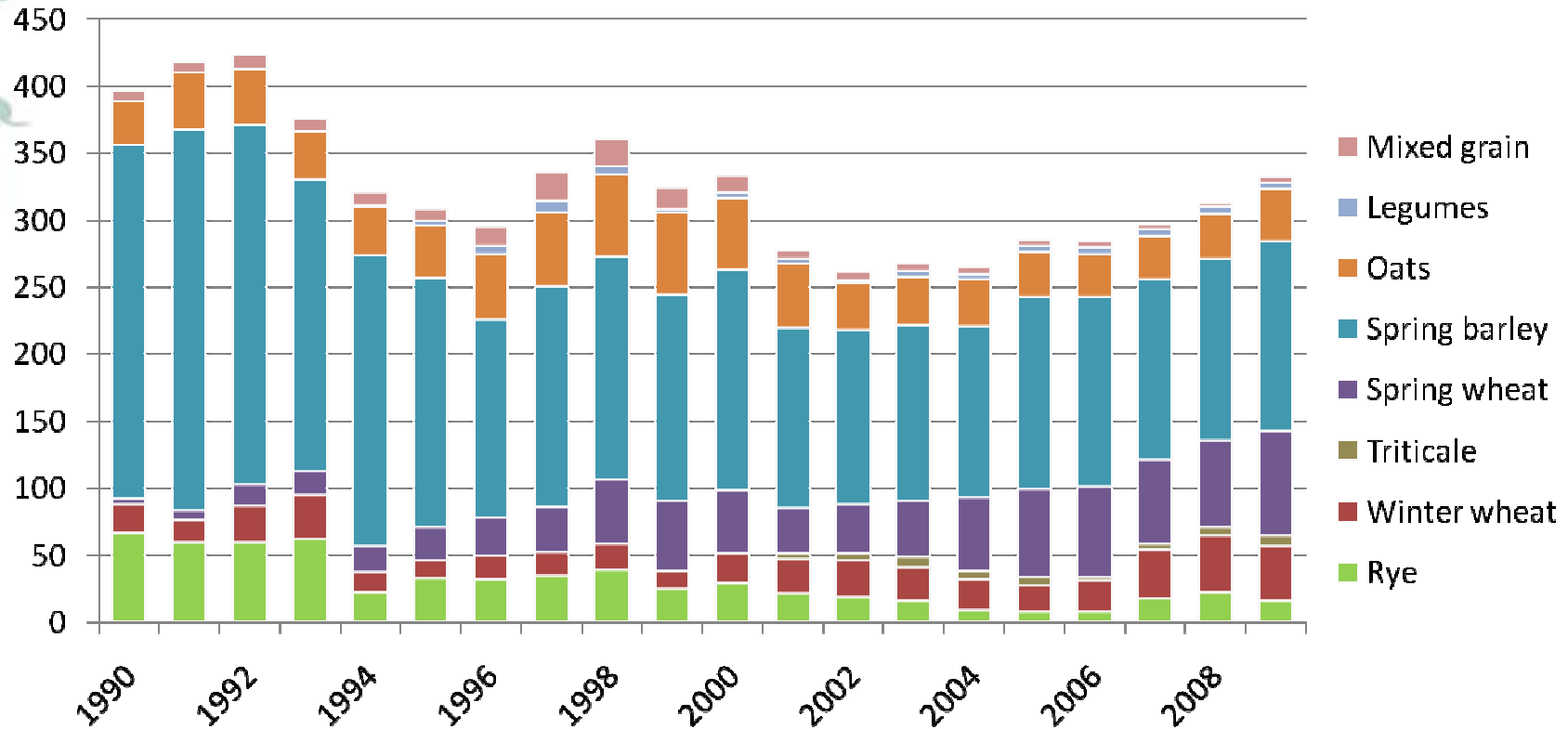
# Decrease of agricultural land depending on the soil quality

Agricultural land use has declined most of all in the rural municipalities located in the regions with low fertility soils.

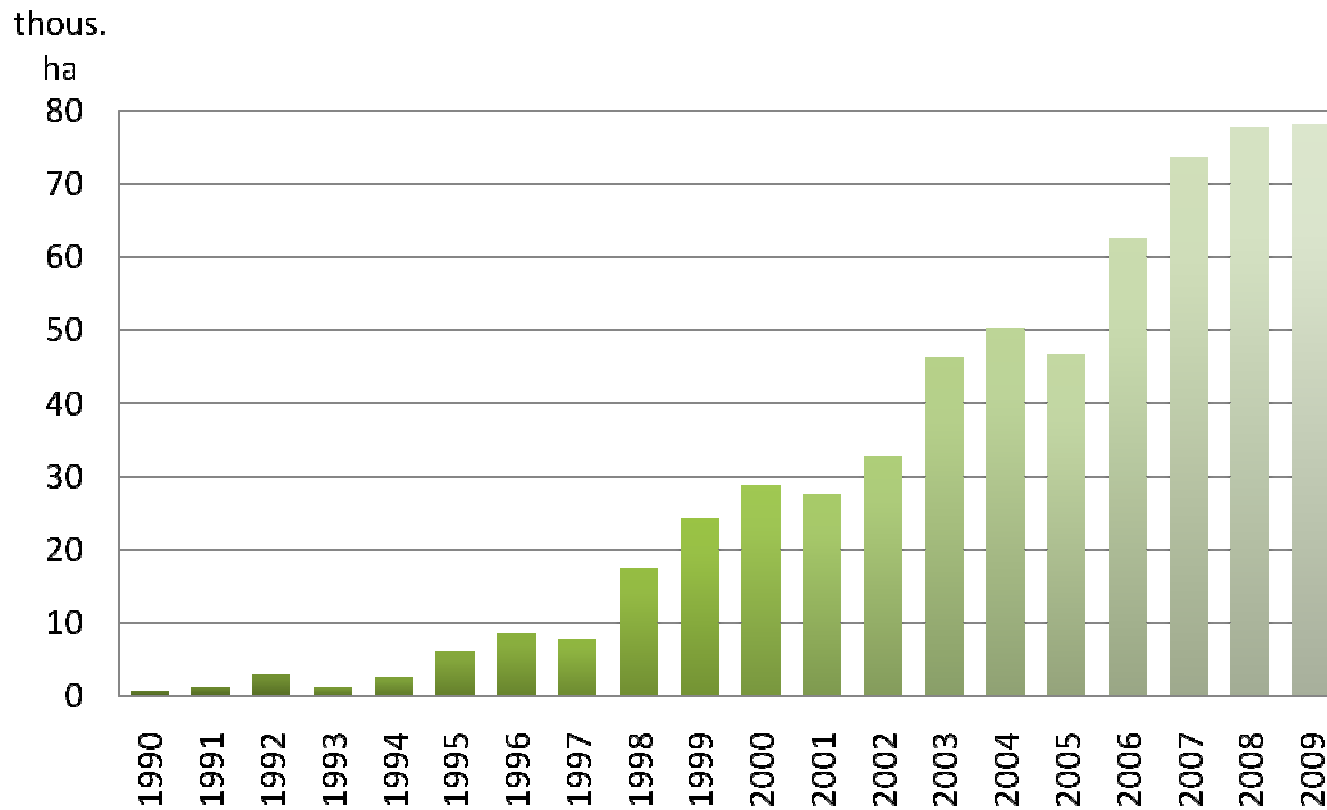


# Cultivation area of cereals

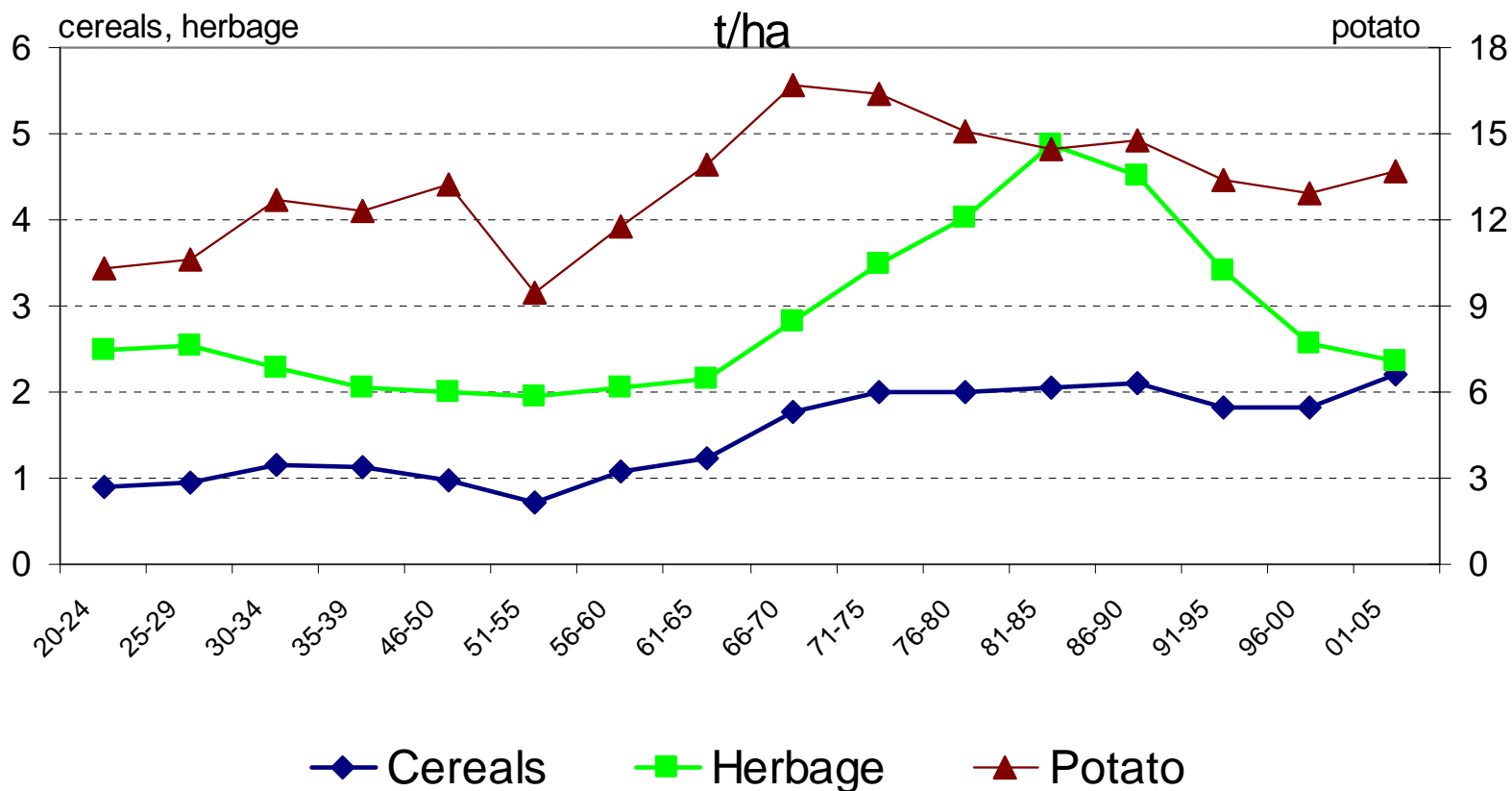
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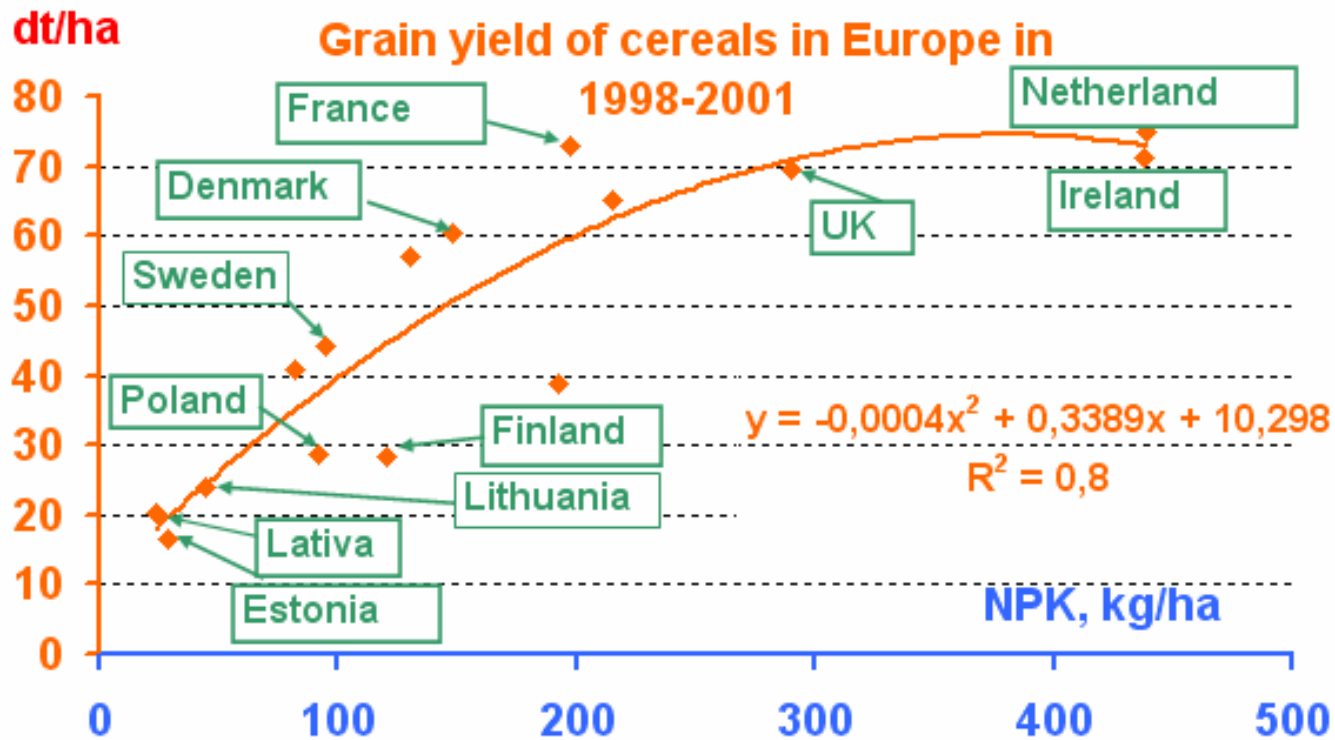
## Cultivation area of oilseed rape



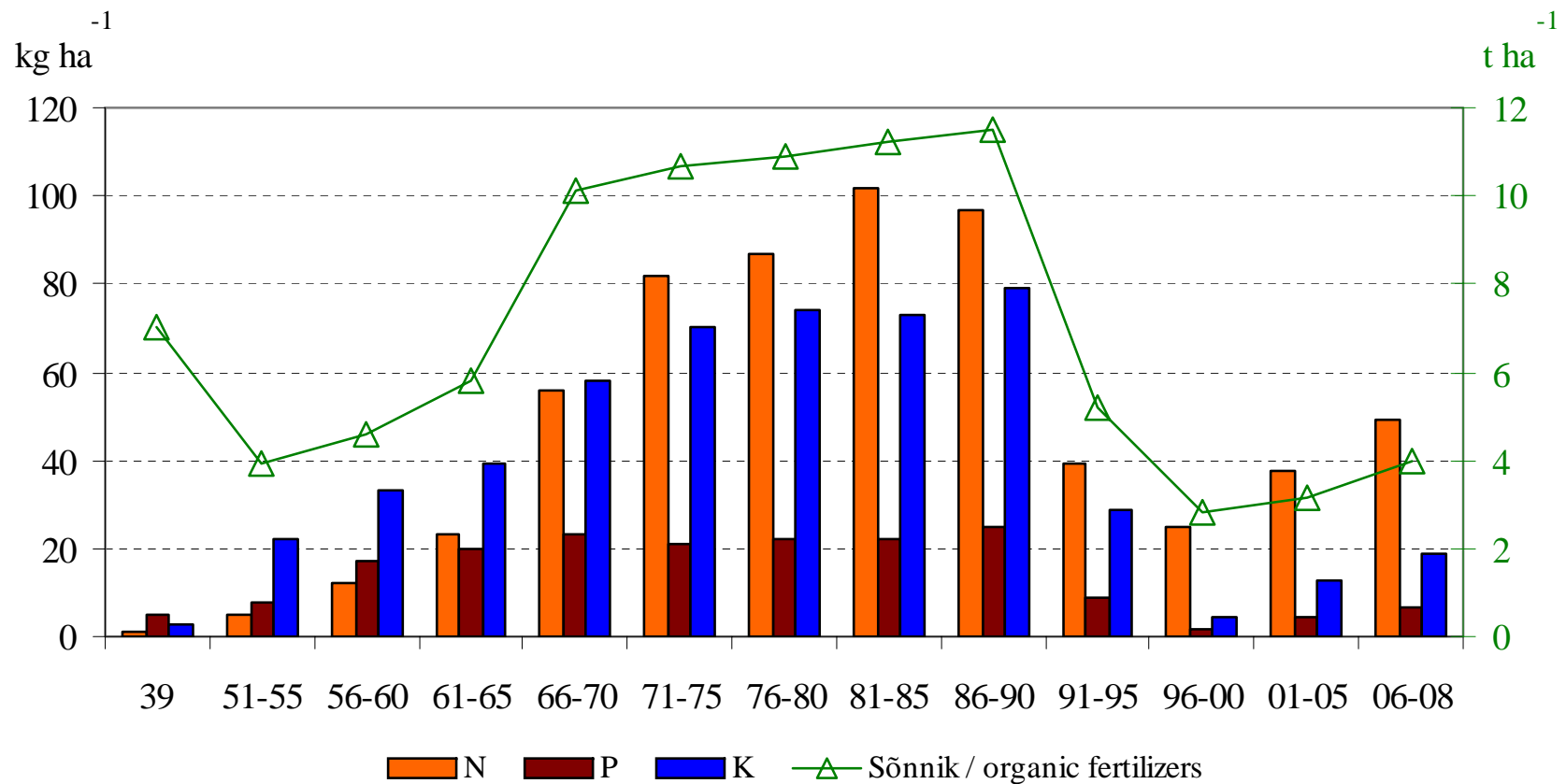
# Crop yields (national average)



# Crop productivity and fertilisation



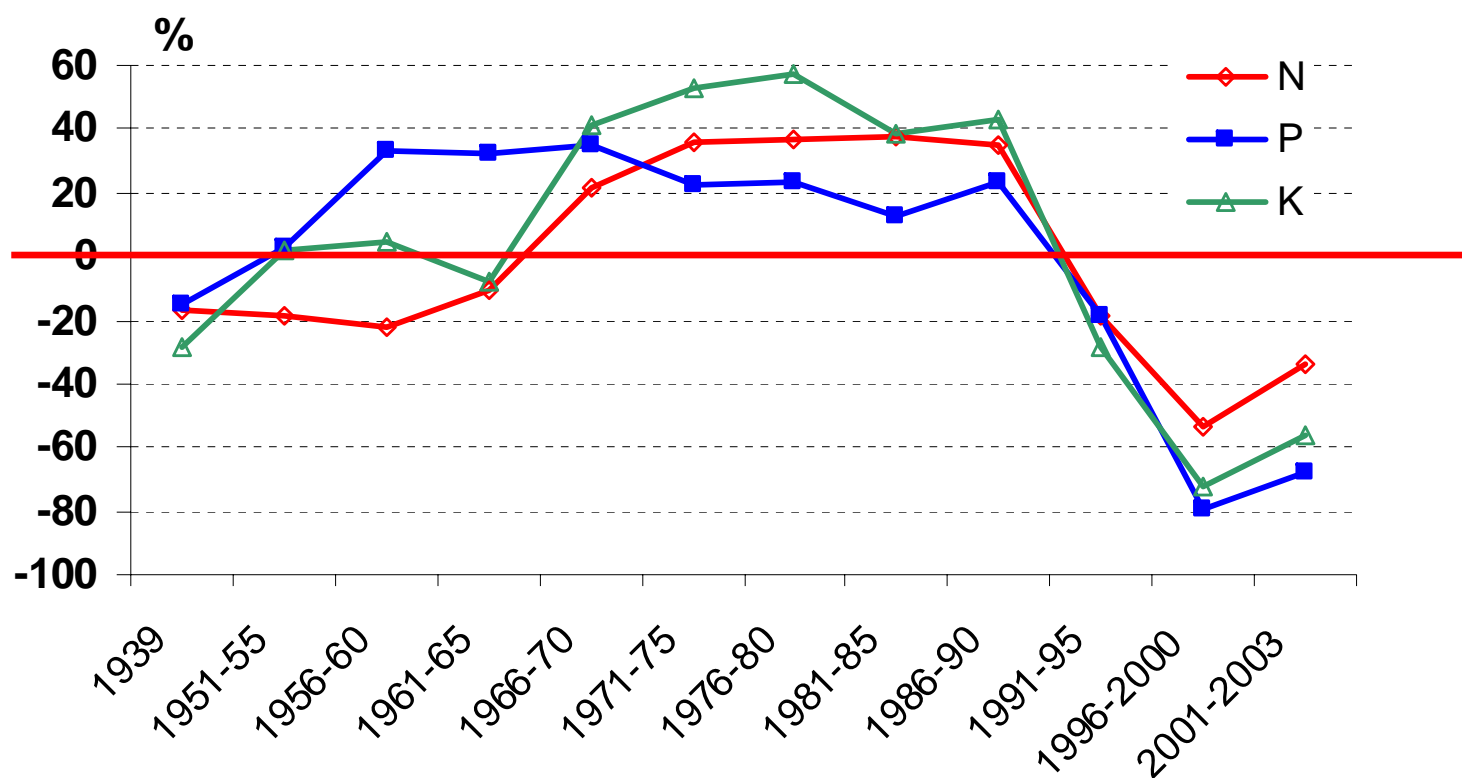
# The use mineral and organic fertilizers





## Active balances of nitrogen, phosphorus and potassium of arable soils

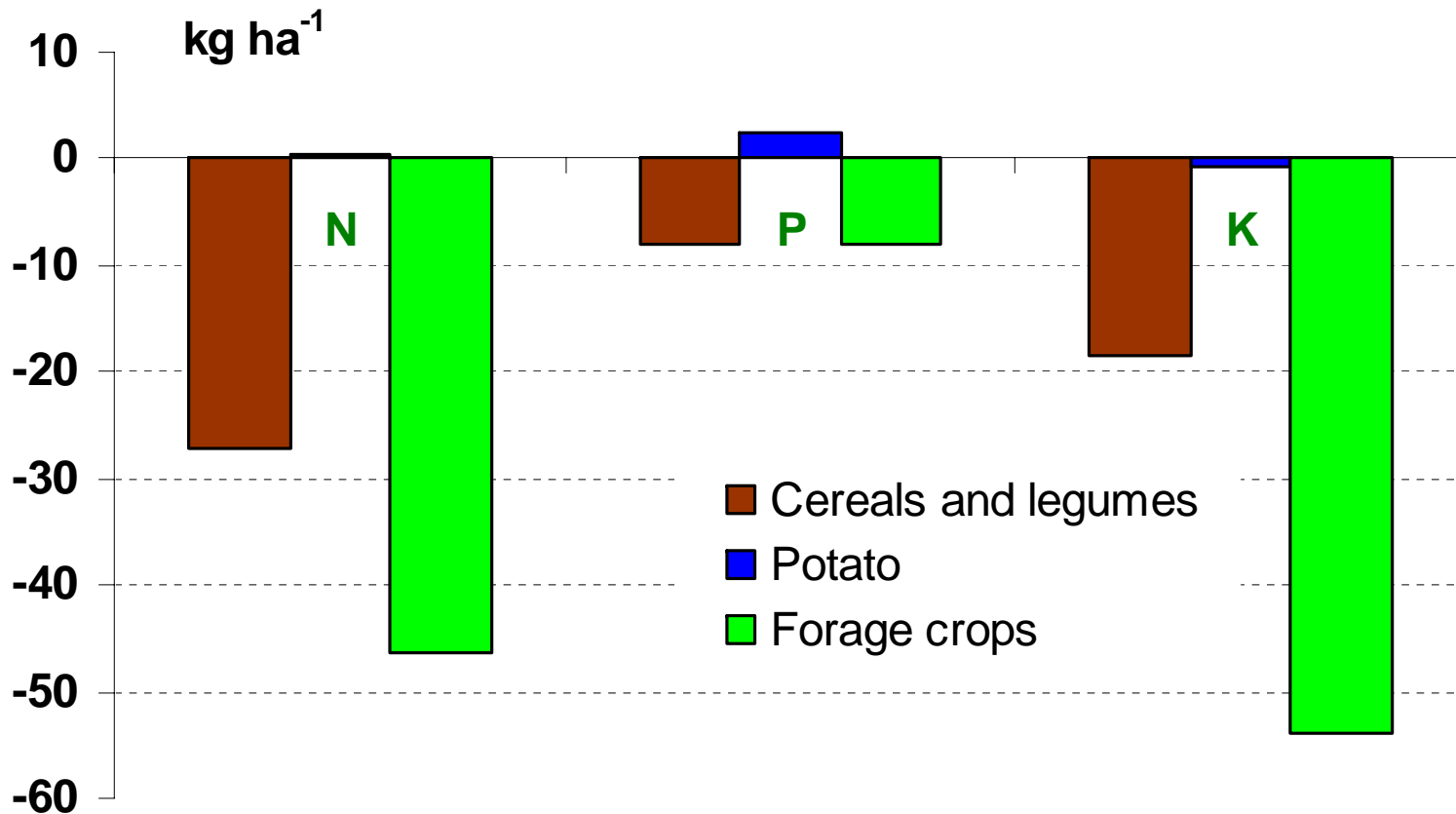
If total balances of NPK are calculated as the difference between total input and the removal of nutrients with harvested products, then **active balances** of nutrients are calculated based on the **plant available inputs**.



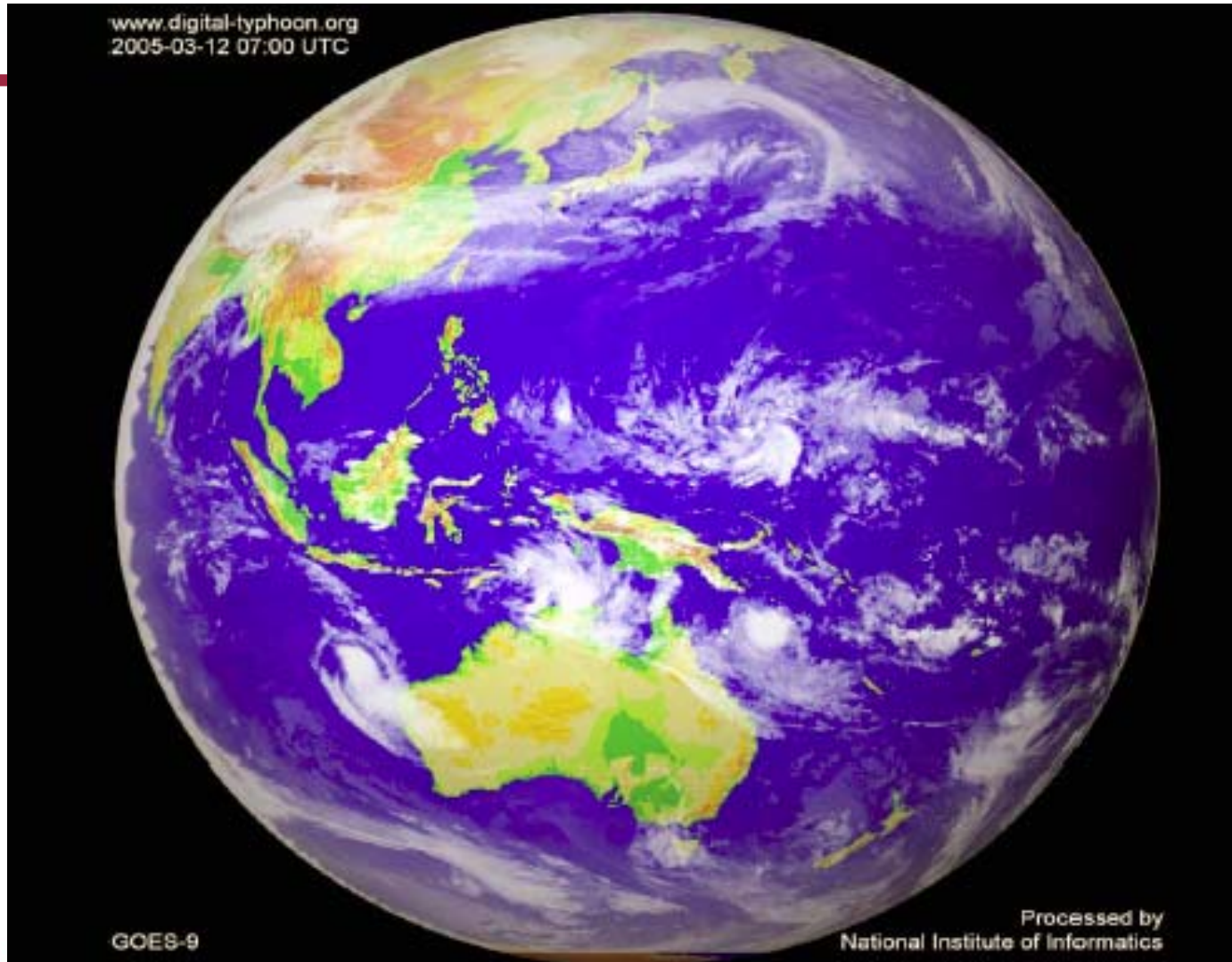
# Active balances of nitrogen, phosphorus and potassium for different field crops as an average for 2001–2003 in Estonia

Agricultural producers can ensure maintaining of soil fertility only in potato cultivation.

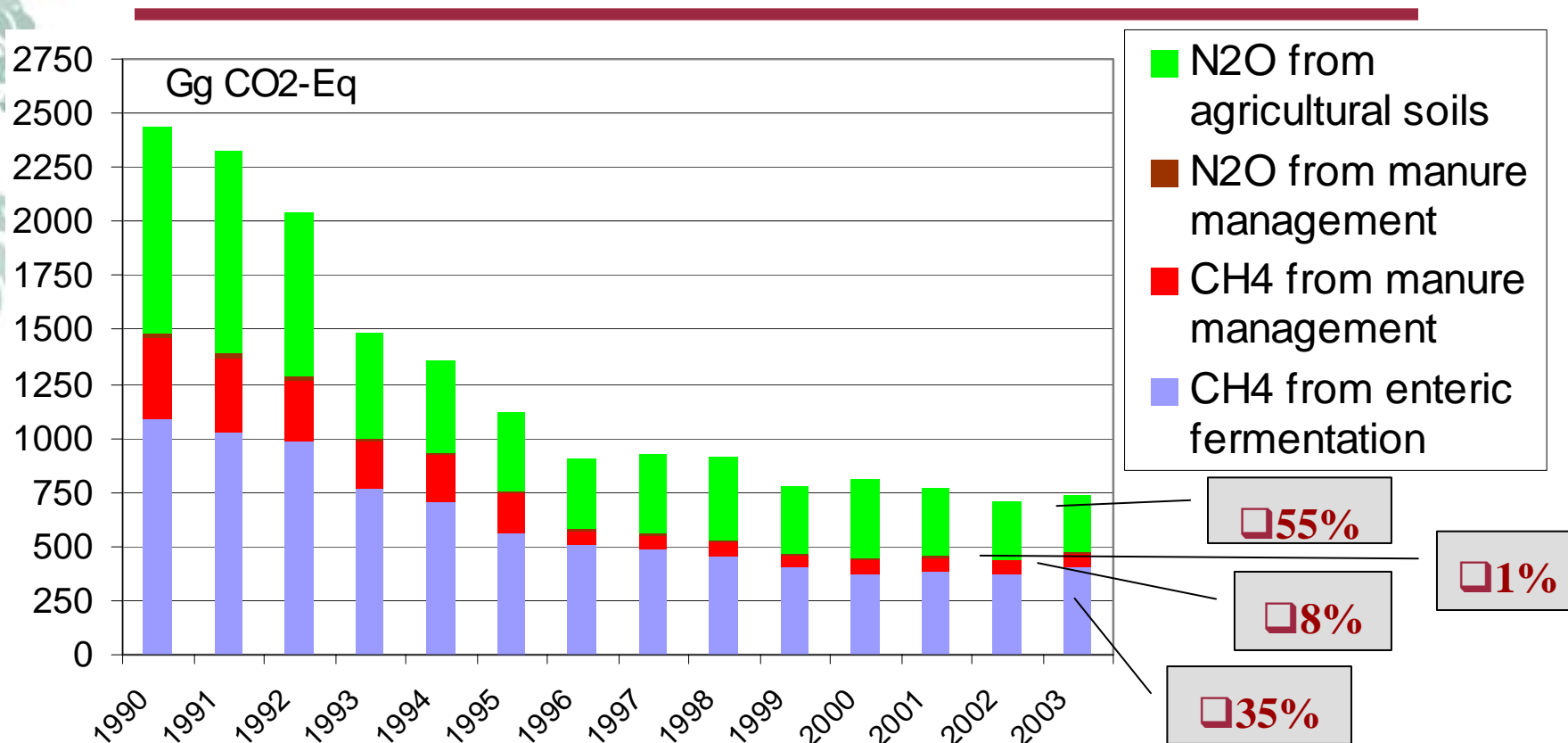
The most negative active nutrient balance is for forage crops



# System “earth” is balanced

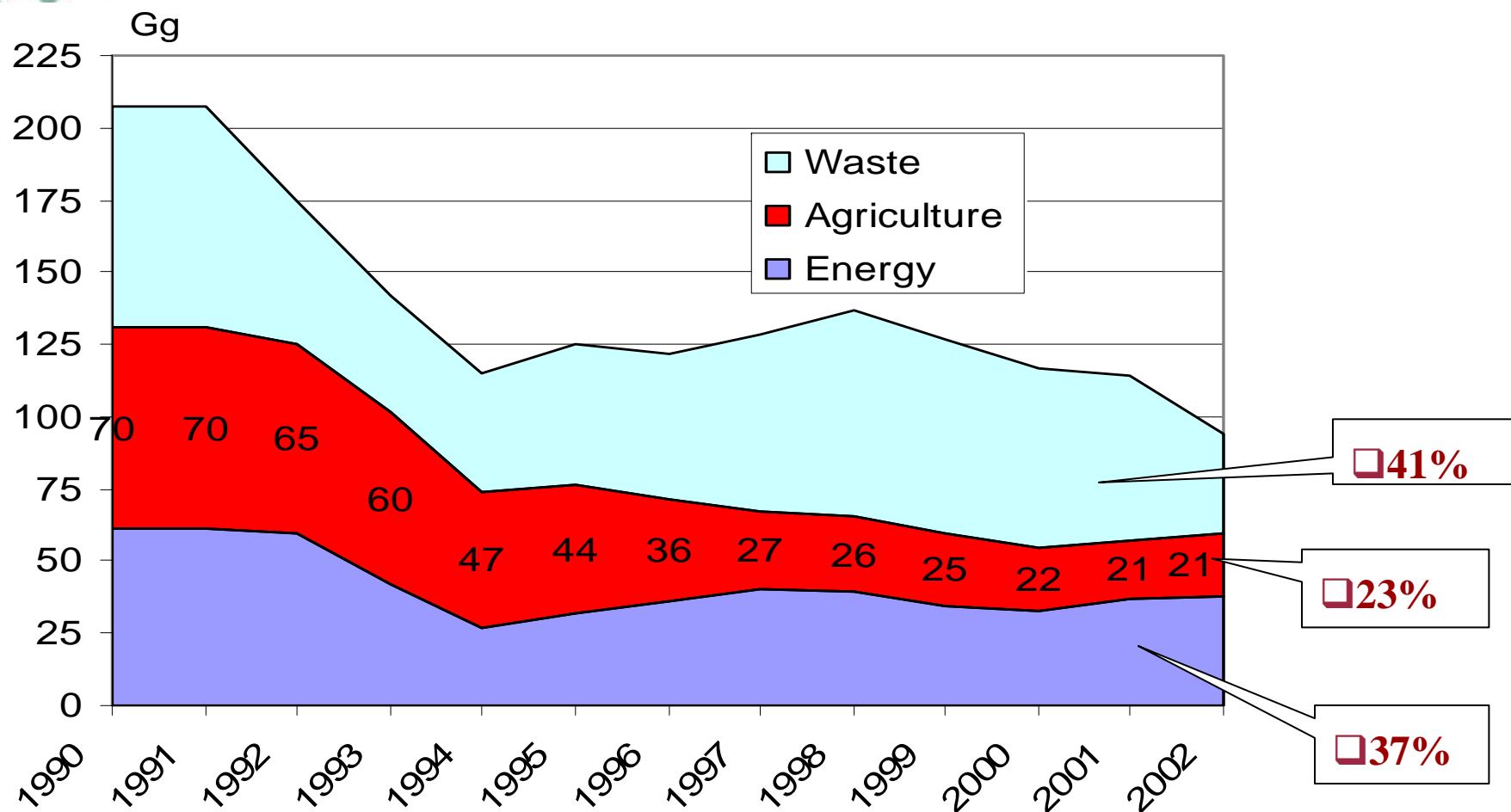


# GHG emissions from agriculture, Gg CO<sub>2</sub>-Eq

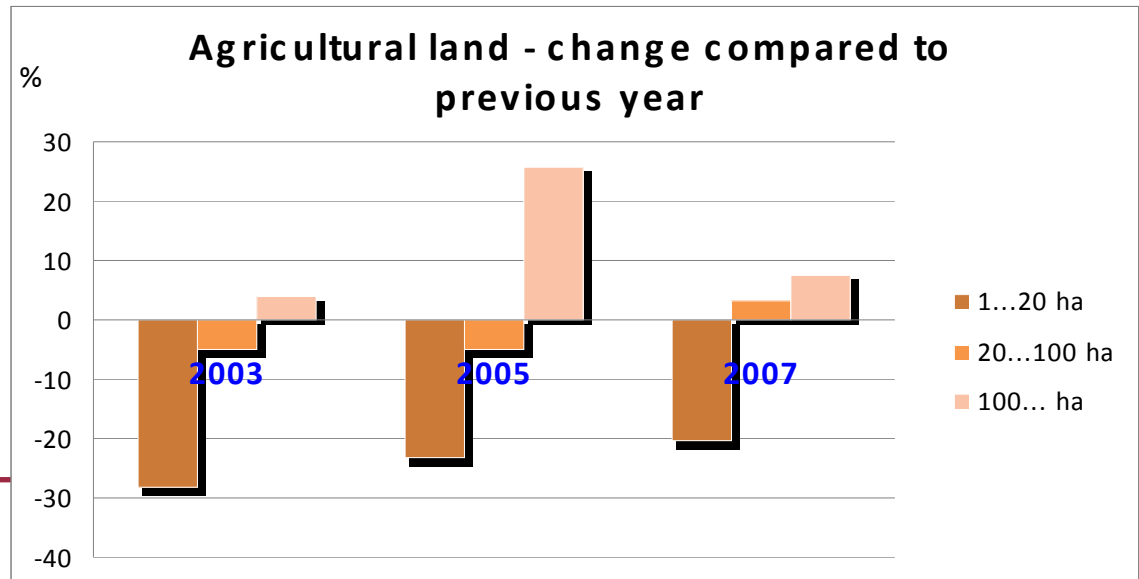
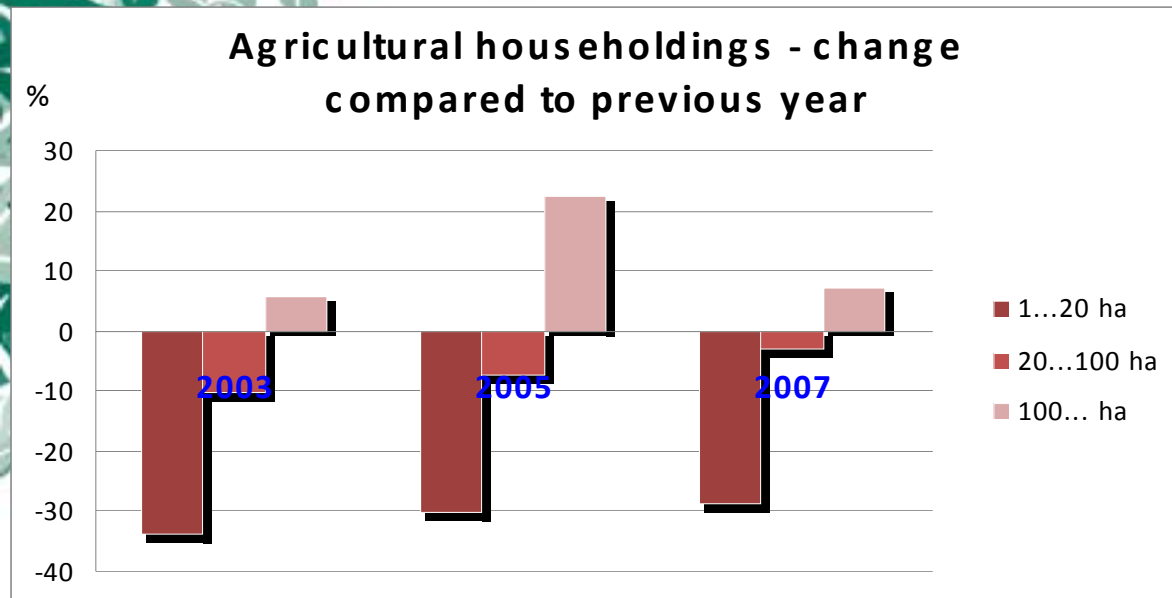


**Estonian agricultural greenhouse gases emissions in 2003 were 732 Gg CO<sub>2</sub> in total.**

# Methane emission

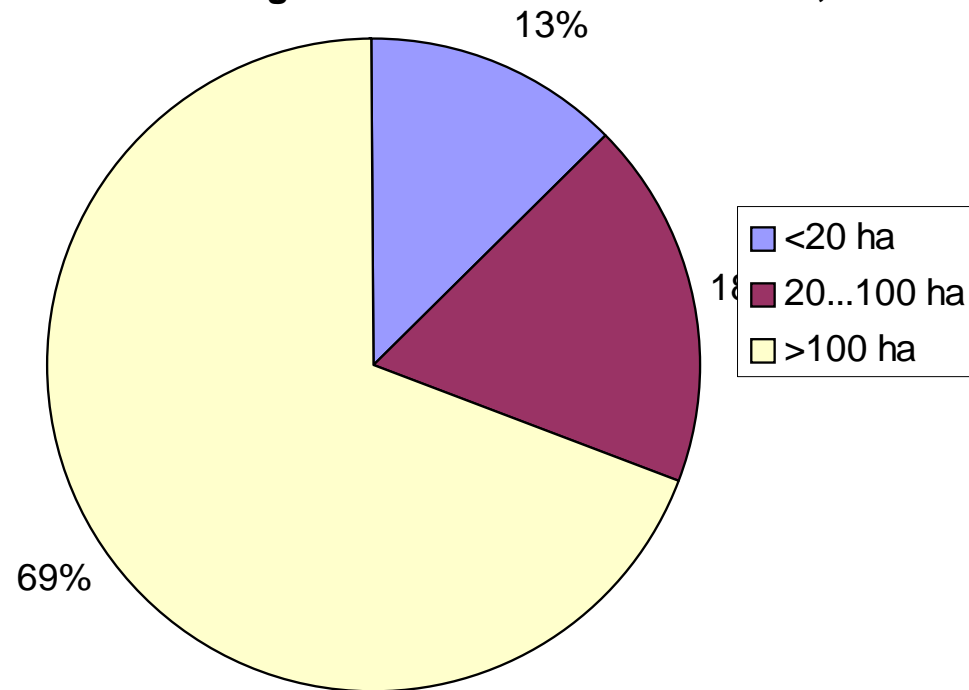


# Are the small farms history?



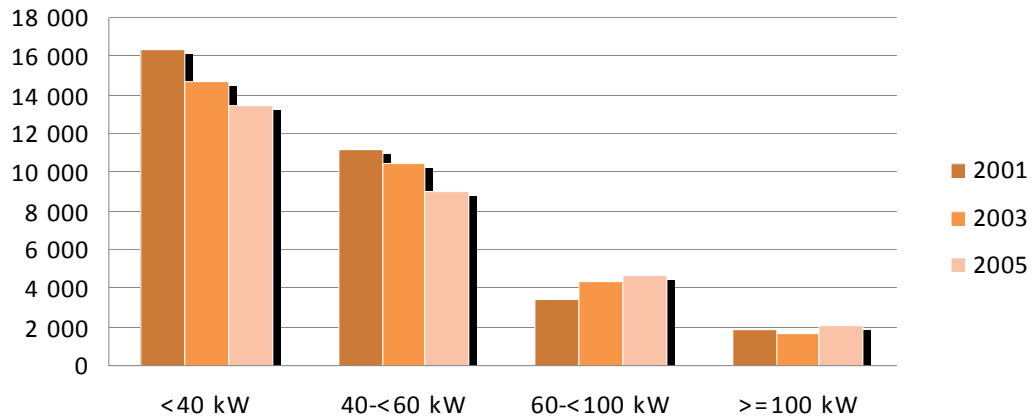


Distribution of agric. land between size classes, %

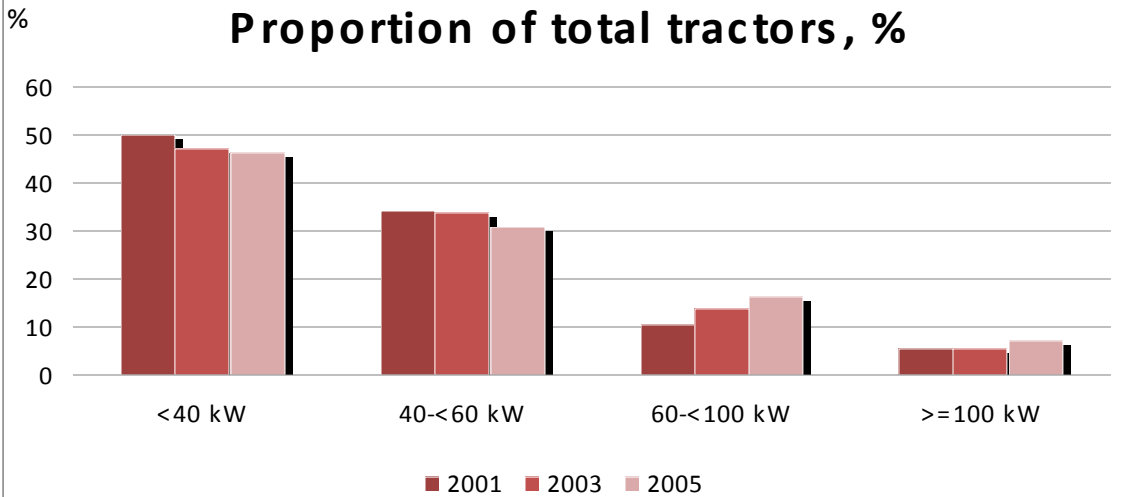




## Number of tractors



## Proportion of total tractors, %







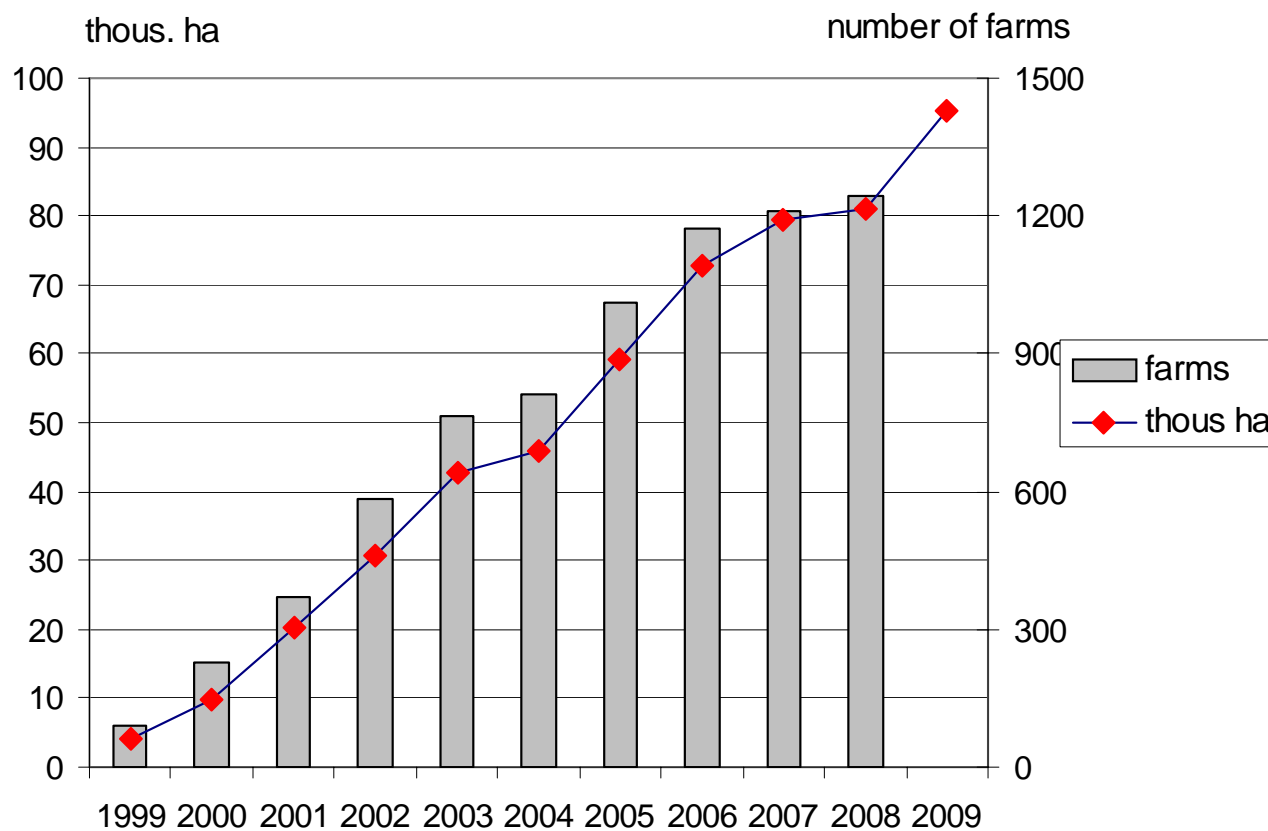
## Farming (in 2008/2009)

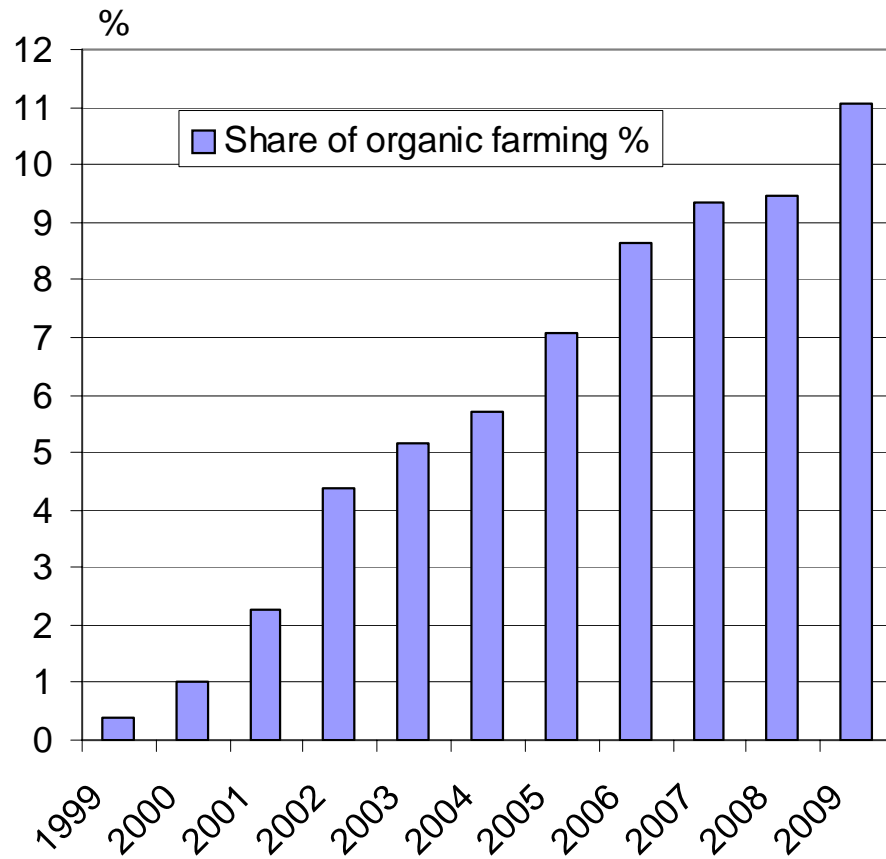
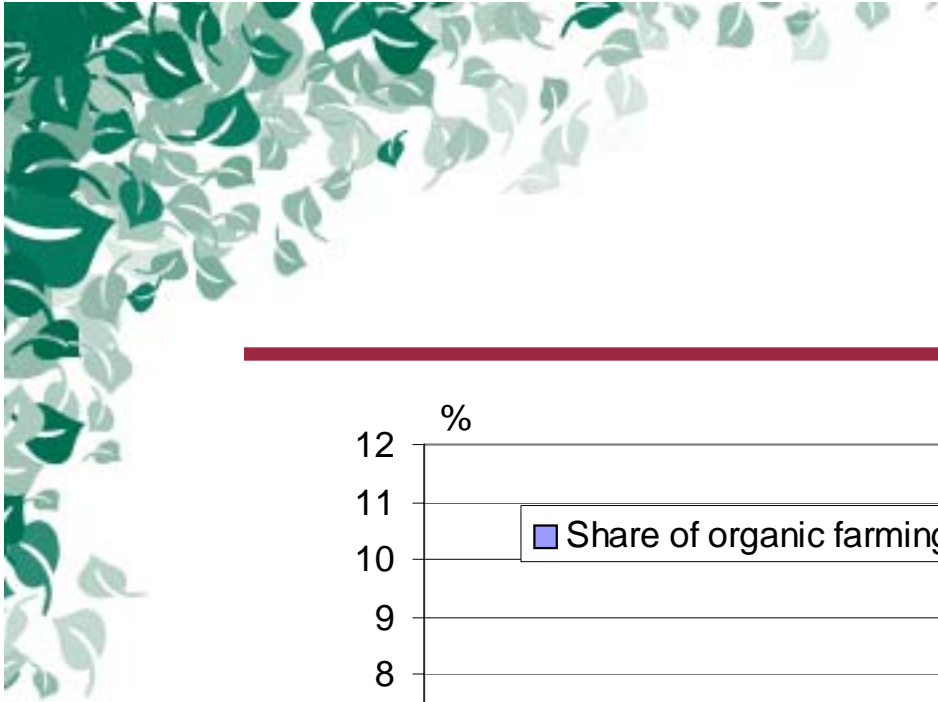
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**Distribution according to the area payments (appr. % from total subsidized area 850 thous. ha)**

- Conventional 35%** (extremely variable practices)
- Environmental-friendly production 55%**
- Organic 10%**

# Organic farming

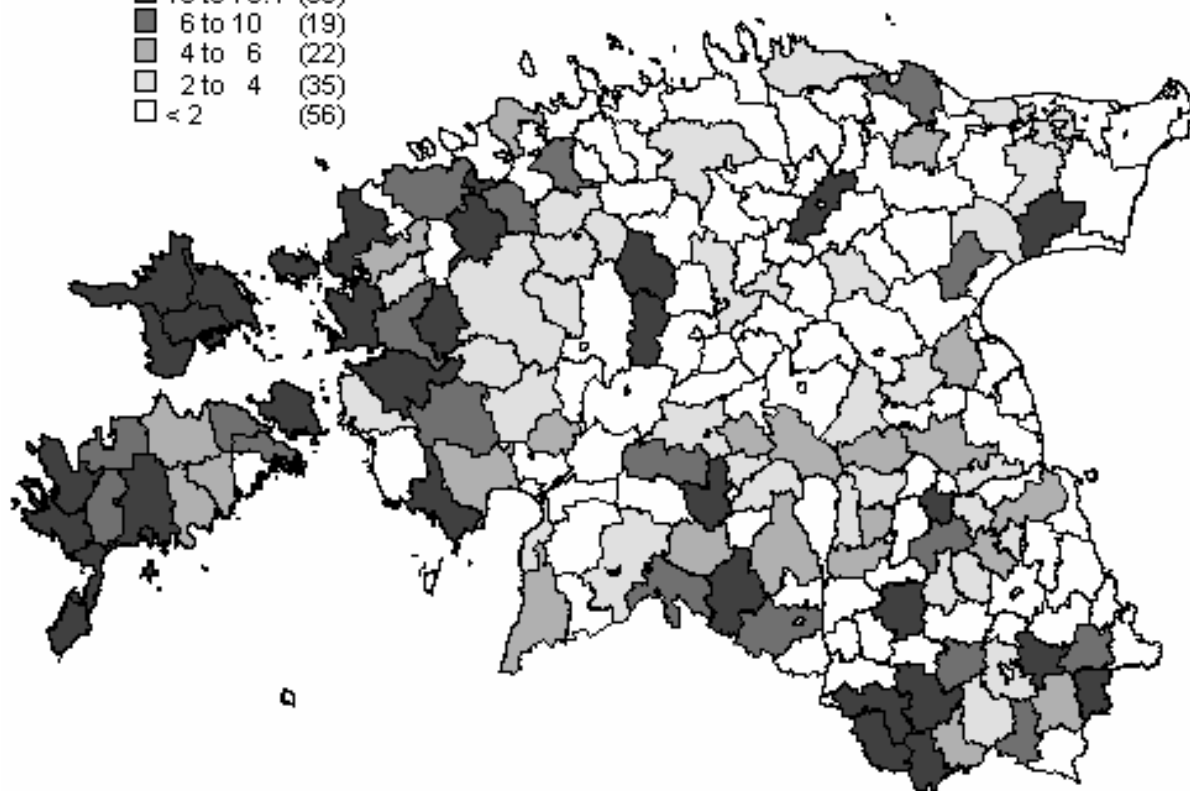




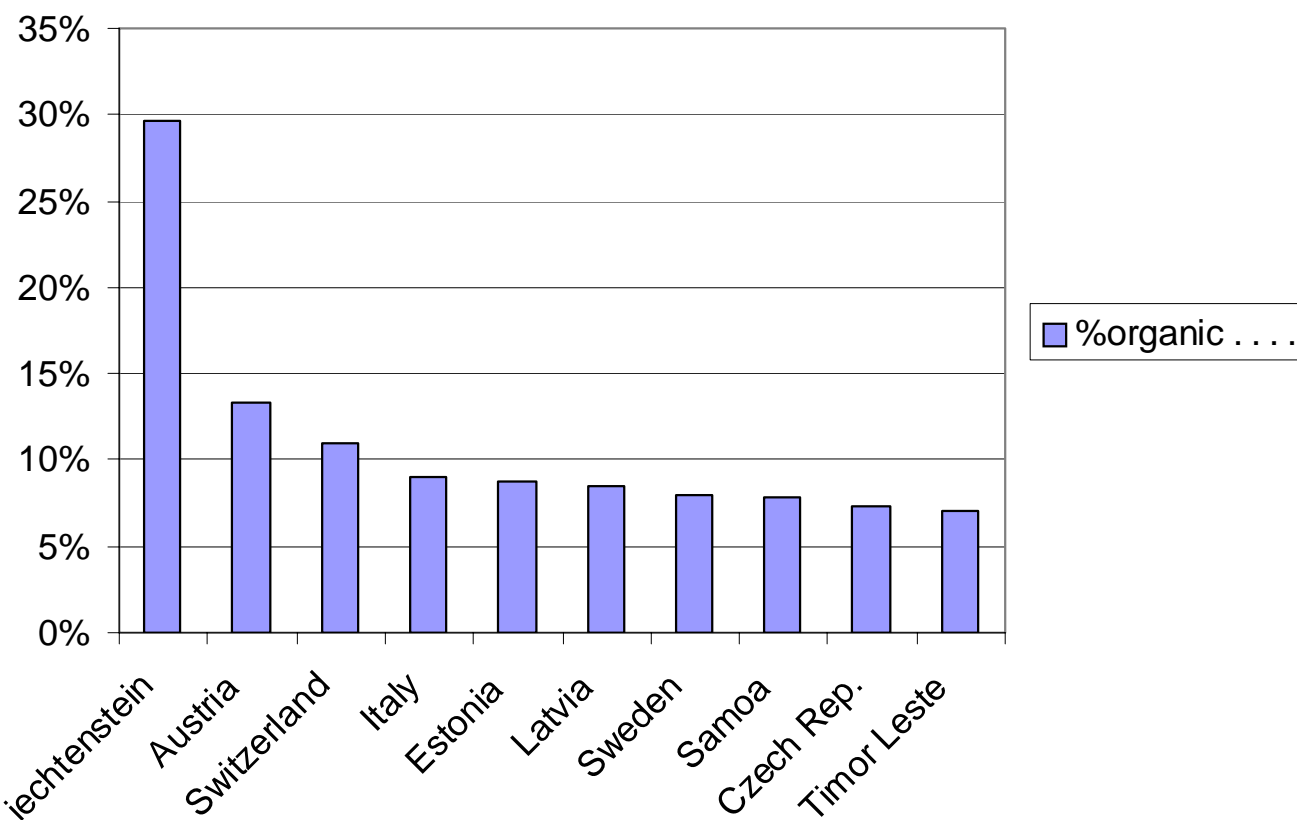
## In 2004

Share of organic area, %

■	10 to 79.4	(33)
■	6 to 10	(19)
■	4 to 6	(22)
■	2 to 4	(35)
□	< 2	(56)



# World TOP 10: in 2007, share of organically farmed area %



Source: FiBL, IFOAM, SOEL 2007-2009



## Share of organic animals, %

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	Cattle	..dairy cows	Pigs	Sheeps	Horses	Poultry
2001	1.3		0.04	2.9	1.1	0.04
2002	1.7		0.1	5.7	5.0	0.1
2003	3.1		0.1	17.5	9.8	0.2
2004	4.0	2.6	0.1	26.9	18.5	0.2
2005	4.7	2.7	0.1	33.2	25.7	0.3



# Share in product volumes?

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## Survey in 2007

- Grain 1,3%
- Potato 1,3%
- Vegetables 0,4%
- Rapeseed 0,1%
- Milk 2,2%
- Meat 1,5% (pork 0%, poultry 0%, beef 5,9%, sheep 23,8%)
- Eggs 0,2%



# What knowledge is missing?

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- Soil tillage (how much minimum or no-tillage?)
- Manure systems
- Farm level real production intensity
- FADN collects (only) monetary values
  
- What we have
  - *Site-specific data, soil maps (digital format 1:10,000)*



# Täna tähelepanu eest!

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This material has been produced in ENPOS project. ENPOS is acronym for *Energy Positive Farm*.

The project partners are

- University of Helsinki, department of Agricultural Sciences – Agrotechnology
- MTT Agrifood Research Finland - Agricultural Engineering
- Estonian University of Life Sciences

Project home page is at <http://enpos.weebly.com/>

The project is financed by the EU Central Baltic IV A Programme 2007-2013

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**ENPOS** Energy Positive Farm



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