



P-recycling in Swedish Agriculture

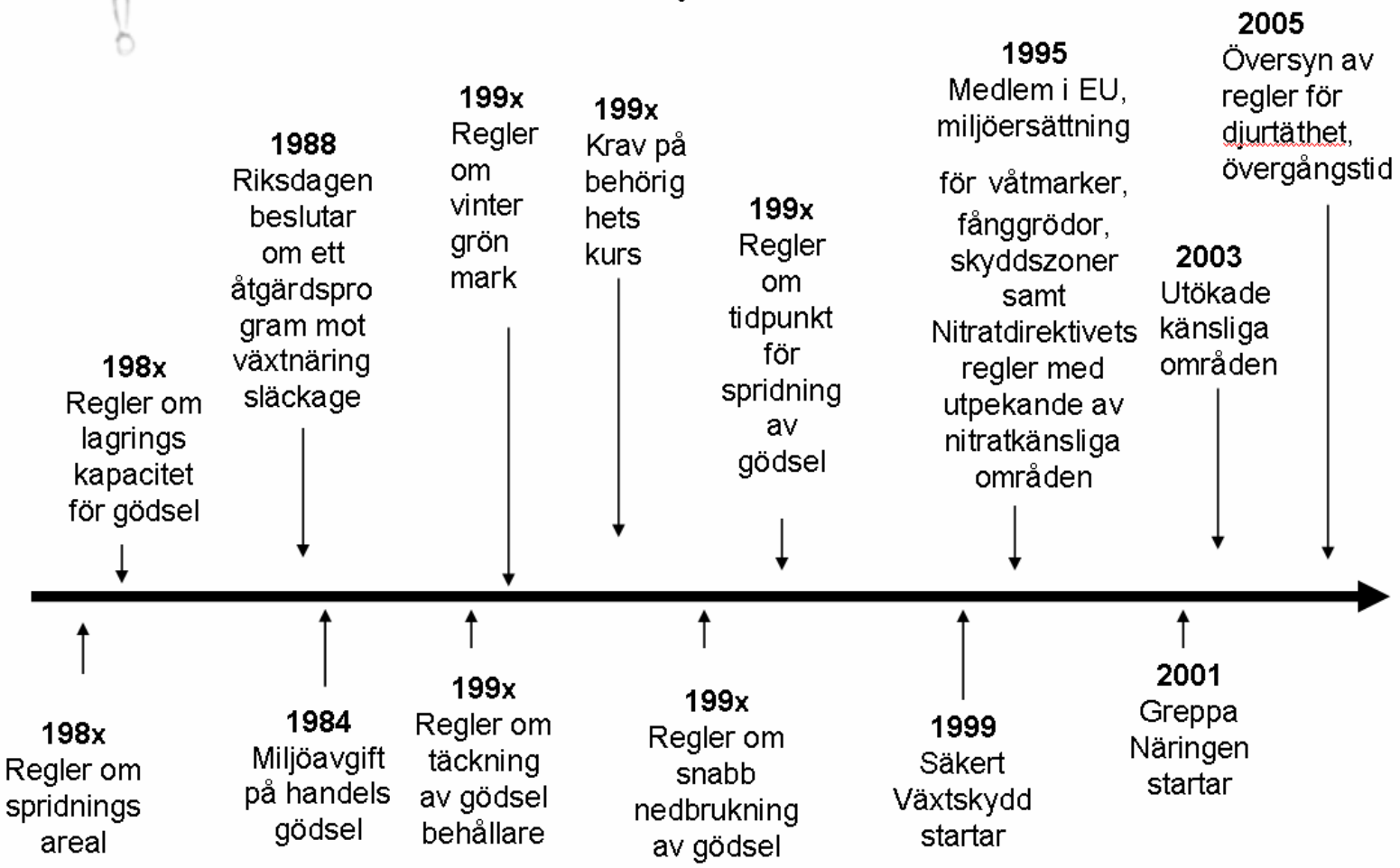
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c/o Federation of Swedish Farmers



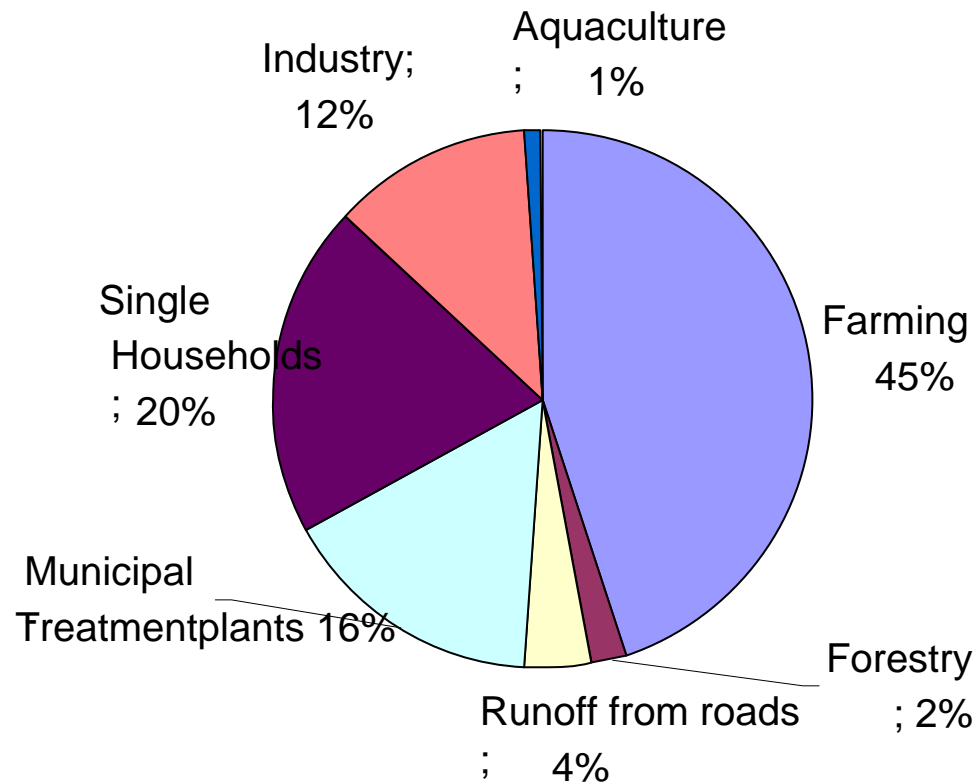


A long time of history in combating N and P losses





Farming is estimated to be the single largest source of P emissions to the surrounding seas in Sweden



Source: Fosforutsläpp till vatten. Naturvårdsverket Rapport 5364





Average P loss and P surplus in Swedish Agriculture

| | P loss in kg / ha | P surplus in kg / ha |
|------------------|-------------------|----------------------|
| Denmark | 0,4 | 11 |
| Finland | 1,1 | 8 |
| Lithuania | 0,25 | 3 |
| Estonia | 0,2 | 4 |
| Poland | <i>n.d</i> | 3 |
| Germany | <i>n.d</i> | 4 |
| Sweden | 0,5 | 2 |
| Latvia | <i>n.d</i> | 0 |

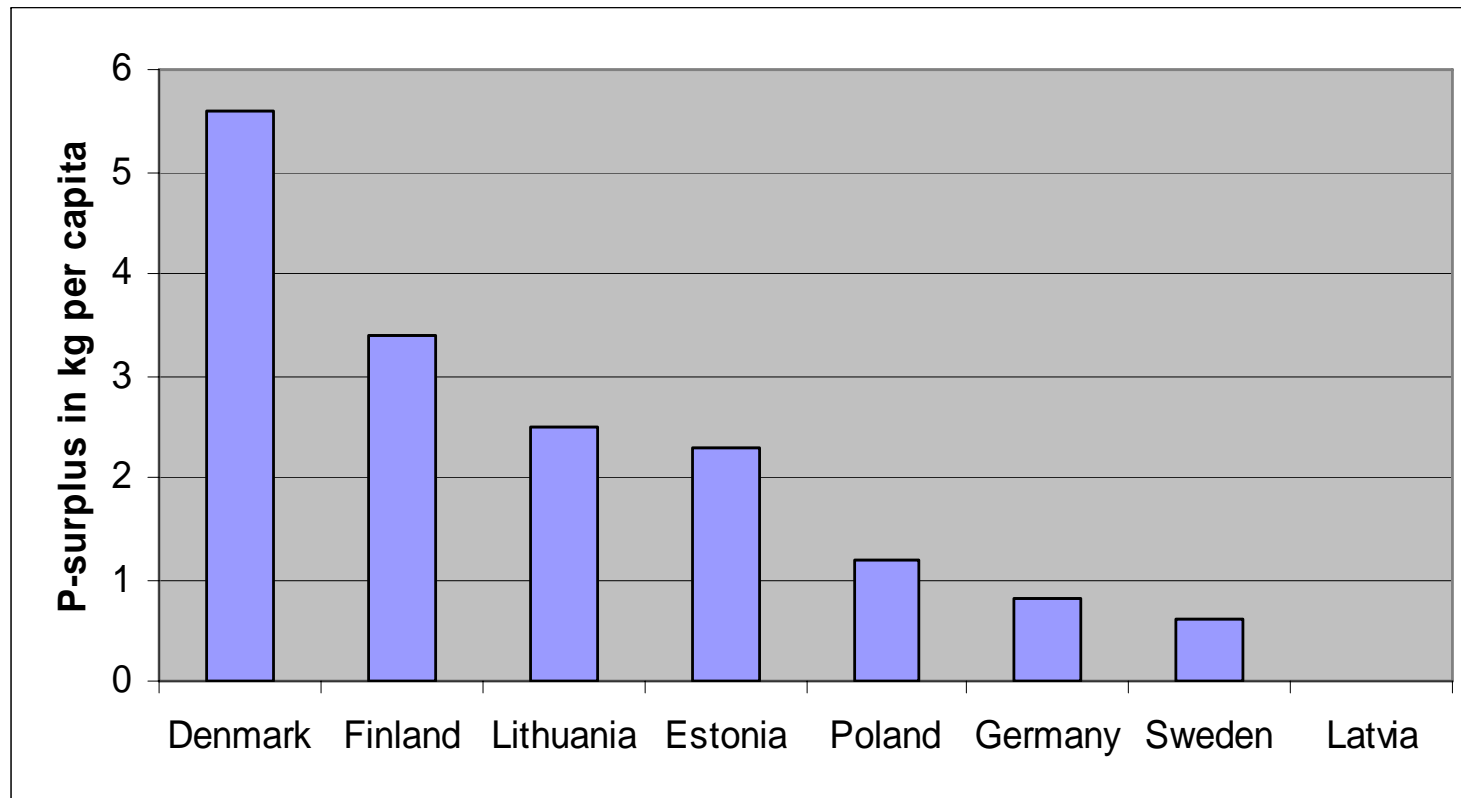
Source: Agriculture and impact on the Baltic Sea – a comparison of indicators, SLU, Uppsala, Sweden





P-surplus in agriculture in kg per capita

derived from EEA core set of indicators



Source: Agriculture and impact on the Baltic Sea – a comparison of indicators, SLU, Uppsala, Sweden





Summary of some Swedish P-legislation for farmers

1. It is not allowed to apply more than 22 kg P / ha from manure. This is a substantially more strict regulation than 170 kg N/ha as in Nitrates directive. We launched this before our membership in EU in 1995. Some countries still accumulate P in soil.
2. Requirement of 8 or 10 months of storage capacity for manure for most farms.
3. Somewhat more generous closed periods for applying manure in autumn and winter compared to some countries. (short closed periods)





Summary of Swedish Agri-environmental payments to reduce P-losses

1. 100 Euros for bufferzones. Must be at least 6 meters wide and max 20 meters. Must be permanent grass. No spraying, no fertilizer.
2. 20 000 Euros / ha for creating wetlands as a one time sum and 300 Euros per year / ha. We guess about 5 kg P / ha retained in the pond.
3. 100 Euros / ha for growing a catchcrop. Usually in cereals and usually it is ryegrass. (*Lolium Perenne*). Reduces N leaching but unclear if it affects P-losses.





Heavy investment in campaign for on-farm advice

1. In year 2000 we launched the campaign Greppa Näringen. "Focus on Nutrients" together with the Swedish Board of Agriculture.
2. Until today about 7 000 farmers are members and 28 000 home visits have been made. Costs 20 million euro for 9 years.
3. We see concrete results. As example: P surplus on pigfarms have decrease substantially.



www.greppa.nu





Does the legislation and the Agri-environmental payments and the extension campaign help?

P leaching are decreasing, but too slow. Our national modelling excercises indicate a 10 percent reduction in P-losses from agricultural land from 1995 to 2005





Scientific challenges

1. Animal scientists in Sweden estimate an overuse of P in animal fodder of about 3 000 tons. How can this be reduced and if so, is it possible to calculate a reduction in P-leaching?
2. How much of the particulate-P transport in rivers originates from erosion in riverbanks and how much originates from soil erosion from field? Such source apportionments have not been made in Sweden.
3. Ongoing discussion about the actual role of particulate P-losses in eutrophication. Is it bioavailable at all? If so, is there a time lag?

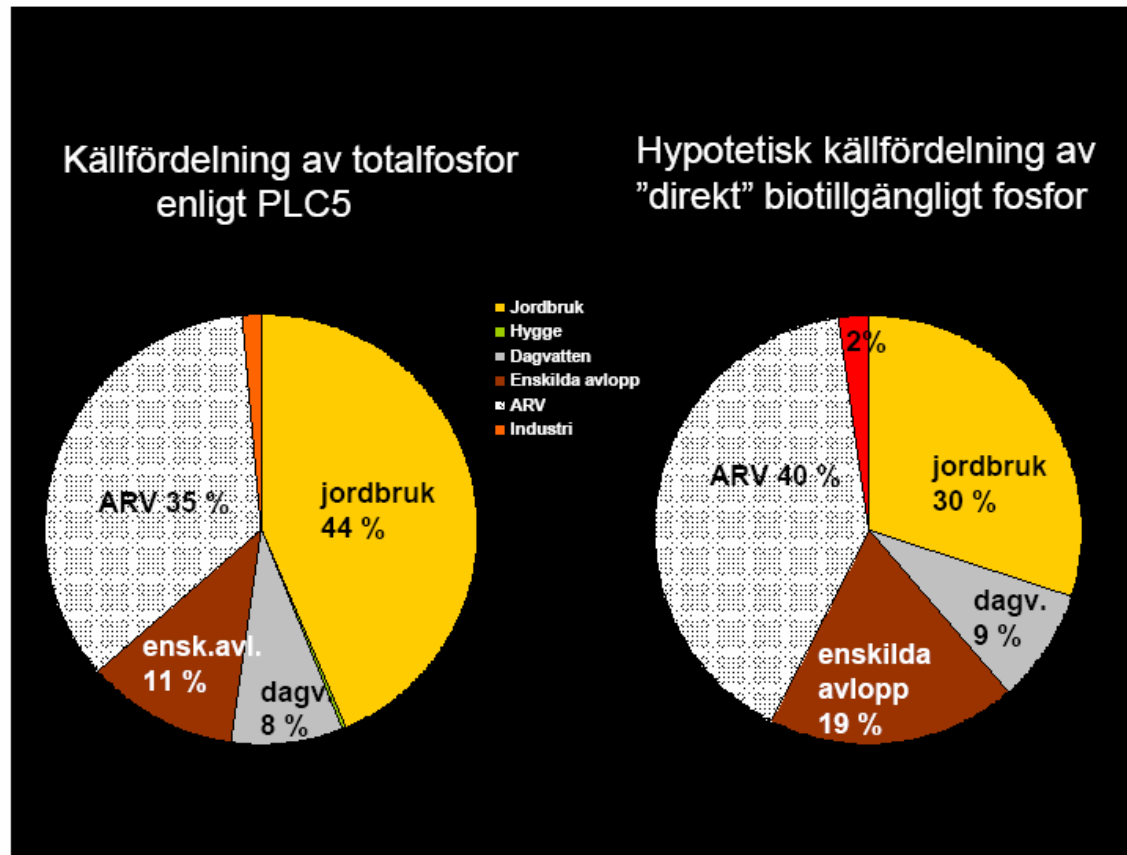




Source
apportionment
according to PLC5

Hypothetical source
apportionment of
direct bioavailable P

Water
district of
North Baltic
Sea
(approx Lake
Mälaren)



Source: Dr Martin Larsson, County Administration Board of Västmanland.



More challenges and new ideas

In 2010 Sweden will launch three new measures in our EU-Agrienvironmental scheme:

1. Economic support for bufferzones diagonally to waterstreams
2. Economic support for "super-sedimentation ponds" ("Braskerudponds")
3. Economic support for controlled drainage as in Finland





More challenges and new ideas

- How can we reach more farmers voluntarily with our campaign "Focus on Nutrients"?
- How can we pin-point bufferzones to the right places in the landscape if it is voluntarily as a part of the agri-environmental scheme?
- This year we are testing Lime-filters in drainage wells on the field to reduce soluble P in drainage water.





... whats going on in P-Sweden this year?

1. Present problems in finding measures to reach the Swedish P-quota of 300 tons for Baltic Sea Action Plan. Will likely cause debate this summer when the bluegreen algae bloom soon starts.
2. Ongoing debate wether to spread sludge or not in fields. The high price of mineral P encourages farmers to use more sludge but there is a fear for accumulation of heavy metals in the soil.
3. The EU Water Framework directive has turned out to be a EU Phosphorus directive. Very much focus on P losses from all sources.





Thank you for listening.

