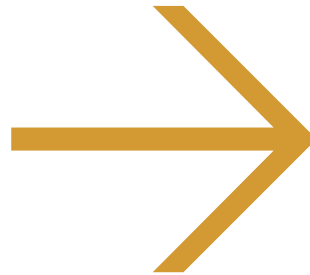


# Reducing the use of chemical fertilizer in the Netherlands

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## Outline

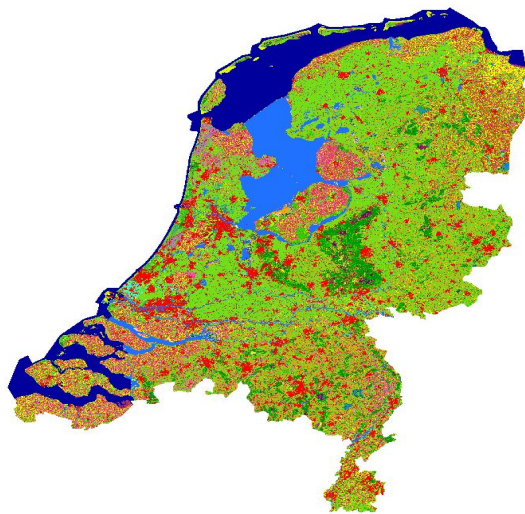
1. Introduction
  - National policy on minerals
  - Effects on soil input
  - Effects on groundwater quality
2. The Nitrates Directive and fertilizer use
3. Conclusions and discussion

# Introduction



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## → The Netherlands



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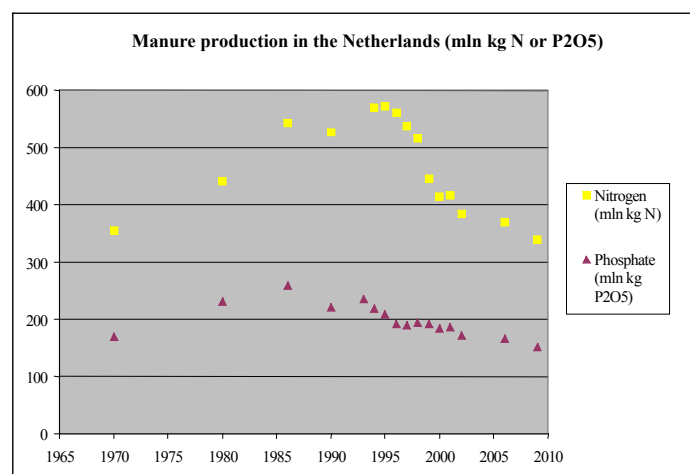


## National policy on minerals

- In the 80s, phosphorus application standards.
- In the 90s, focus switched to N (EU-Nitrates Directive), so:
  - to control **production**, production rights for cattle and poultry
  - milk quota at EU-level
  - to control **application**, loss-standards for grassland and crops (MINAS: N and P)
  - losses calculated at the farm gate as:  
 $input - default\ losses - output$
  - phosphorus fertilizer not included in the system.
- Levy for losses above the standard.

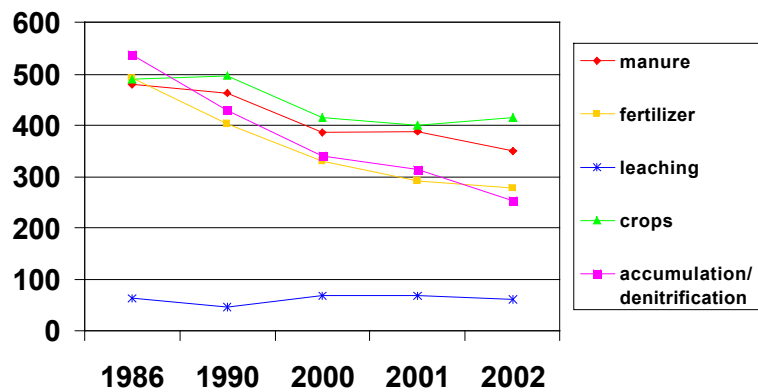


## Manure production



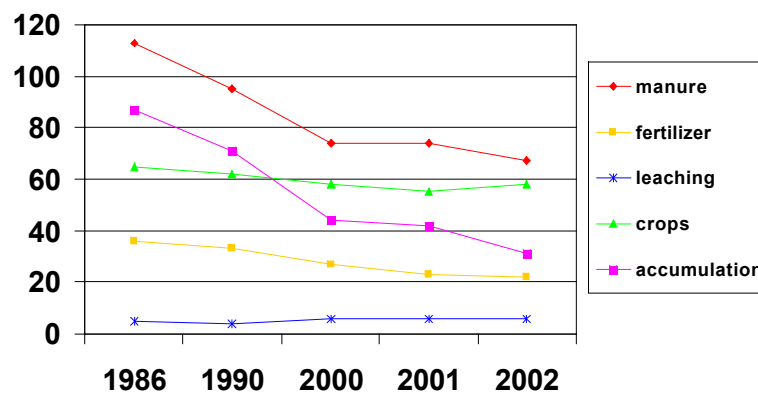
➔ Effects on soil input: Nitrogen

Nitrogen balance (mln kg N)



➔ Effects on soil input: Phosphorus

Phosphorus balance (mln kg P)



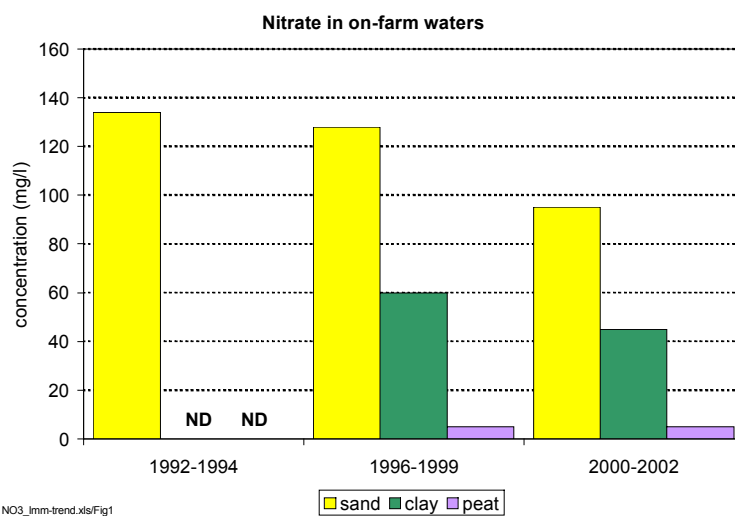


## Effects on crop yield

- Input was reduced by 35% (N) and 40% (P)
- Crop yield was reduced by 15% (N) and 11% (P)



## Effects on groundwater quality



## The Nitrates Directive and fertilizer use



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### The EU-Nitrates Directive (1)

- The Directive (1991) aims to reduce pollution to waters by nitrates from agricultural sources.
- The Directive formulates:
  - a target: max. 50 mg/l of nitrate and reduction of eutrophication.
  - a means: application standard of max. 170 kg N per hectare of manure.
- It offers the possibility to apply more than 170 kg N if this can be scientifically underpinned (growing season, high uptake..).
- This possibility is called “a derogation”.

VROM



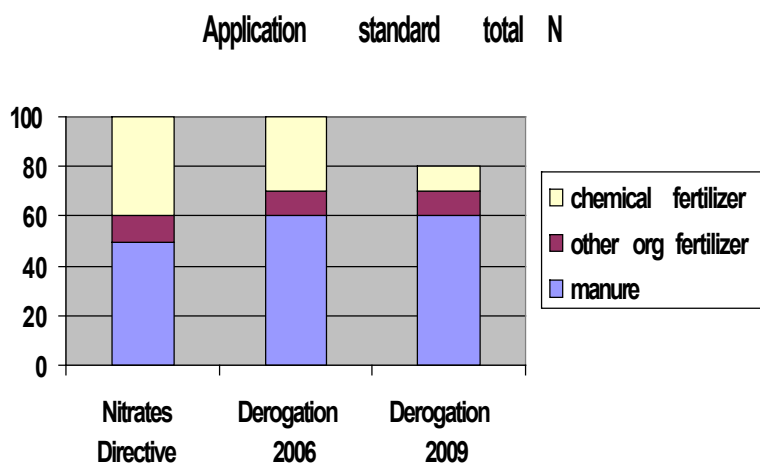
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## → The EU-Nitrates Directive (2)

- The Netherlands claims a maximum application higher than 170 kg N;
- The scientific basis for the derogation is available: 250 kg N per hectare from manure on grassland (long growing season and high uptake).
- New standards 2009 will allow for the standard of 50 mg/l;
- The Nitrates Committee (Member States) has just voted on the Dutch derogation.

## → ..and fertilizer use (1)

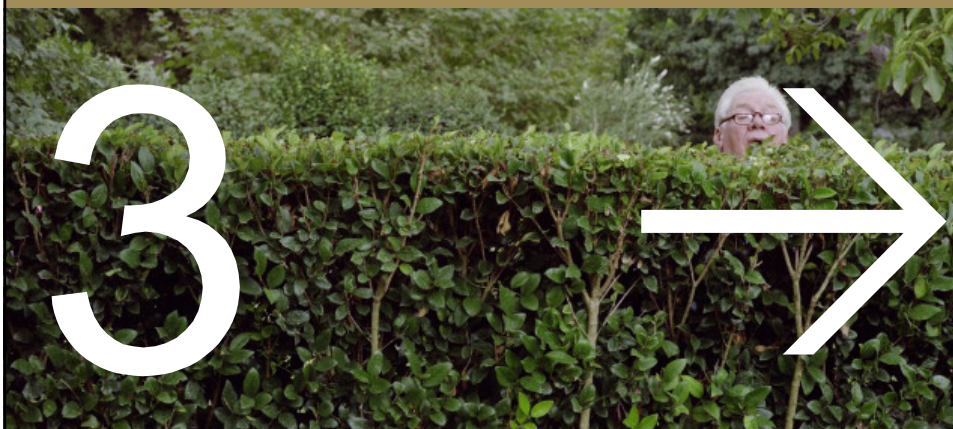




## ..and fertilizer use (2)

- Application standards per crop;
- Distinction between animal manure and chemical fertilizer;
- Dutch dairy farms will have to export manure and will buy chemical fertilizer;
  
- Growing interest in treatment of manure to obtain a fertilizer-like product;
- Rapid increase in digestion installations creates opportunities: energy and heat are available.

## Conclusions and discussion







## Conclusions and discussion (1)

- Both application standards and loss standards have reduced nitrogen and phosphorus input in the soil in the Netherlands;
- Although inputs were reduced by 35% (N) and 40% (P), yields were reduced by only 15% (N) and 11% (P);
- Also well educated farmers appear to be inclined to over-fertilize their crops.



## Conclusions and discussion (2)

- Under conditions where animal manure is available, use of chemical fertilizer should be minimized;
- If chemical fertilizer is used, it should be Enhanced Efficiency Fertilizer;
- Transformation of animal manure in a chemical fertilizer-like product is highly desirable;
- The rapid increase in digestion installations for manure offer good possibilities for such a product;
- The fertilizer industry is challenged to participate in this process.



### Conclusions and discussion (3)

- Under conditions where animal manure is lacking, Enhanced Efficiency Fertilizer should be introduced as soon as possible;
- Regular fertilizer production should be replaced by EEF production.

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Thank you for your attention

