

Highlights of 25 years with the Danish Agricultural Monitoring Program



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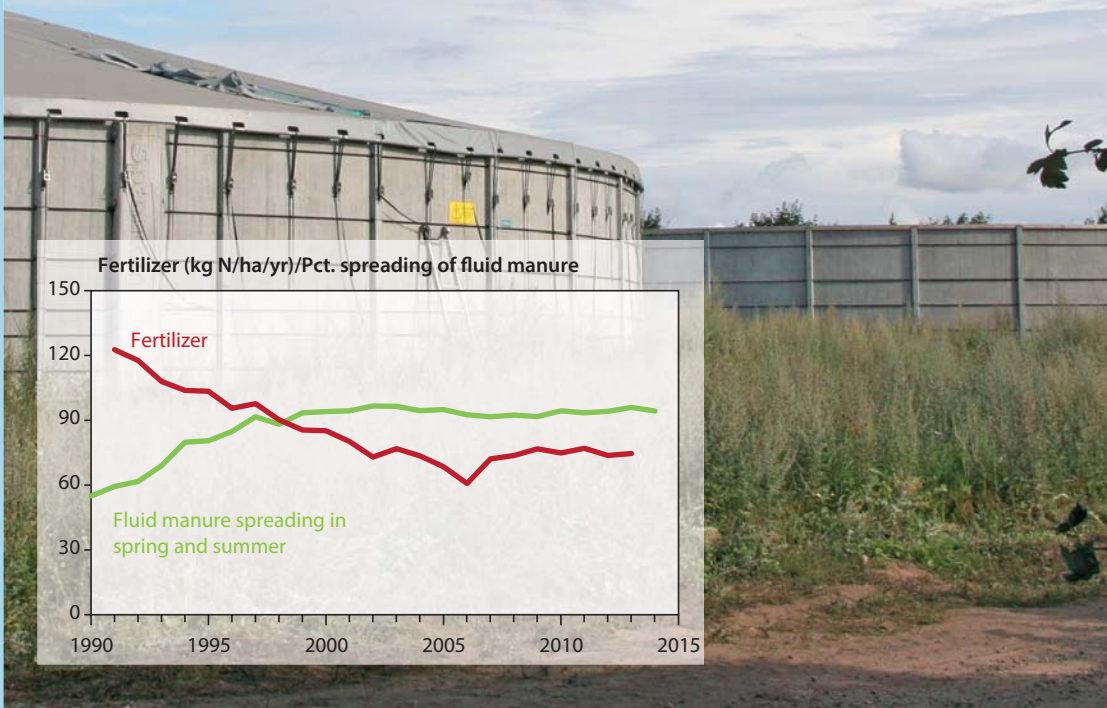
Eight Action Plans for the Aquatic Environment have implemented a wide range of measures to reduce the agricultural load of nutrients to the Danish surface and coastal waters. The effectiveness of the measures is being followed in a dedicated agricultural monitoring program in five small agricultural dominated catchments.

Due to investments in longer manure storage capacity, improved spreading techniques and the implementation of a N-quota system Danish farmers have been able to increase the utilization of nitrogen in manure. Together with an increased use of catch crops the implemented measures contributed to a decreased nitrate leaching from the root zone and a significant ($P < 0.01$) lower nitrogen transport in four out of five monitored streams.

The measured nitrate concentrations in soil water (1.0 m below soil surface) have decreased since 1990 approaching the EU Nitrate Directive limit of 50 mg nitrate l⁻¹.

The experience gained from the Danish Action Plans for the Aquatic Environment clearly demonstrates that regulation of fertilizer utilization and utilization of animal manure is an effective measure to reduce diffuse nitrogen emissions from agriculture. However, it also demonstrates the complexity of defining an efficient regulatory system and confirms the need for effective control measures, and a continuous monitoring and evaluation program.

INCREASED STORAGE CAPACITY



MONITORING PROGRAMME

Measuring programme

Root zone water, 1 m	32 sites
Drainage water	7 sites
Upper groundwater, 1.5-5 m	100 sites
Streams	5 sites

Annual interviews with farmers

Crops
Animals
Fertilizers
Manure

Trend in streams concentration of total nitrogen in the period 1989/90–2012/13 with relative change compared to 1989. *** 1% level, ** 5% level, ns: not significant.

	Total N mg N/L/yr	Rel. change %	Significance level
Højvads Rende (LOOP 1)	-0.054	-26	n.s.
Lillebæk (LOOP 4)	-0.198	-55	***
Horndrup Bæk (LOOP 3)	-0.156	-60	***
Odderbæk (LOOP 2)	-0.054	-24	***
Bolbro Bæk (LOOP 6)	-0.013	-25	***

The catchments are selected to represent the main soil types and the variation in livestock density, crops and climatic conditions found within the country.

