Monitoring of the Environmental Impact of Manure Handling in Animal Farms

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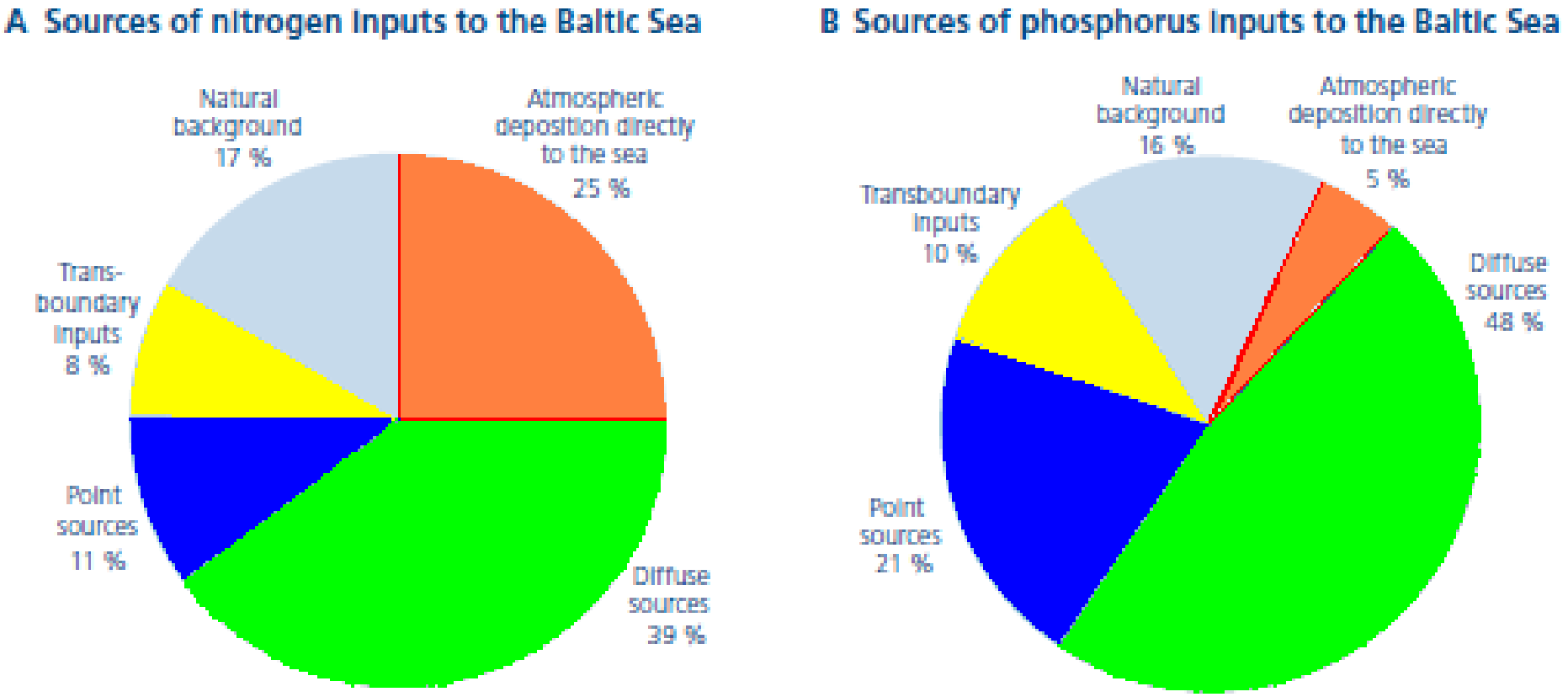
Agriculture contribute 70-90% of N and 60-80% of P non-point pollution load to the Baltic Sea.

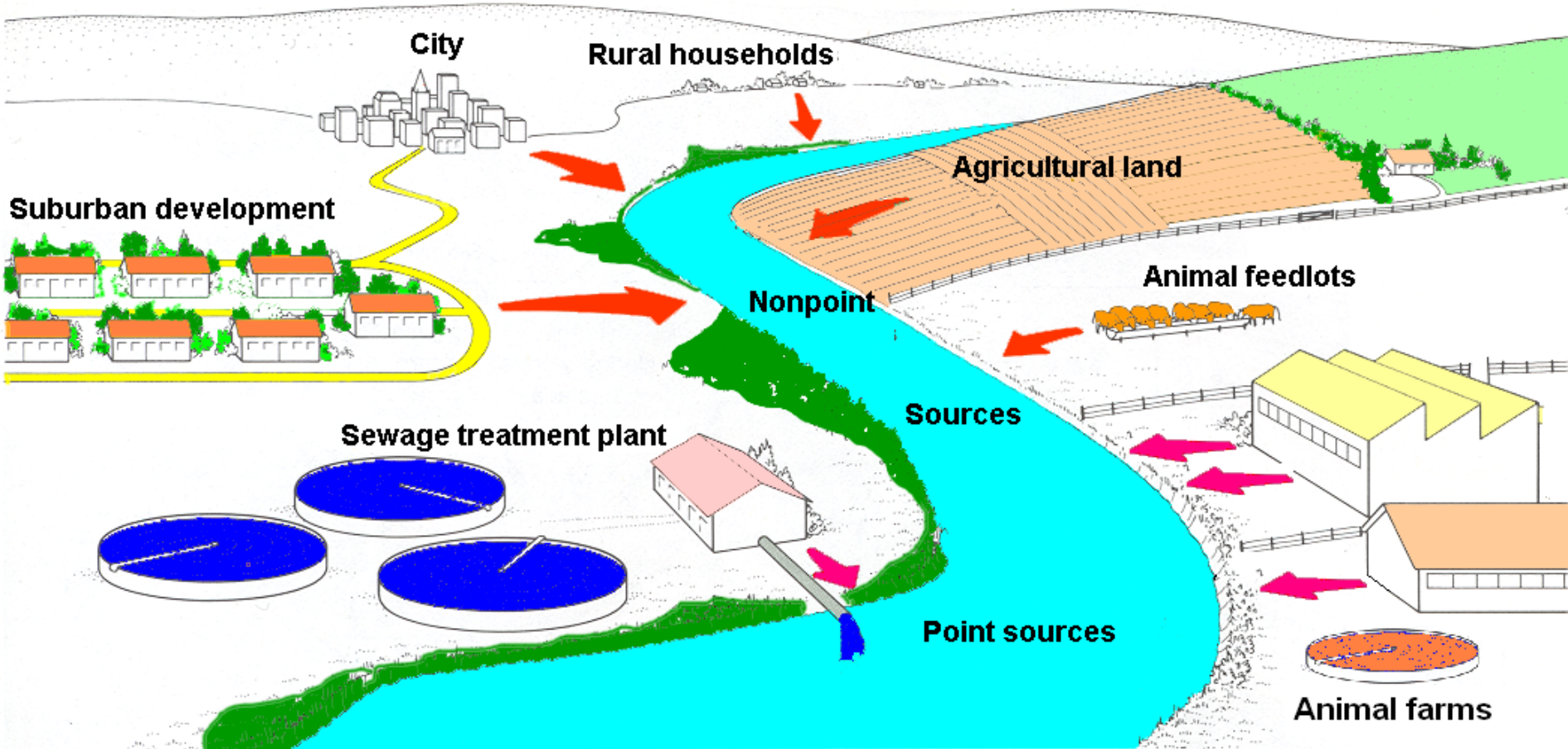
Source: The Fifth Baltic Sea Pollution Load Compilation (PLC-5). Balt. Sea Environ. Proc. No. 128. 2011.



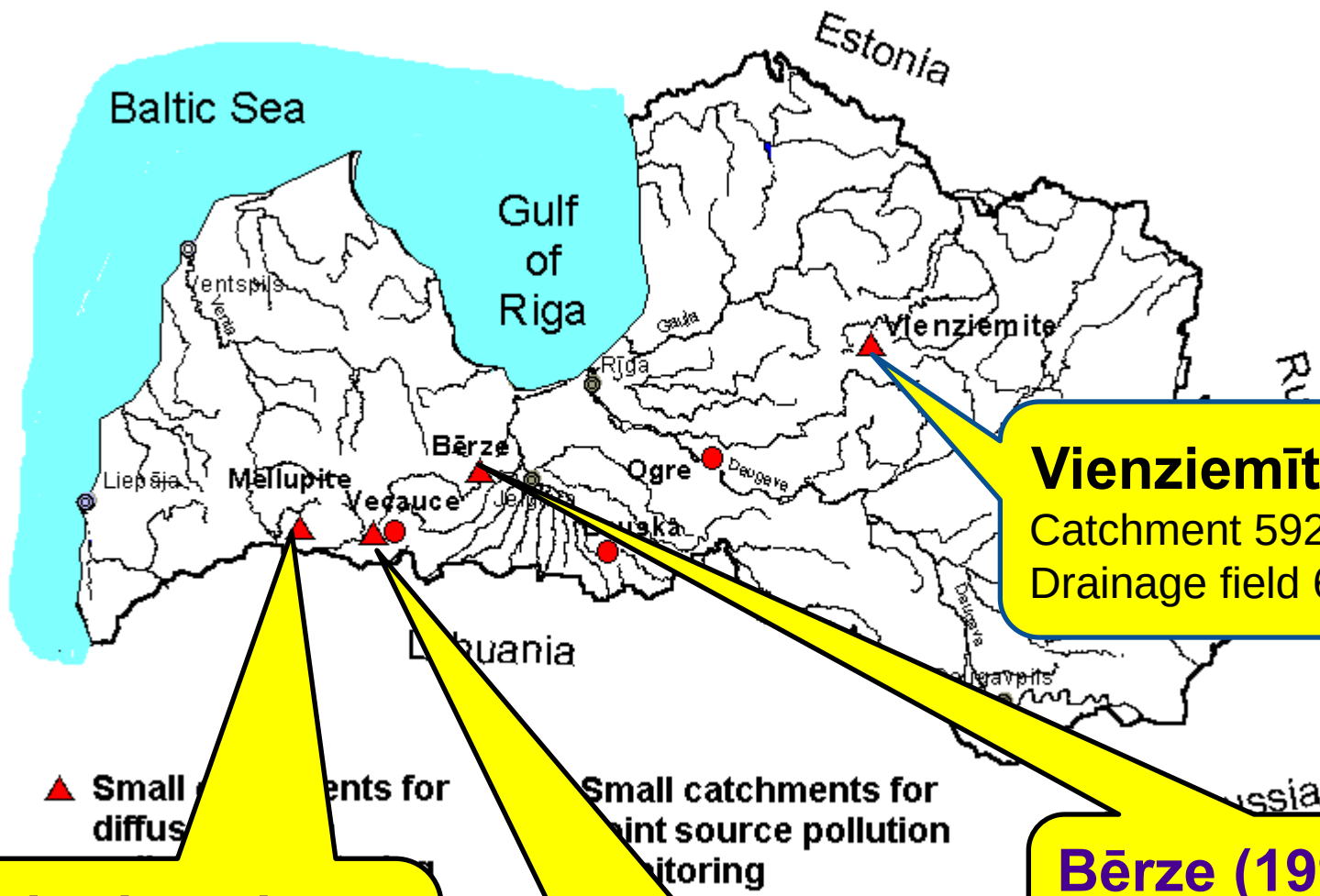
Proportions of different input sources of nitrogen (A) and phosphorus (B) to the Baltic Sea. Point sources include both coastal and inland point sources. Note that transboundary inputs have not been divided into point or diffuse sources. Data source: HELCOM PLC-5.

Water pollution source – agricultural run-off

- **Non point sources (surface and drainage run-ff)**
- **Point sources (leackage from storages, feedlots, manure dumping sites)**



Non-point agricultural pollution monitoring



Vienziemīte (1994)
Catchment 592 ha
Drainage field 67 ha

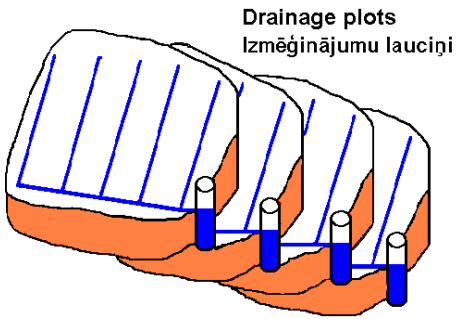
Bērze (1994)
Drainage field 76 ha
Sm.catchment 360 ha

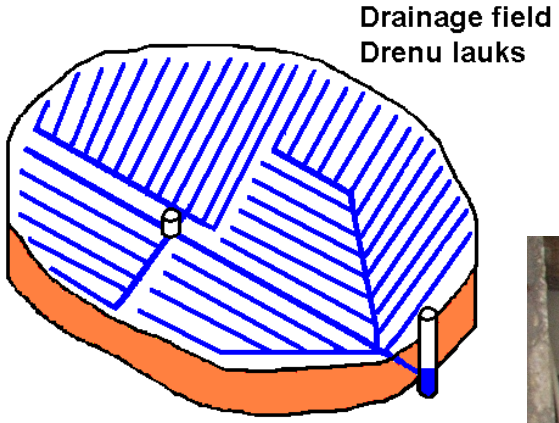
Mellupite (1995)
15 Drainage plots (0.12 ha)
Drainage field 12 ha
Sm.catchment 960 ha

Auce (2014)
Sm.catchment 68 ha

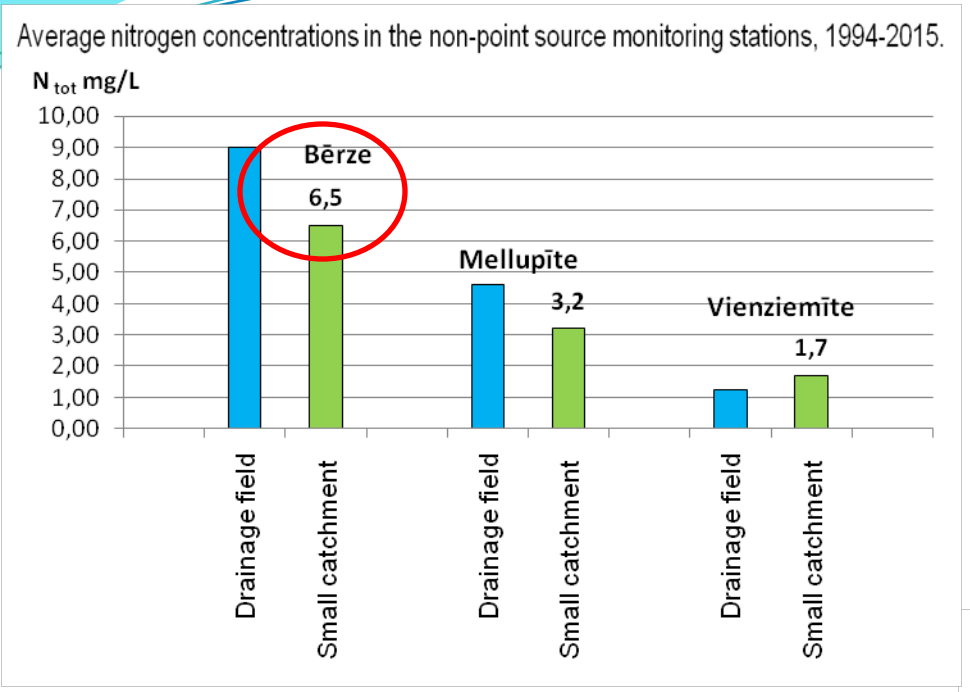
Monitoring methods

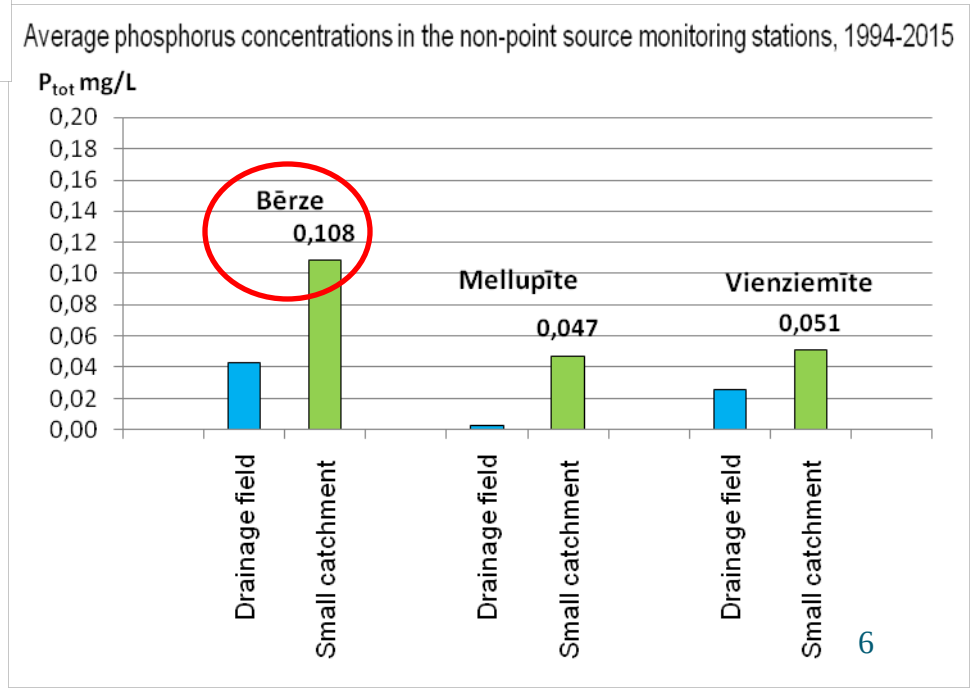
Impact of other pollution sources should be excluded, thus providing information on agricultural non point source pollution in several geographical scales:



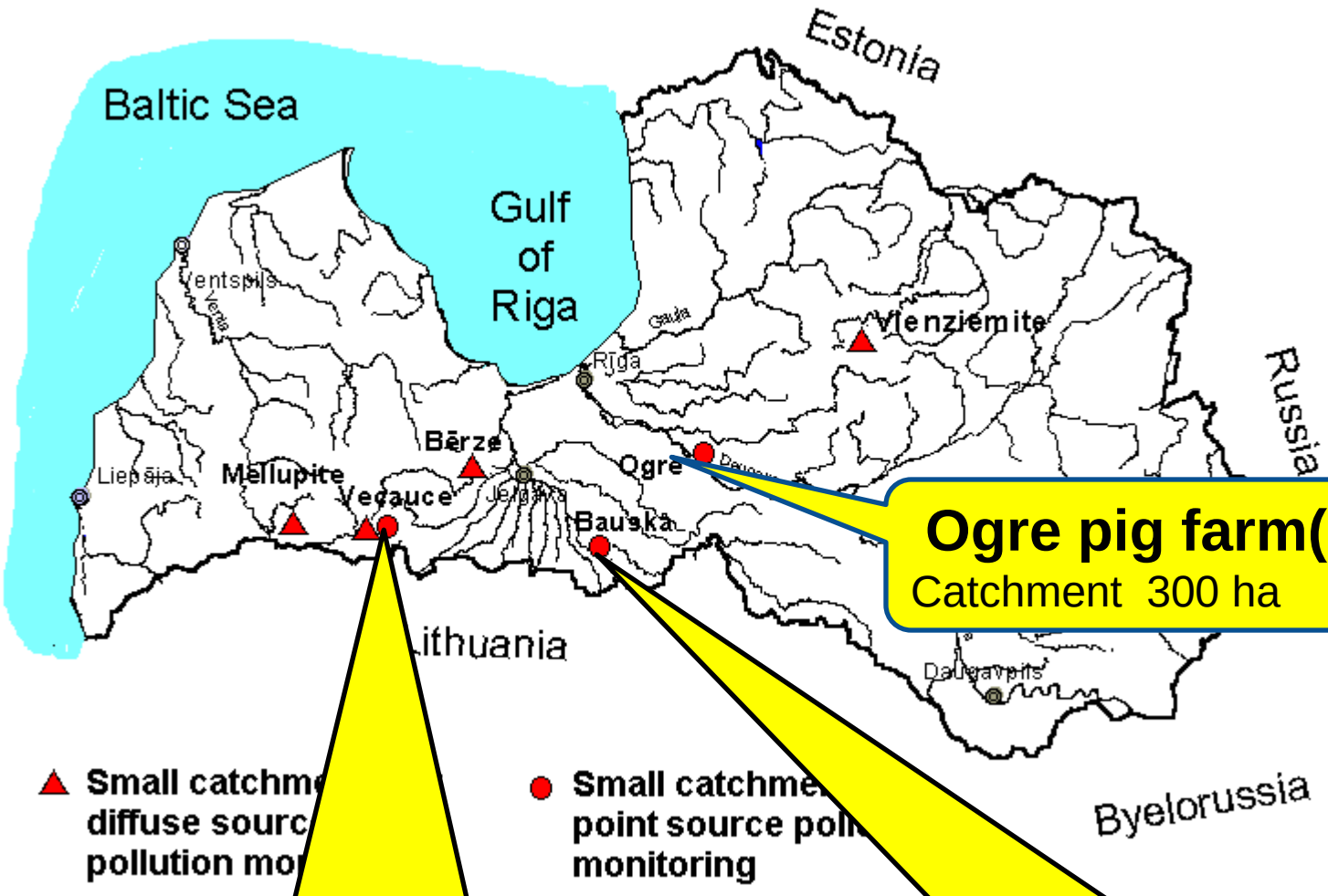


Monitoring results (non point source)





Point source agricultural pollution monitoring



Ogre pig farm(1995)
Catchment 300 ha

Auce pig farm (1995)
Sm.catchment **60** ha

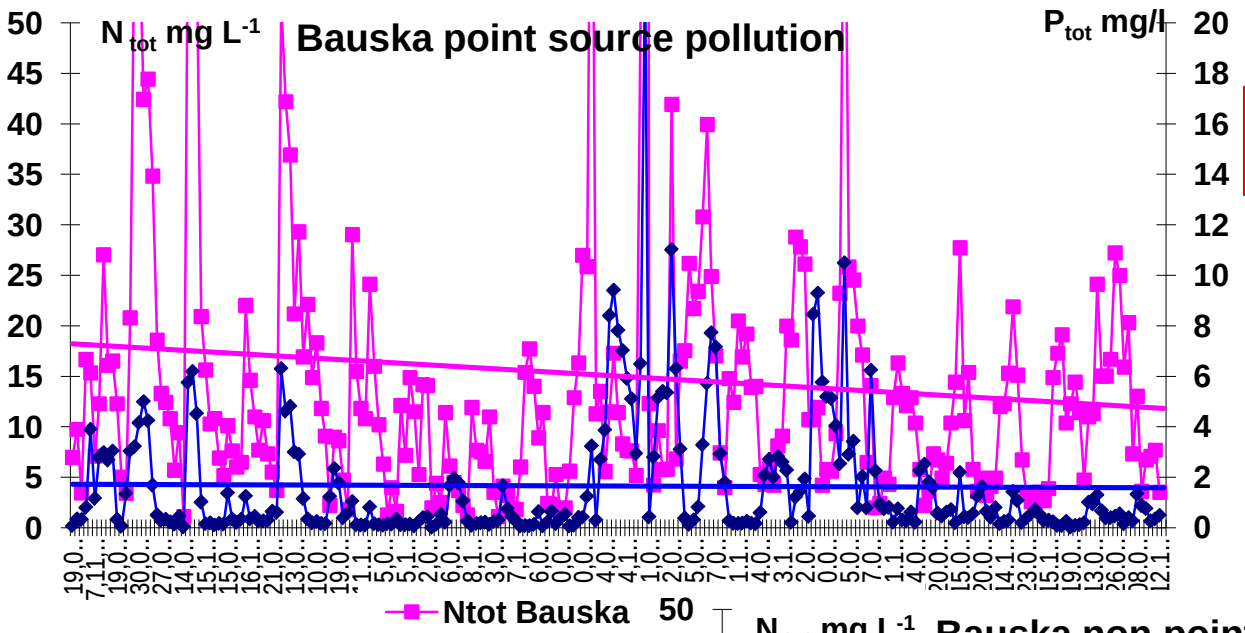
Bauska pig farm (1995)
Sm.catchment 800 ha

Bauska farm

The Bauska farm (12 000 fattening pigs per ye 55 000 m^3 pig slurry per year) was established in 1976. Until 1987 tractor movec application. In 1987 a slurry irrigation system production is 8000 -10 000 fattening pigs, but ha.

Small catchment - 800 ha(slurry lagoons, dum monitoring. Another catchment -750 ha of int as reference site.

Bauska farm

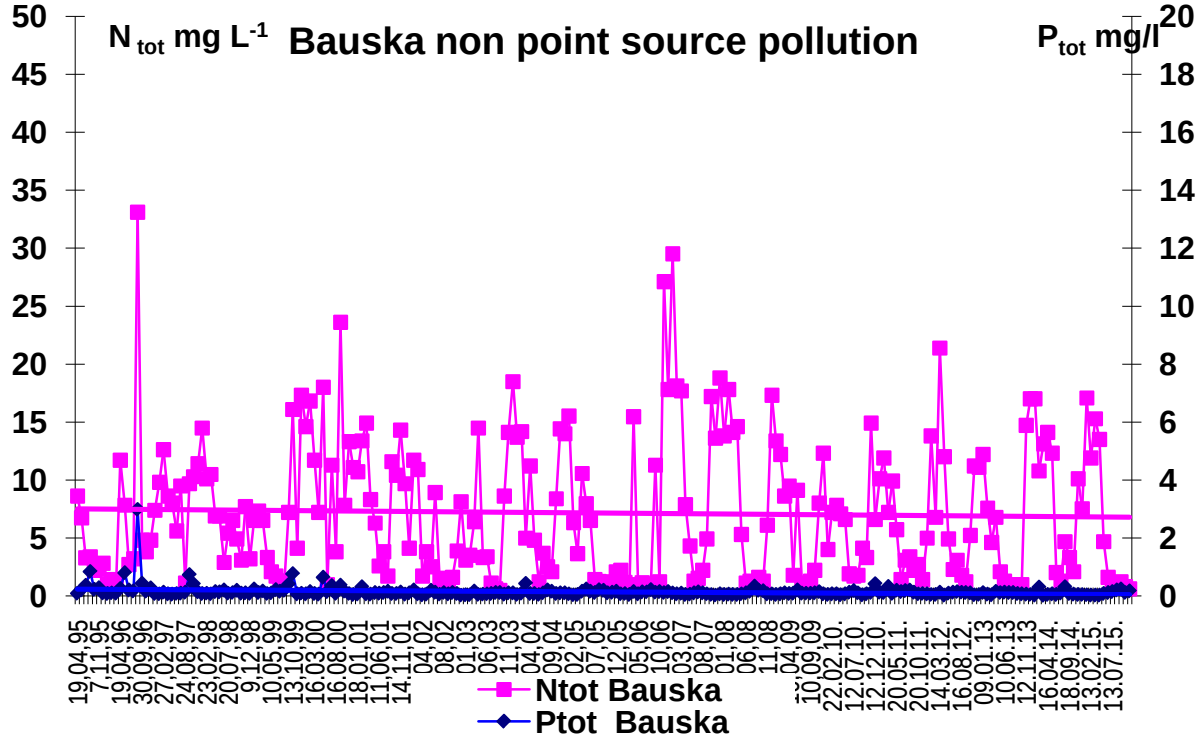


Average 1995-2015, 246 water samples
N_{tot}= 15,2 mg L^{-1} P_{tot}=1,65mg L^{-1}

Average 2015. g. 11 water samples
N_{tot}= 12,8 mg L^{-1} P_{tot}=0,52mg L^{-1}

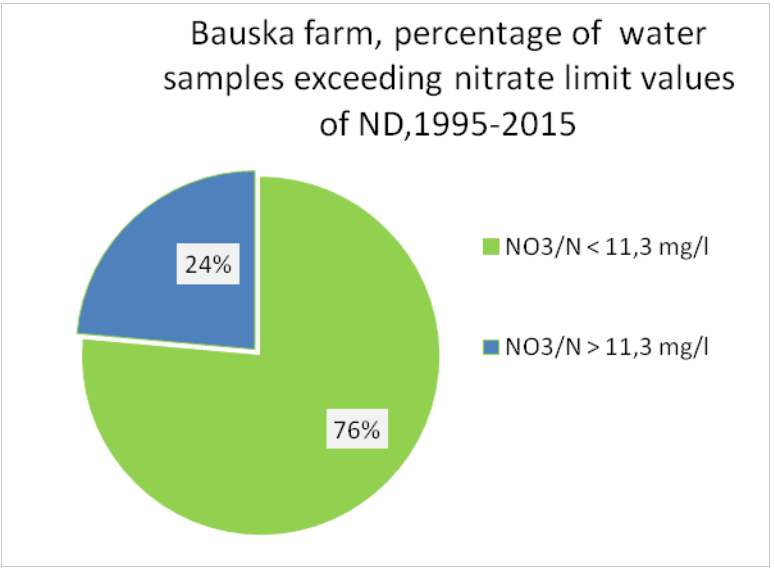
Average 1995-2015, 244 water samples
N_{tot}= 7,15 mg L^{-1} P_{tot}=0,14 mg L^{-1}

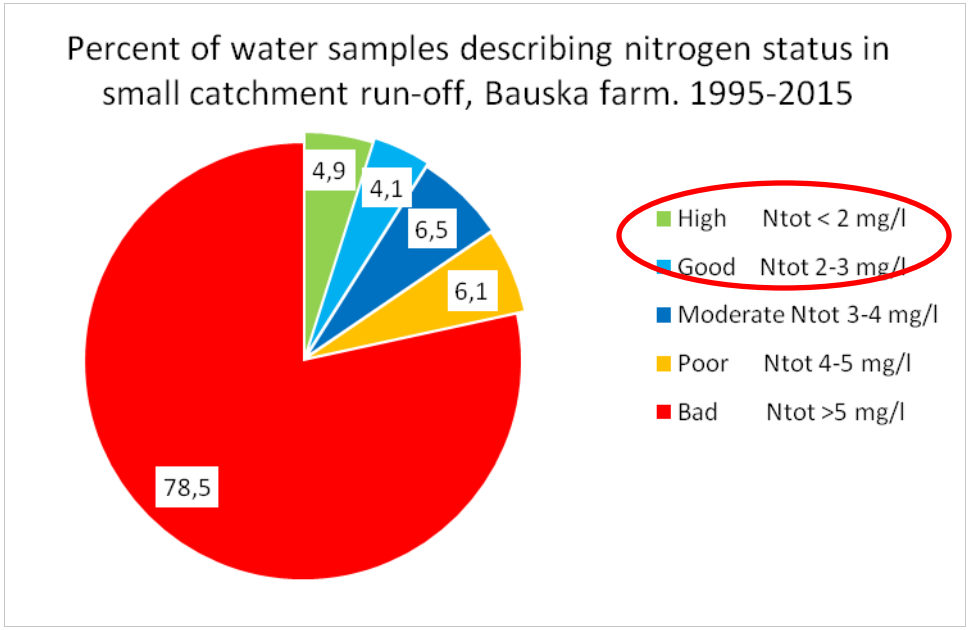
Average 2015. g. 11 water samples
N_{tot}= 6,14 mg L^{-1} P_{tot}=0,09 mg L^{-1}

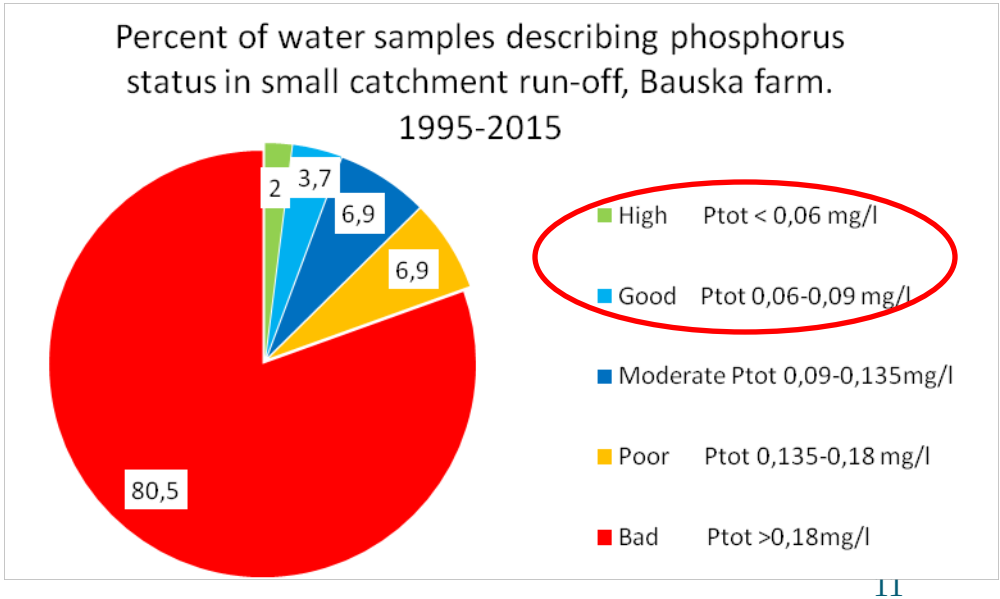


Water Framework Directive

Nitrate Directive

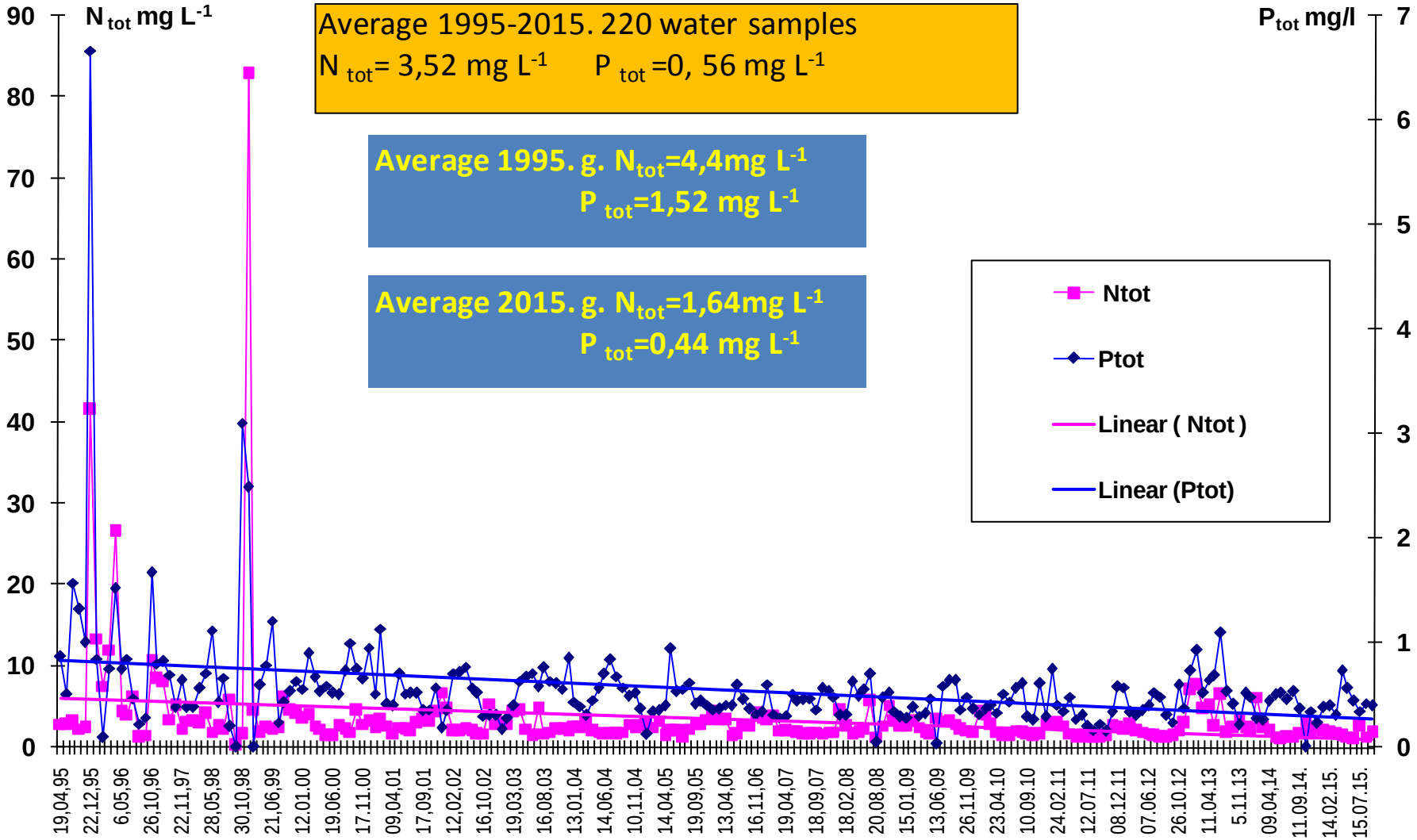




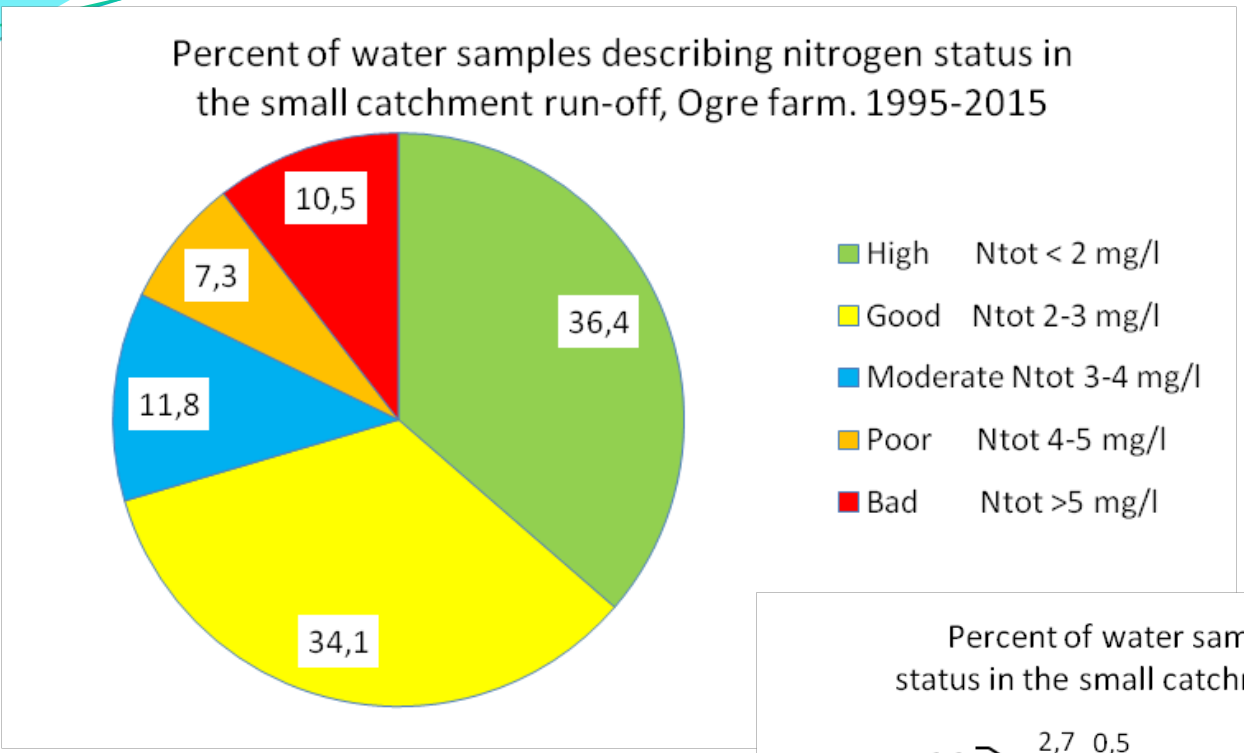


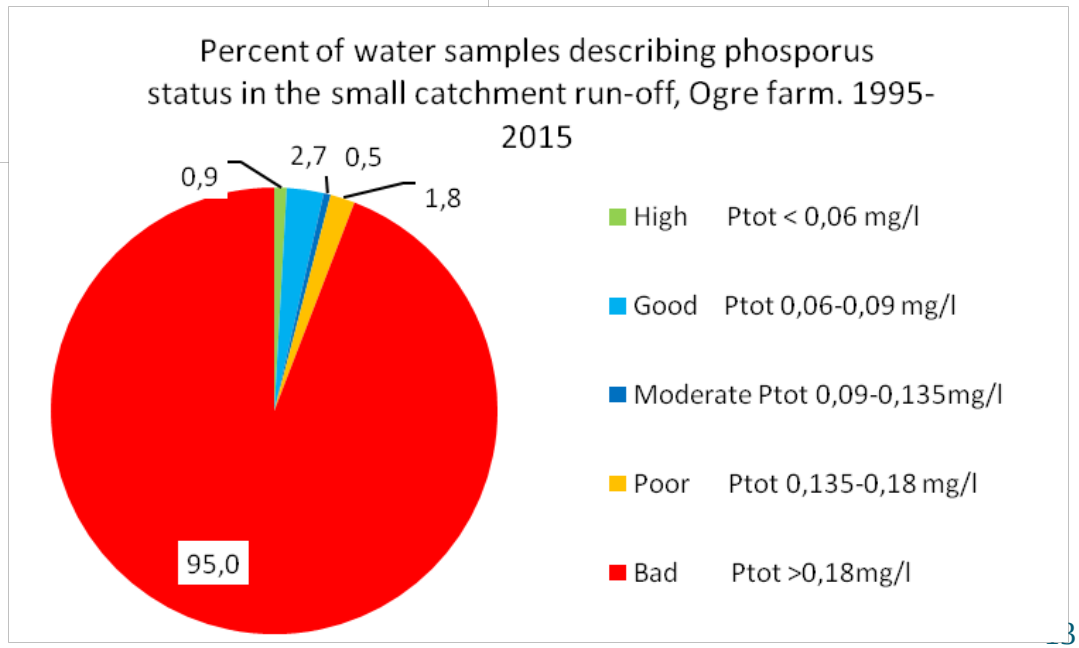
Ogre farm

The farm was built for 30 000 slaughtering pigs in 1974. Slurry application in area of 462 ha (slurry 127000 m3/year). The farm was



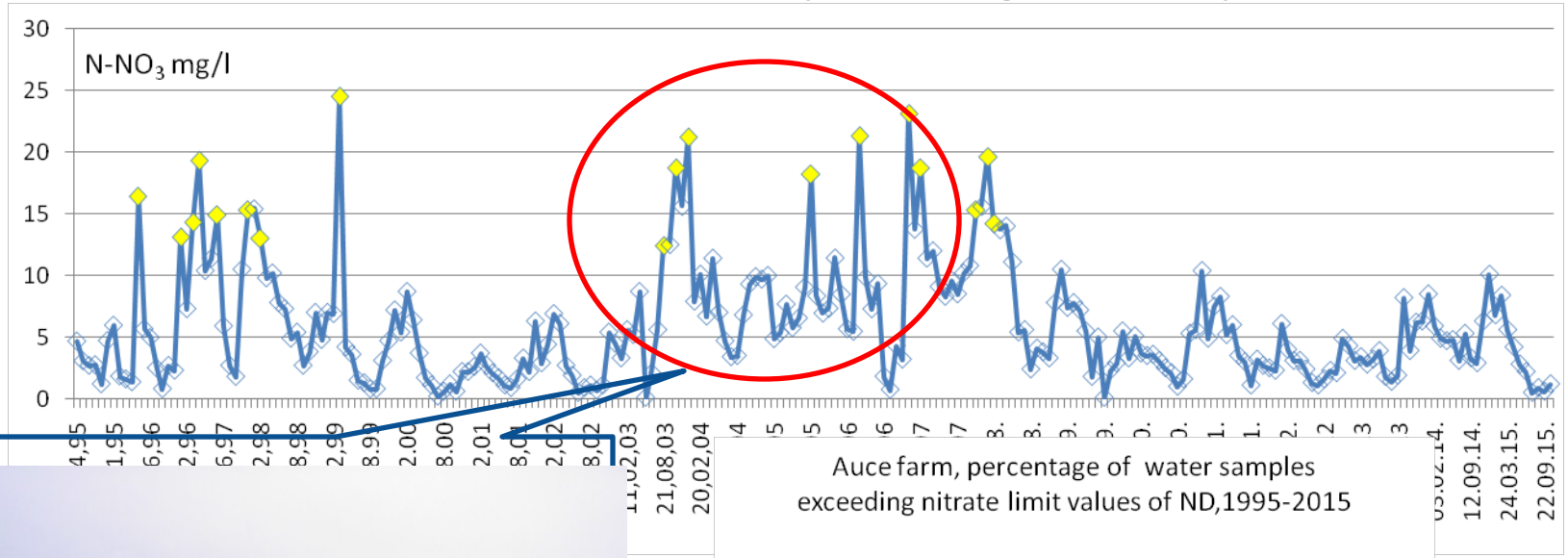
Water quality, Ogre farm

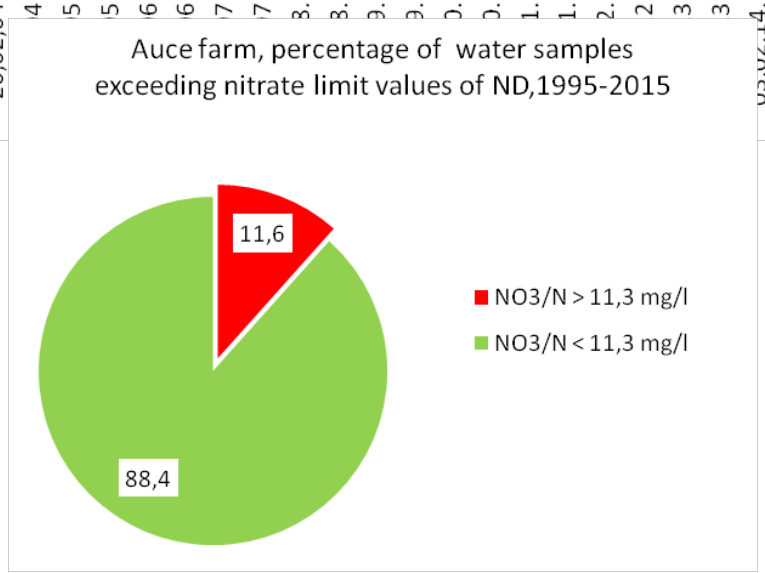




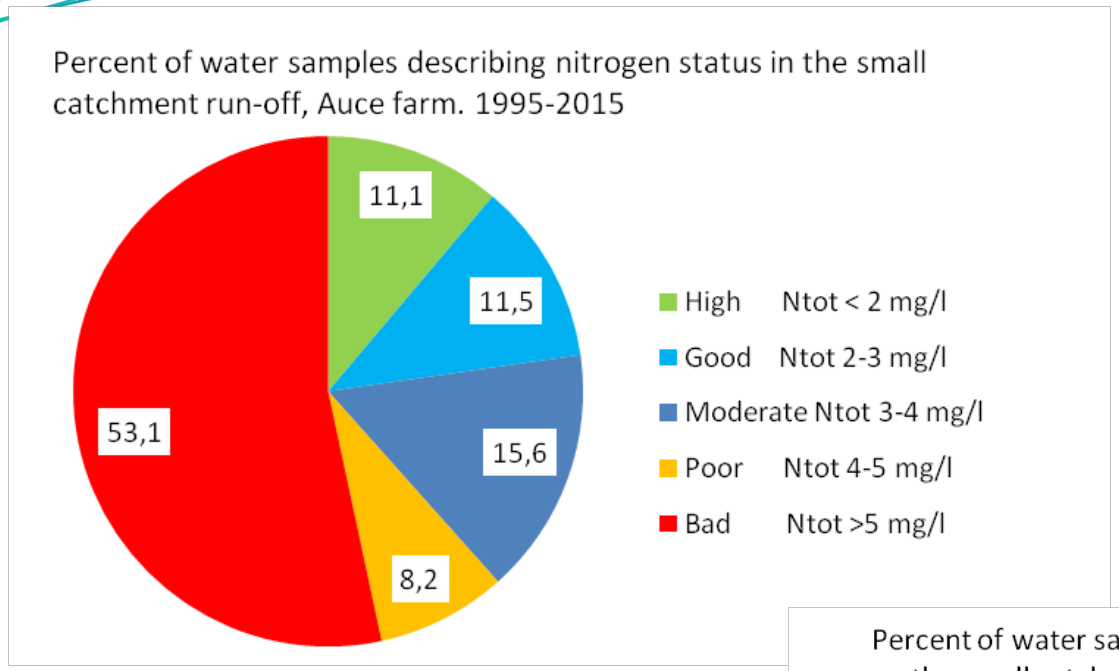
Vecauce farm

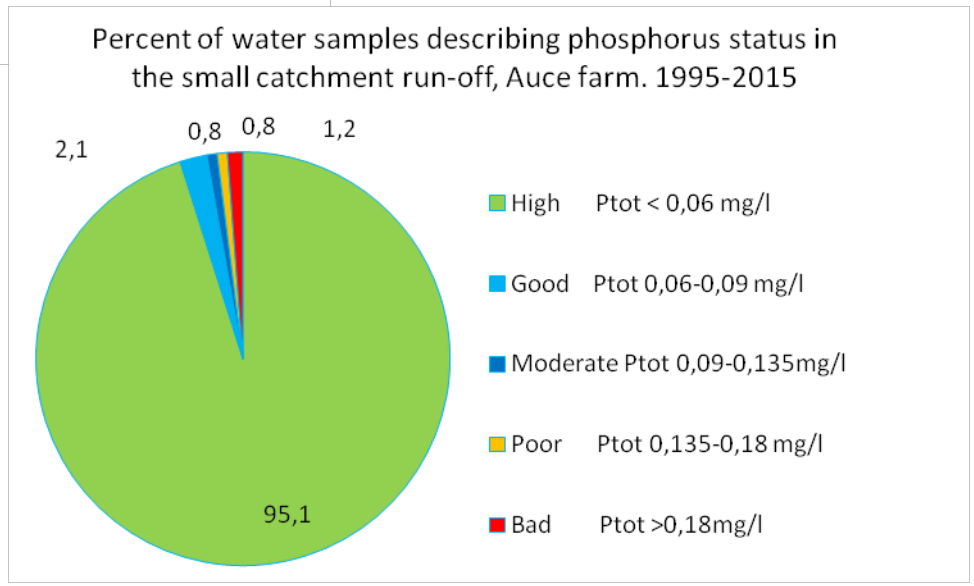
Vecauce pig farm was established in 1987 for the production of 6000 fattening pigs per year. After separation, the liquid manure was stored in a lagoon and used for irrigateon an area of 32 hectares. Today tractor tankers has been used for spreading of slurry.





Water quality, Vecauce farm





Thank You for attention!
Questions?