

An aerial photograph of a rural landscape. In the foreground, a winding river flows through green fields. A dense forest with trees in autumn colors (yellows, oranges, and browns) is situated in the middle ground. In the background, there are agricultural fields, some of which are brown (plowed), and a small village with houses and a church. The sky is overcast.

RBPS/MBPS

Water and soil quality

VLAAMSE
LAND
MAATSCHAPPIJ

FLEMISH
LAND
AGENCY



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Water & soil quality Flanders - Approach

▶ Nitrates Directive and Waterframework (EU)

→ 5th Action programme (Flanders) (2015-2018)

× codes of good agricultural practices

× measures to prevent and reduce water pollution (balanced fertilization, nitrate residue, area specific approach, integrated farm based approach, ...)

→ Positive discrimination in favour of compost/farm yard manure

▶ Rural Development Plan III (2014-2020) [link](#)

→ Agro-environmental climate measures (M10)

× Management agreements (Flemish Land Agency) [link](#)

× Agro-environment measures (Dep. Agriculture and Fisheries) [link](#)

▶ Cross-compliance (CAP)

→ Reinforced action to prevent erosion (Flanders 2014-2018)

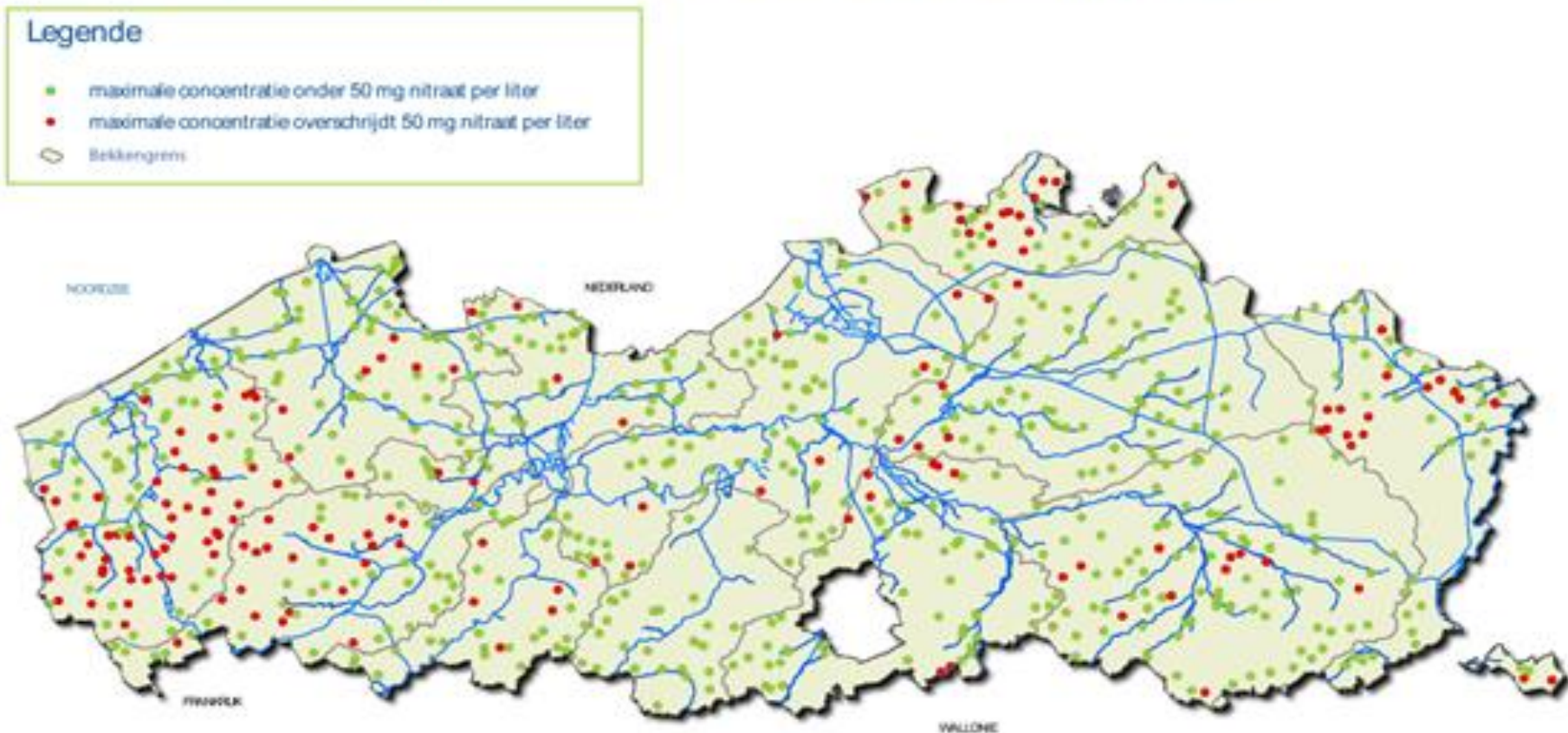


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Management agreement RB and MBPS waterQ



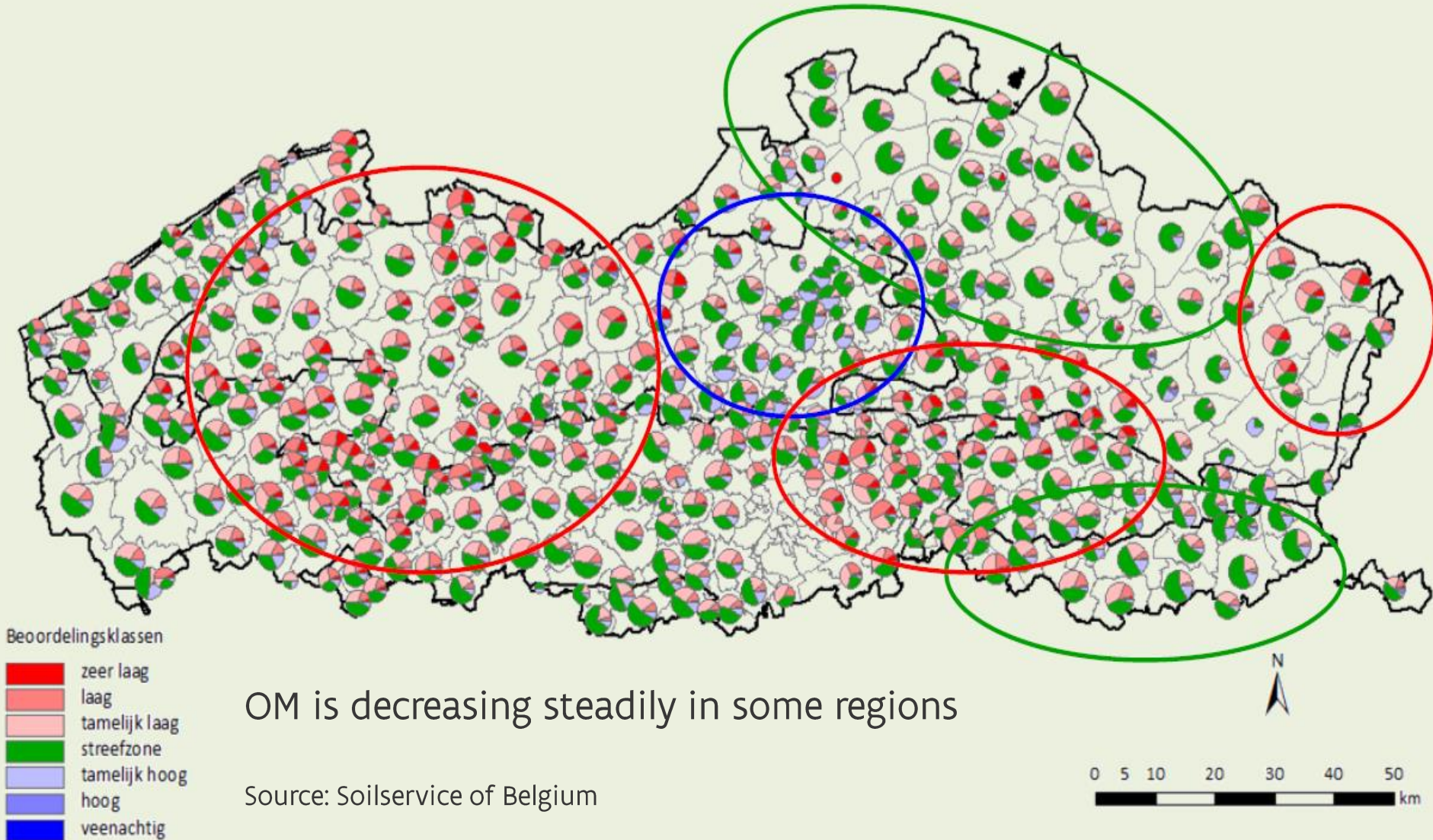
Monitoring network surface water 2013-2014



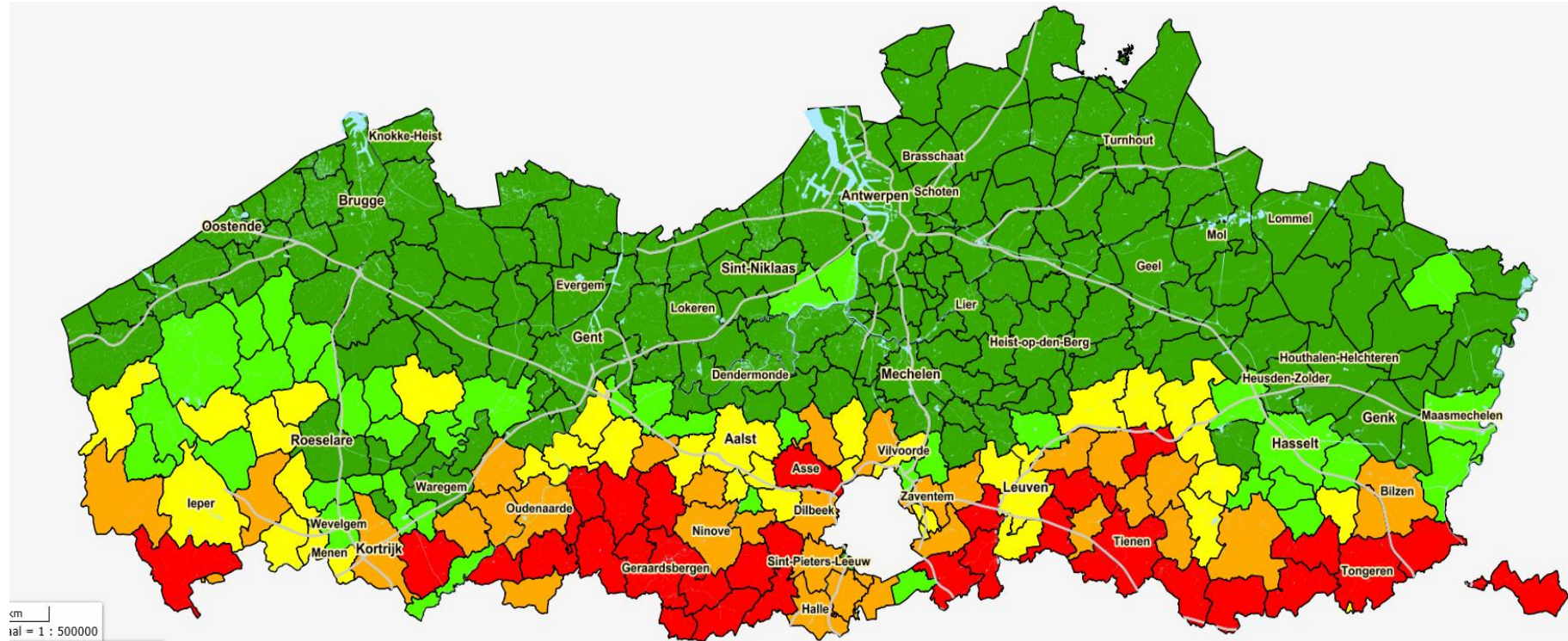
WaterQ slightly improving – still a gap towards goals



Organic matter - arable land – (2012-2015)



Potential erosion



- Zeer sterk erosiegevoelig
- Sterk erosiegevoelig
- Medium erosiegevoelig
- Weinig erosiegevoelig
- Zeer weinig erosiegevoelig

Management agreement - waterQ new approach (2014-2020)

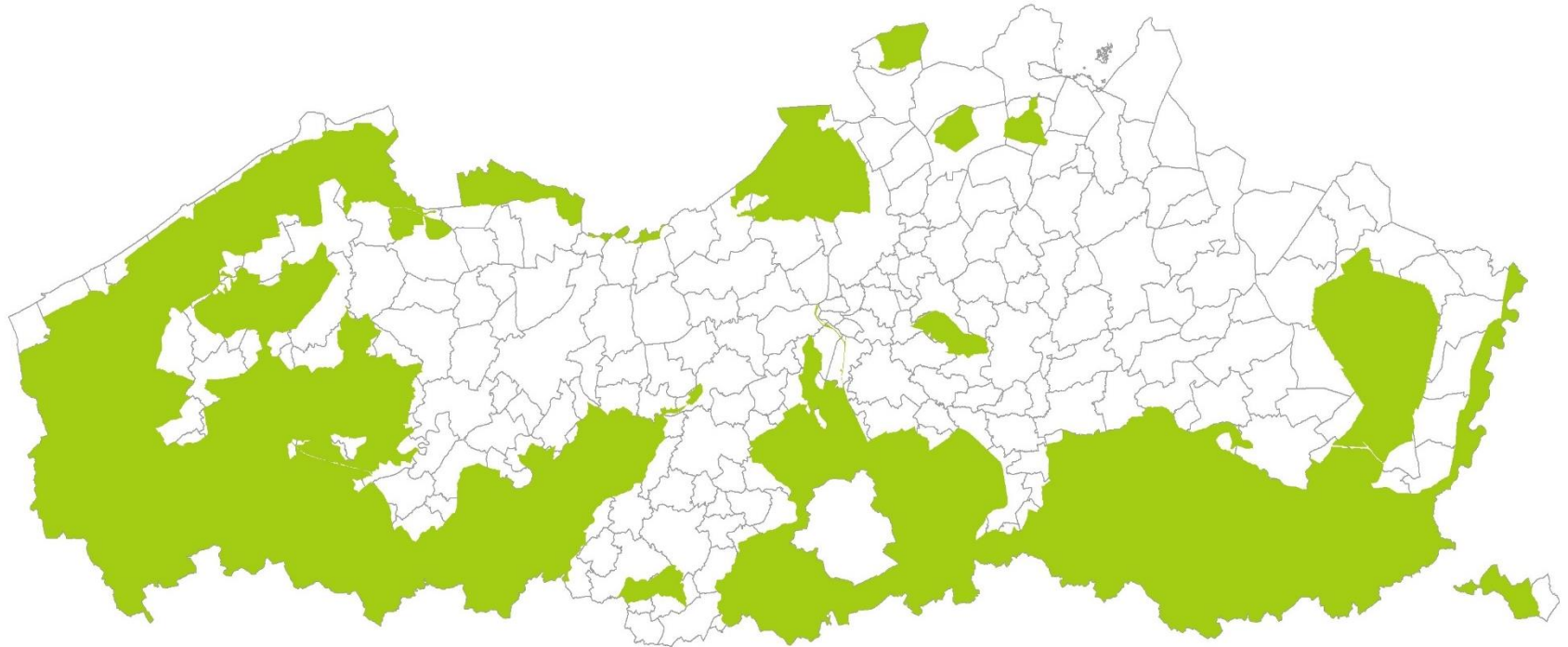
- ▶ **Goal** = improving water and soilQ
 - preventing nitrate leaching
 - reducing risk of soil erosion from arable land
 - improving level organic matter in soil
- ▶ **Where**
 - Only in specific management areas
- ▶ **How**
 - Encourage use of low risk arable crops
 - Soil testing – organic matter and pH (acidity)
 - Residual soil N (end of growing season) (**result indicator**)



Risk *profiling* crops

- ▶ Crops listed according to (weighting factor)
 - Low risk for nitrate leaching (50%)
 - Low risk for soil erosion (10%)
 - Capacity for building up organic matter (40%)
- ▶ Examples: cereal crops, corn maize, beets (sugar/fodder), grass/clover, brussels sprouts, chicory, most catchcrops,

Management area



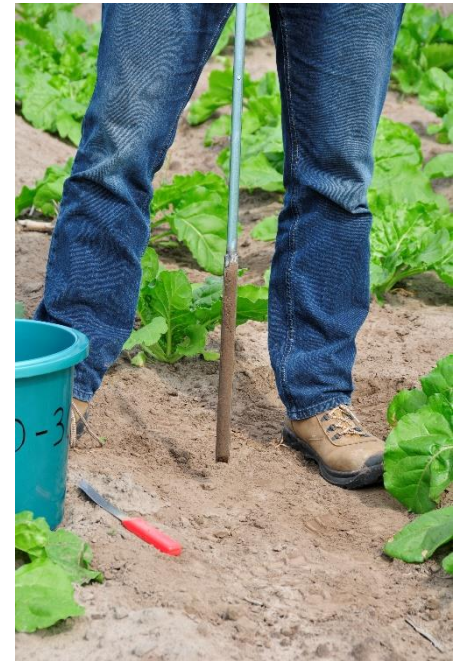
Basic requirements

- ▶ At least 2 ha arable land in management area
- ▶ At least 4 main crops of which 3 low-risk crops
 - At least 5% of area arable crop for each LRcrop
 - At least 90% of total area arable land = low-risk crops
- ▶ After harvest main crop
 - Sow LR(catch)crop en maintain from 15/10 to 15/11
- ▶ Advice from farm adviser (FLA=government)
 - Before signing agreement
- ▶ Soil testing - organic matter + pH (acidity)
 - 1st year of agreement
 - × Not part of result indicator
 - × Useful for nutrient management
- ▶ During agreement (5 year)
 - One on-site advice from advisor (FLA)



Result indicator - residual soil N

- ▶ Residual soil N level = soil sample
 - 15 samples per field/crop of 2 ha
 - 3 layers: 0-30, 30-60, 60-90 cm
 - Period : 1oct – 15nov
 - By accredited lab
- ▶ Measured on all fields on the farm
 - arable and grassland
- ▶ Results are sent to FLA
- ▶ Result must be at least 4 kg N/ha below lowest treshold value set by regulations



Payment



- ▶ 245 euro/ha for arable land – low crops
- ▶ If residual soil N is too high on fieldlevel – adjusted payment



Example treshold value & Nres

(kg NO3-N/ha)

Crop	soiltype	Non-focus farms		Focus farms	
		Treshold value	Max. value MA waterQ	Treshold value	Max. value MA waterQ
Grassland	Sandy soil non-sand soils	90	86	70	66
Maize	Sandy soils	90	86	70	66
	Non-sand-soils	90	86	80	76
Cereal crops	Sandy soil	90	86	70	66
	Non-sand soil	90	86	80	76
potatoes	Sandy soil	90	88	85	81
	Non-sand soil				

Nitrate residue results (2016)

crop	MA waterQ			Control campaign Manure bank		
	# fields	Average (kg NO ₃ -N/ha)	Median (kg NO ₃ -N/ha)	# fields	Average (kg NO ₃ -N/ha)	Median (kg NO ₃ -N/ha)
Grassland	134	23	15	5726	47	29
Maize	201	38	27	5290	64	53
Beets	102	30	22	463	37	26
Cereal crops	478	42	28	1833	66	51
Potatoes	15	52	46	1077	106	95
Vegetables	Farmers with MA-WQ show lower Nres results ⇒ lesser risk for nitrate leaching				94	69
Fruit	6	20	15	185	59	32

MA WaterQ – facts (2016)

# fields	967
# samples	1.551
Area	2.100
# farmers	49

Treshold value MA-WQ	fields		Area	
	#	% of total	ha	% of total
Nitrate res. \leq TV MA	886	92%	1.932	92%
Nitrate res. $>$ TV MA	81	8%	168	8%
Total	967		2.100	

Key to succes/challenges

- ▶ Communication + sensitising/advising farmers
 - Advisors ↔ farmer ↔ farmer
 - Individual/group approach
 - Follow up during agreement
- ▶ Knowlegde transfer
- ▶ Decision support tools/decision automated tools
 - Simulation impact on farm management
 - Nutrient Management Plan, Organic matter, ...
 - Easy to use, automated, webbased, integrated, ...
- ▶ ...

Challenges

- ▶ Farmers are hesitant because
 - Requirements are difficult to implement/incompatible with current farm management
 - Nitrate residue on all fields
- ▶ Impact on waterQ?
 - Need for more farmers/area?
- ▶ Impact on soil Q takes years
- ▶ ...

Other management agreements contributing to water & soil Q (FLA)

- ▶ Buffer strips: grass strips, mixed grass strip, flowering strip, ...
→ From €619 eur - €2000/ha
- ▶ Erosion control : grass strips, erosion dam



Dep. Agriculture Fisheries

- ▶ Agro environmental measure (M.10)
 - Cultivation fibrehemp, fibreflax
 - × No use of N
- ▶ Support for organic farming (M11)
- ▶ Support non-productive investments (M04)
 - Small-scale waterinfrastructure, erosion dams, ...
- ▶ Demonstration projects (M01)
 - Water/Soil quality,
- ▶ Individual advice –KRATOS (M02)
 - Module water, soil, biodiversity, business plan, ...



Questions?

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