On Flanders (Belgium) expertise of researchers and farmers interaction regarding actions to minimize the nutrient leakage towards surface water

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Situation

- Dense network of monitoring water quality specific related to agriculture in Flanders
  - Surface water (755 monitoring points, 55/1000km²)
  - Groundwater (2200 monitoring wells, 162/1000km²)
Objectives for water quality
Nitrate in surface water

- Action program 2015-2018 max 5% points exceeds 50 mg Nitrate/L
Objectives for water quality
Nitrate in groundwater

- Action program 2015-2018 weighted average < 32 mg NO3-/L
- On average good result
- Regions with intensive agriculture higher concentrations nitrate
Surface water quality en focus area 2015

Green stars: all measurements < 50 mg nitrate/L
Red stars: > 1 measurement > 50 mg nitrate/L

Focus area (combination surface + groundwater)
Yellow: new focus
Green: bonus (prev. year no exceedings)
Red: no change
Organisation CVBB

- 4th Action Program: application rate N ↓ legislation, rules ↑
- Flanking policy: establishing organisation that support farmers and helps to improve water quality.
- Start in 2011, prolonged in 2015 till 2018
- CVBB is union of 9 research stations
- 22 full-time units (more than 40 persons involved)
- Budget € 2,2 milion/year

Main tasks:
- Establish Water Quality Groups. Measuring nitrate in catchment; awarness leaching out N towards farmers
- Offering guidance and information about fertilisation for farmers with problems of nitrate residu in soil.
CVBB Water Quality Groups

- Measuring nitrate in catchements
  - Starting from official measuring point
  - Upstream from point, in catchment, drainpipes fields
  - Quick, indicative measurements (test strips Reflectometer)
  - Follow up every month
CVBB Water Quality Groups

- Example: Site in mechelen start CVBB since 2012
- Catchment area: 129 ha dominated by vegetables/maize
- Strong communication results to farmers
<table>
<thead>
<tr>
<th>Coördinatiecentrum voorlichting en begeleiding duurzame bemesting</th>
<th>Datum</th>
<th>Meting (mg NO₃/L)</th>
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<tbody>
<tr>
<td>CVBB</td>
<td>02/03/2015</td>
<td>50</td>
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<tr>
<td>VMM</td>
<td>10/03/2015</td>
<td>62</td>
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CVBB Water Quality Groups

Methods

- In winter meeting with all farmers in catchment area
- Discussion the results of past year
- Everyone sees results of everyone
  → social pressure
- Strengthness approach:
  - Better insight where nitrate come from
  - Knowledge of the field (drains eg.)
  - Personal relation with farmers
  - Results confidential in group, not to externs
- Weakness approach
  - Source(s) of N-pollution not always clear, diffusive
- Intensive approach needed
CVBB Intensive Approach

Identifying the problem

- Method: Taking soil samples in autumn (end growing season) to determine amount N-nitrate at depth of 90 cm in soil
- Whole catchment of parts of it (significant high levels nitrate in water)
- For Flanders: budget for IA € 225,000 (operational costs only)
- 94 cases of IA (upstream at “red” measuring points
- 403 farmers involved
CVBB Intensive approach

Solutions

- Select parcels with risk of leaching N
- Discuss fertilisation strategy with expert
- Planning fertilisation through season
- Taking soil samples, analyse manure,... expert determines on which parcels
CVBB Intensive approach
Nitrate residus 2015

- Additional information for water quality groups
- Clear link between farmer-water
- Even more social pressure
- Strengthness approach:
  - Close involvement, farmers want progress
  - Better results motivate to continue efforts
- Weakness approach
  - Long way to change old habits in fertilisation
  - Small part that won’t cooperate
CVBB Intensive approach
Progress?

Average Nitrate residus on site Mechelen

Coördinatiecentrum voorlichting en begeleiding duurzame bemesting
CVBB Waterquality Flanders

Thank you for your attention

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