



# **The multi actor approach enabling engagement of actors in sustainable use of chemicals in agriculture**

**Ingeborg Joris, Ellen Pauwelyn, Elien Dupon, Els Belmans,  
Eva Kerselaer, Piet Seuntjens**

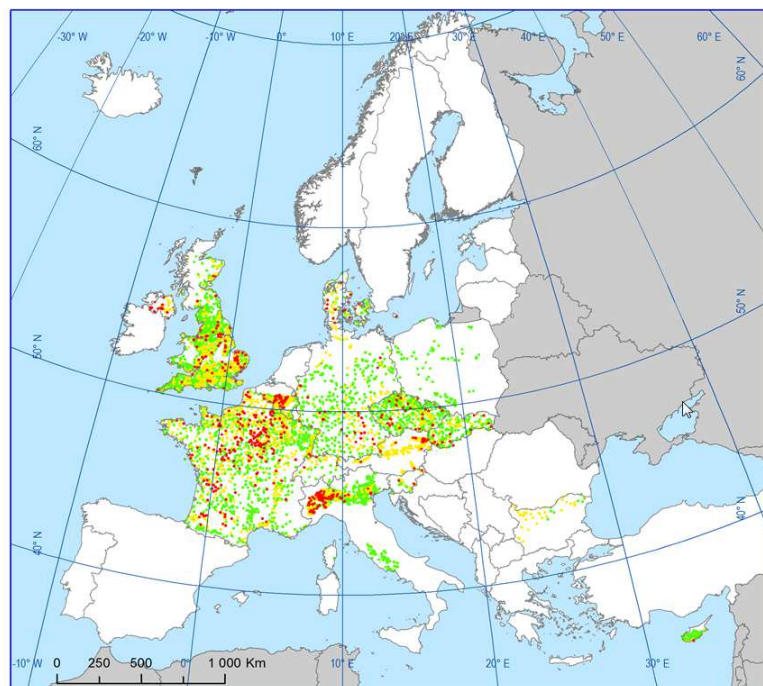


This project has received funding from the European Union's Horizon 2020  
Research and Innovation Programme under grant agreement No. 727450



# PESTICIDE AND NUTRIENT POLLUTION OF DRINKING WATER SOURCES IS A CONTINUING CONCERN ...

Occurrence and exceedance of selected pesticides in groundwater monitoring stations, 2010-2011 (Source: Eurostat)



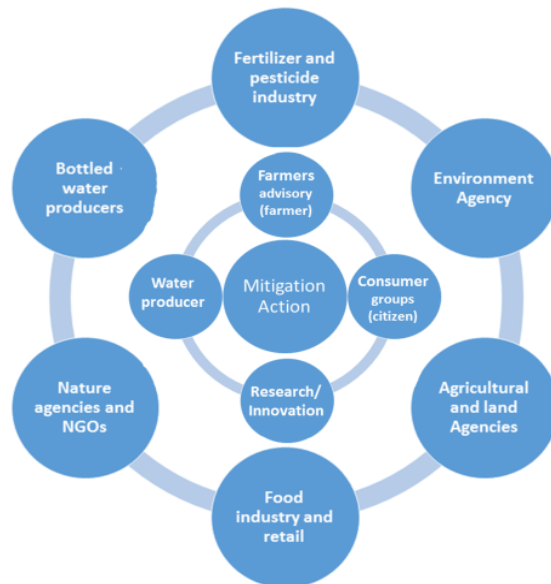
● < limit of quantification      ● > quality standard  
● >= limit of quantification and <= quality standard      ■ outside coverage

- ▶ Points of concern:
  - Hot-spots of exceedance across Europe (>0.1 µg/l)
  - Hot-spots = intensive agriculture
  - Pollution sources are diffuse, monitoring and treatment costly
  - Poor information across Europe
  - **Mitigation measures are not in place, or not effective and need farmer engagement**

# METHODOLOGY WATERPROTECT

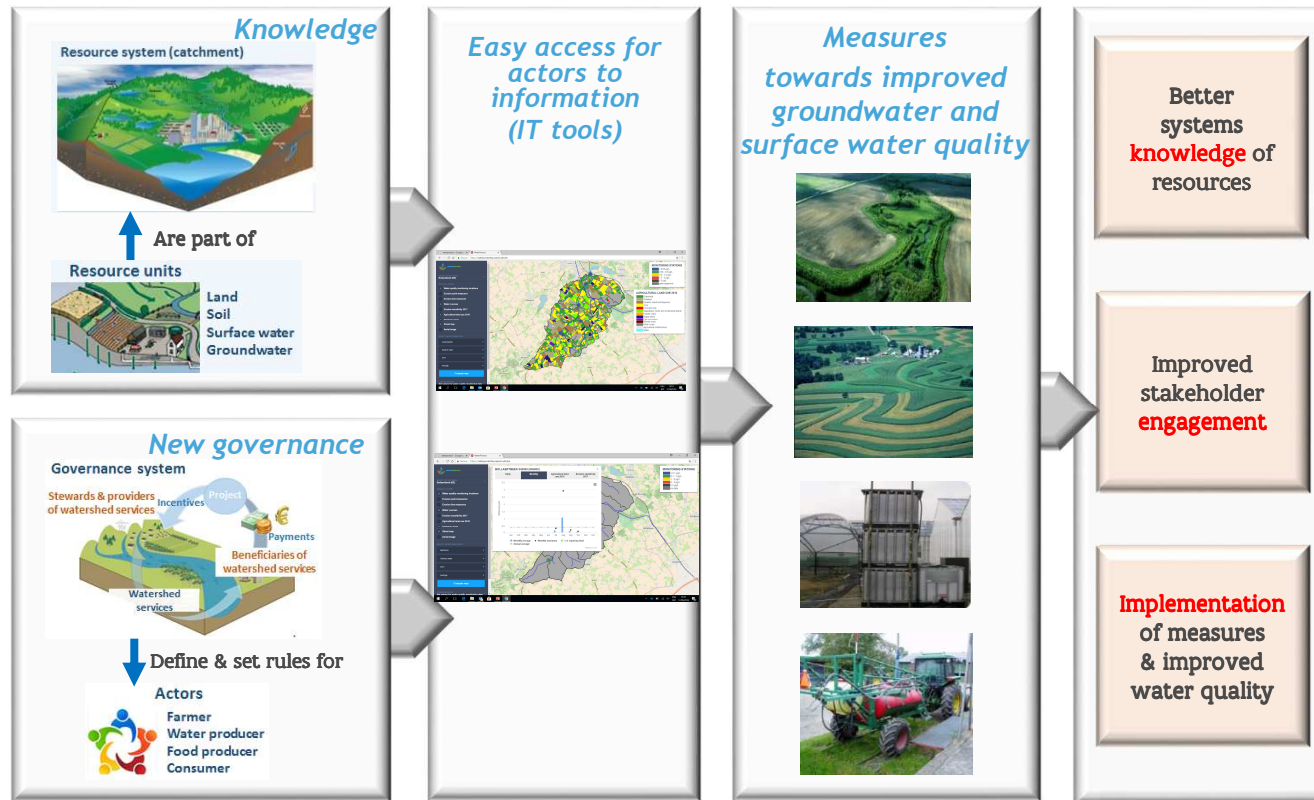
*Action research in local “action labs” with multiple actors (multi-actor)*

*New governance: alternative financing  
 Share data: participatory monitoring  
 Best management into practice  
 Bring information closer to actor using IT tools  
 (collaborative tools)*





# Action lab multi-actor management



## Participatory monitoring in 7 action labs

- ▶ *Designing, aligning and bringing together monitoring data from:*
- ▶ *Scientists*
- ▶ *Environment agencies*
- ▶ *Drinking water companies*
- ▶ *Local farmers*
- ▶ *Local citizens*

complexity  
Local engagement



**Local actors become more engaged in the monitoring and they trust the results.**



This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450



# Best management practices

- ▶ *Engage actors to implement measures !*

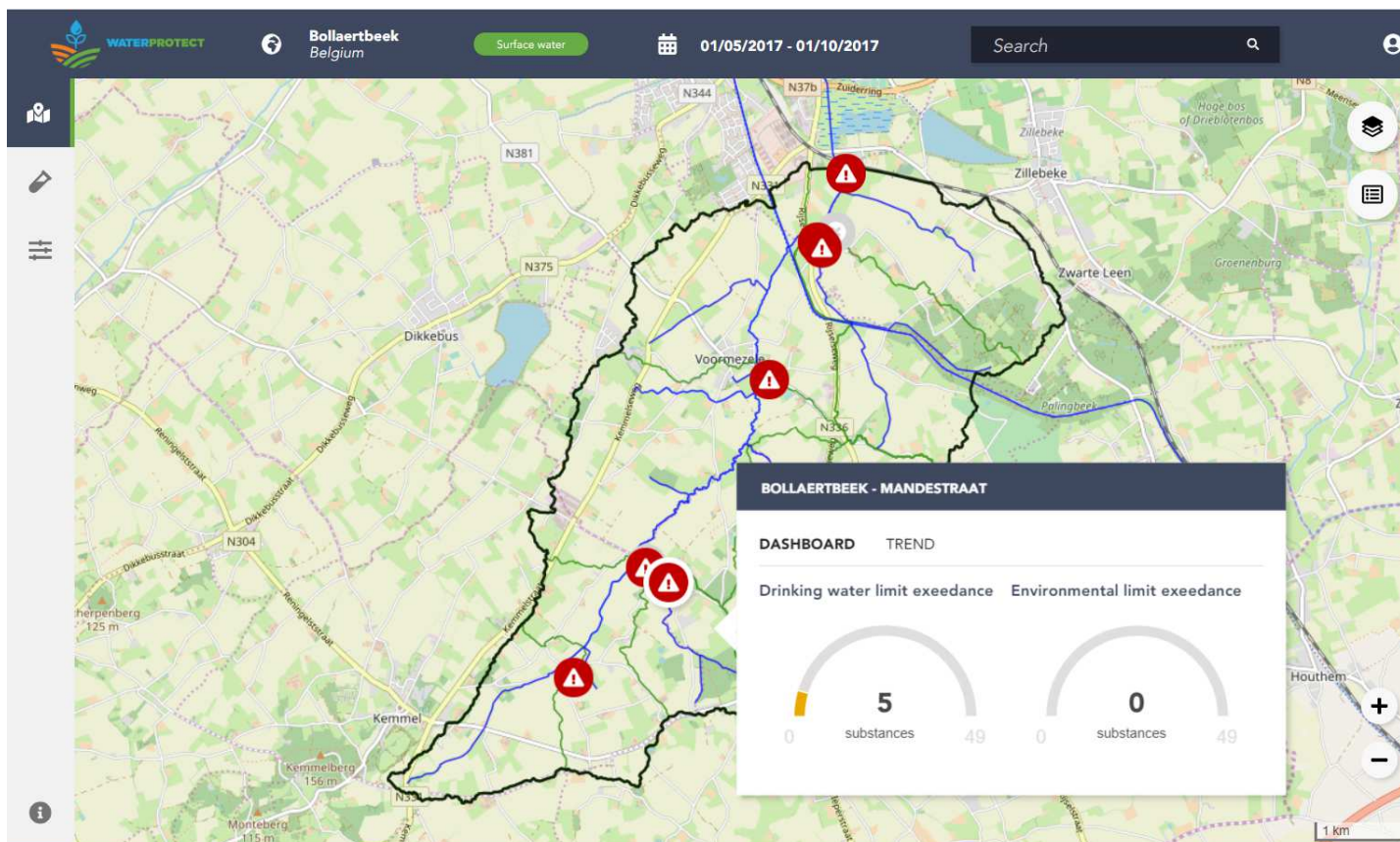
Diffuse sources:  
Bufferstrips  
Mgt practices  
Dams, pools



Treatment  
point  
sources



# Waterprotect app – bringing together data and information for all stakeholders

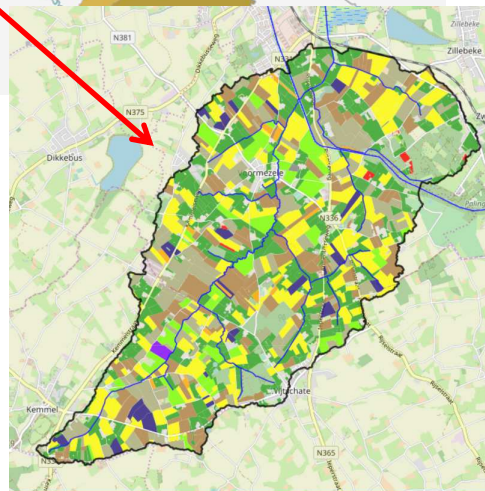


This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450





# BOLLAERTBEEK ACTION LAB



- ✓ *West-Flanders*
- ✓ *22,6 km<sup>2</sup>*
- ✓ *Mainly agricultural use (81%)*

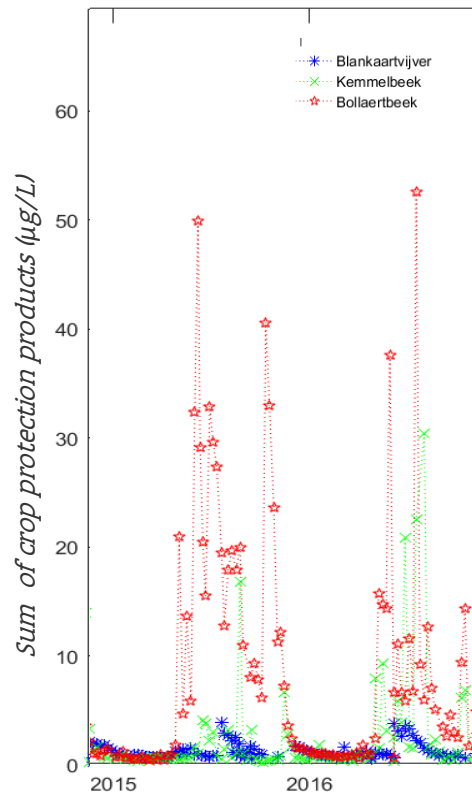


This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450





## BOLLAERTBEEK ACTION LAB



- ▶ Surface water capturing area 'De verdronken weide' from the water production company 'De Watergroep'
- ▶ Monitoring of pesticides and nitrates by the Flanders Environment Agency (VMM), De Watergroep and CVBB
  - => No exceedances of the nitrate standard (50 mg/L)
  - => Contamination of the surface water with pesticides (exceedances up to 100x the water quality standard (0,5 µg/L))

## LOCAL ACTORS

# **MULTI-ACTOR APPROACH** *= together with all actors*

*VMM*  
*De Watergroep*  
*Phytofar*  
*Landbouwers*  
*CVBB*  
*Landbouworganisaties*  
*Regionaal Landschap Westhoek*  
*Gemeente Heuvelland*  
*Vlaamse overheid*  
*Provincie West-Vlaanderen*  
*VLM*  
*Stad Ieper*



This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450



## BOLLAERTBEEK ACTION LAB

*Main objective: stimulate the implementation of best management practices to improve water quality*



This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450





# KNOWLEDGE BUILDING PROCESS

## Monitoring

- Monitoring campaign 2017
- Monitoring campaign 2018

## Actor meetings

- Interviews
- Farm visits
- Intensive working groups
- Bi-lateral conversations with farmers and stakeholders

## Risk analysis



This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450

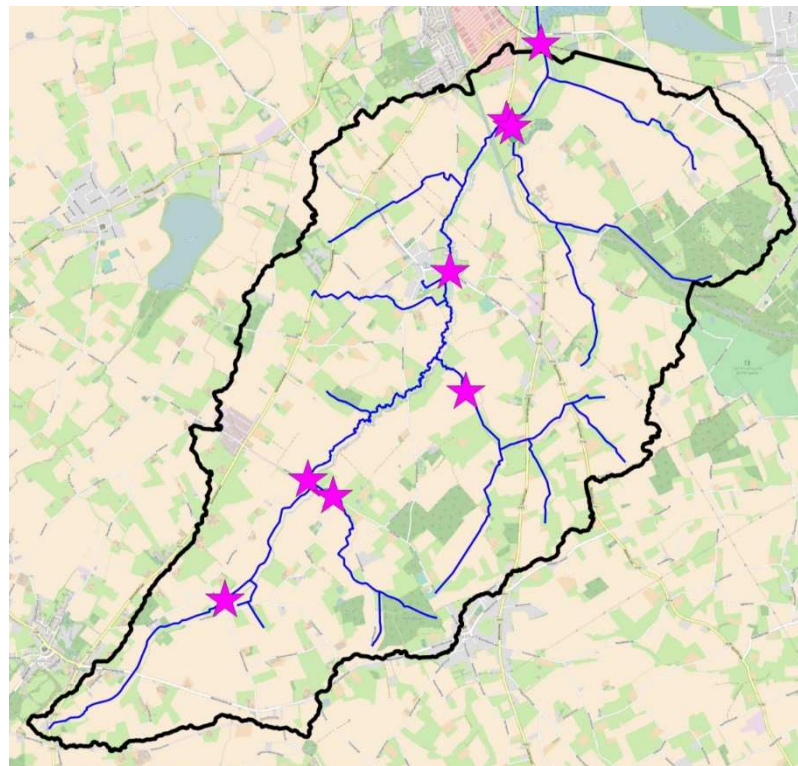


## KNOWLEDGE BUILDING PROCESS – MONITORING 2017

### 8 monitoring points

- June-September 2017
- Grab samples
- 41 crop protection products

=> Aim: Pesticide load in main and side streams



VLAAMSE  
MILIEUMAATSCHAPPIJ



Vlaanderen  
is milieu



De Watergroep  
WATER WILDLIFE EN WAGEN



This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450



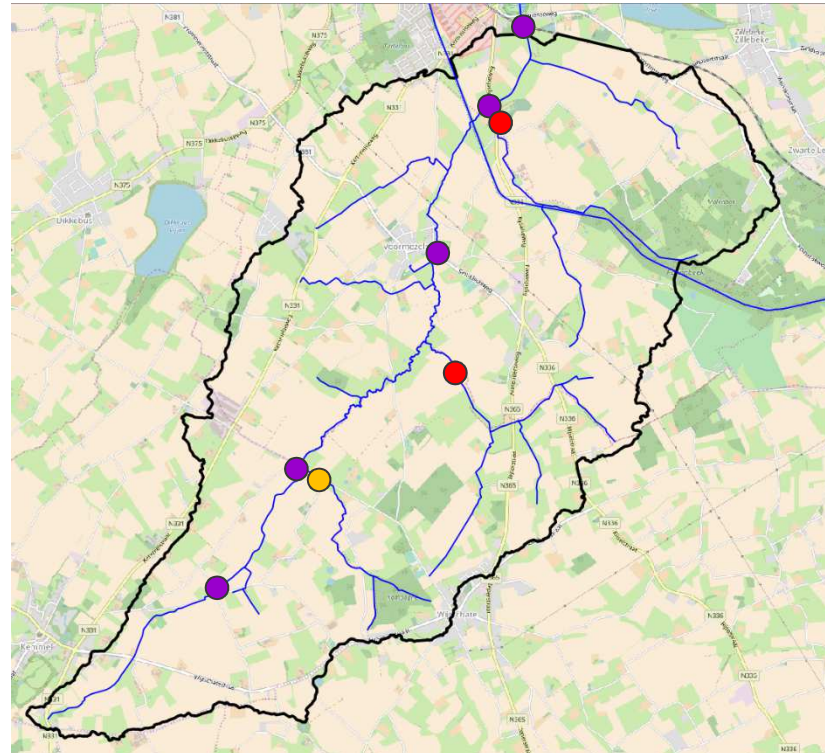
WATERPROTECT

# KNOWLEDGE BUILDING PROCESS – MONITORING 2017

## Results

Number of a.i. > 0,1 µg/L

- none
- 1 - 5
- 6 - 10
- 10 - 15
- 15 - 20



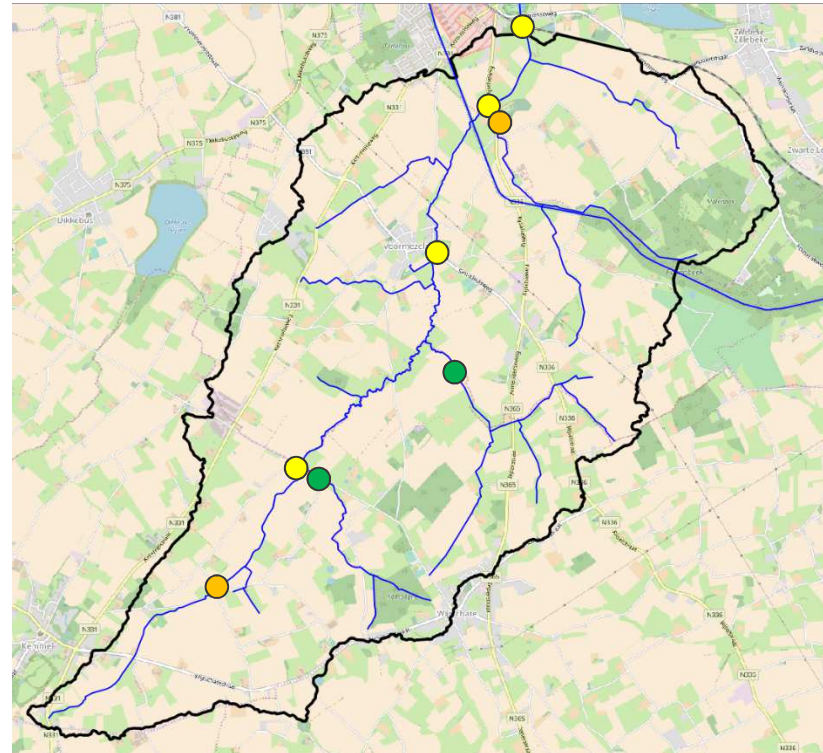


# KNOWLEDGE BUILDING PROCESS – MONITORING 2017

## Results

Number of a.i. > MAC

- none
- 1 - 5
- 6 - 10
- 10 - 15
- 15 - 20

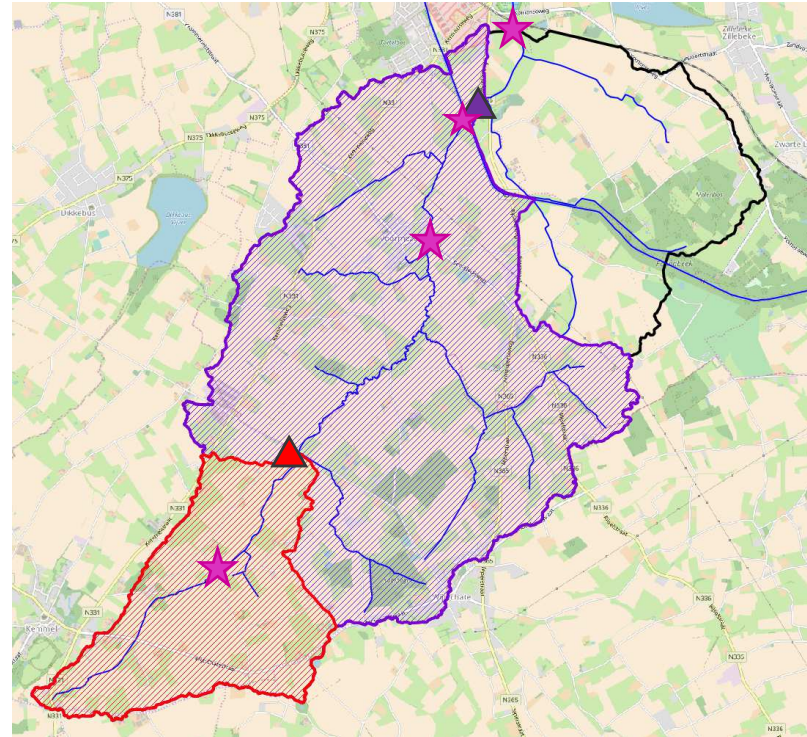


This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450



## KNOWLEDGE BUILDING PROCESS – MONITORING 2018

- ▶ Routine measuring points of VMM (3) and Watergroep (1)
- ▶ Continuous monitoring at 2 locations:
  - Analysis of the most important PPP routes into the Bollaertbeek





## KNOWLEDGE BUILDING PROCESS – MONITORING 2018



This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450





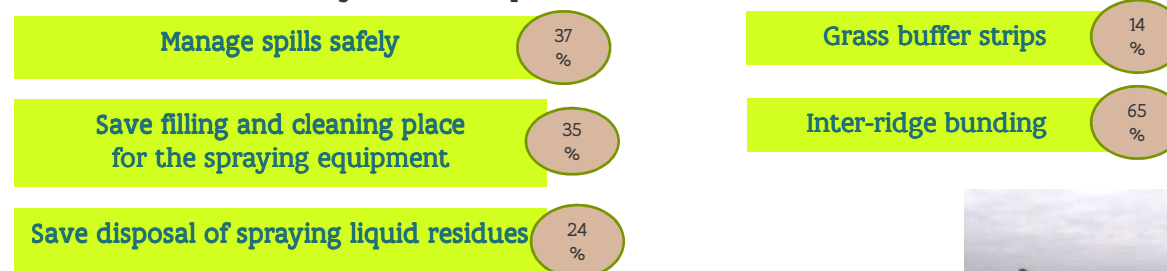
## KNOWLEDGE BUILDING PROCESS – ACTOR MEETINGS

Survey campaign with farmers in two stages:

- ❖ Telephone survey: 132 (80 %) of the farmers reached
- ❖ F2F questionnaire with 49 farmers who spray themselves (56 %):
  - Management of Plant Protection Products (PPPs)
  - BMPs to prevent point pollution
  - Drift reduction
  - BMPs on run-off and erosion of PPP



- ❖ Efficient BMPs, but not yet well implemented:



- ❖ Reasons to not implement BMPs
  - ❖ Some BMPs are perceived as a (high) cost without return of investment for farmers
  - ❖ Strict conditions for funding for grass buffer strips



## KNOWLEDGE BUILDING PROCESS – ACTOR MEETINGS

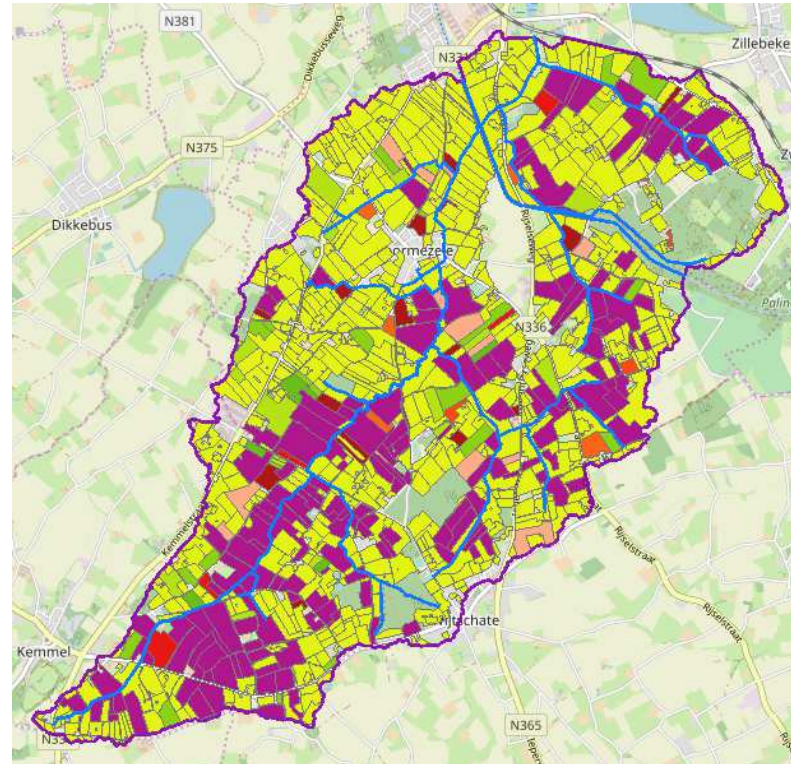
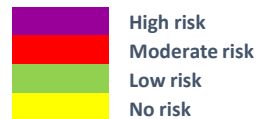
- Interviews with different actors
  - Drinking water company: De Watergroep
  - Farmers advisory: Inagro, CVBB
  - Farmers' union: Boerenbond and ABS
  - Governmental organisations: VLM, VMM, province, municipalities, regional landscape
  - Representative organisation of the crop protection industry: Phytofar
- Intensive working groups (Nov 17, Feb 18, Sep 18)
  - Perception of the water quality by the participants
  - Knowledge on measures to improve water quality
  - Providing information on water quality of the Bollaertbeek
  - Providing information on sources of pollution and possible measures
  - Presentation of existing instruments to support the implementation of buffer strips
  - Demonstration of machines for maintenance of buffer strips
  - Perception and interpretation of possible solutions
- Bi-lateral conversations with several organisations to discuss their role



# KNOWLEDGE BUILDING PROCESS – RISK ANALYSIS

Risk analysis for runoff and erosion of PPP

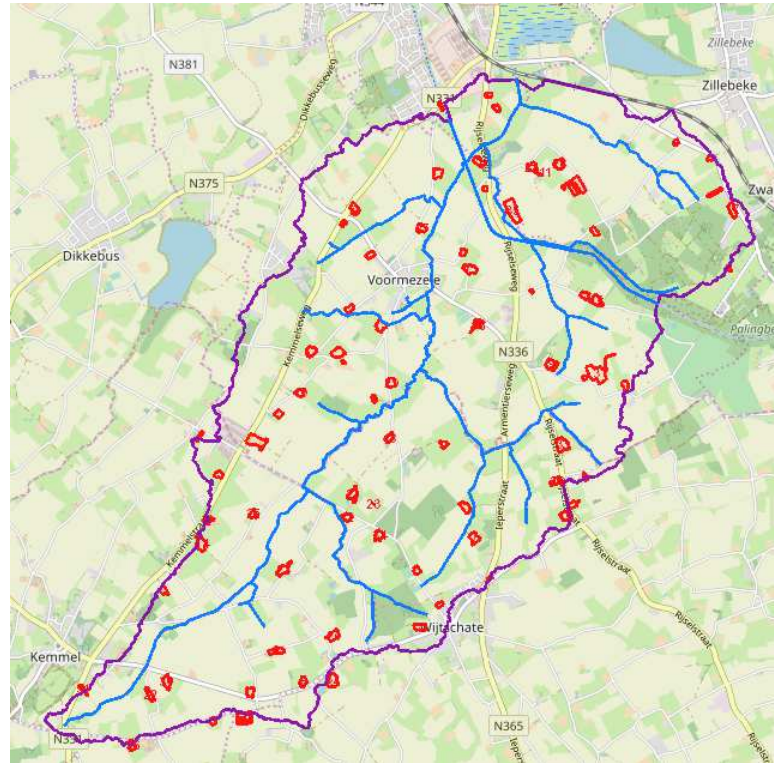
Legend:






# KNOWLEDGE BUILDING PROCESS – RISK ANALYSIS

Risk analysis for point pollution of PPP



 Farm located in the catchment



This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450



## WHAT DID WE LEARN

- Monitoring results show frequent exceedances of the drinking water quality (0,1 µg/L) for many substances in the Bollaertbeek catchment
- Water quality problems with pesticides are unknown by farmers
- Some important BMPs (filling and cleaning place, buffer strips, ...) are not yet well implemented because
  - These BMPs are a cost for farmers without return on investment
  - Financial incentives for these measures are low and require strict conditions (sometimes difficult to meet in practice)
  - Limited confidence in government instruments
- Difficult to reach all farmers (10%) and to have farmers tell their neighbours



This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450



## WORKING PATH 1: COMMUNICATION

*Aim: increase awareness on water quality of the Bollaertbeek*

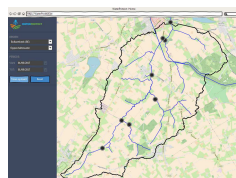


### Monthly newsletter

- *Monitoring results and discussion*
- *Tips to prevent water pollution*



**Local Website:** <https://inagro.be/bollaertbeek>

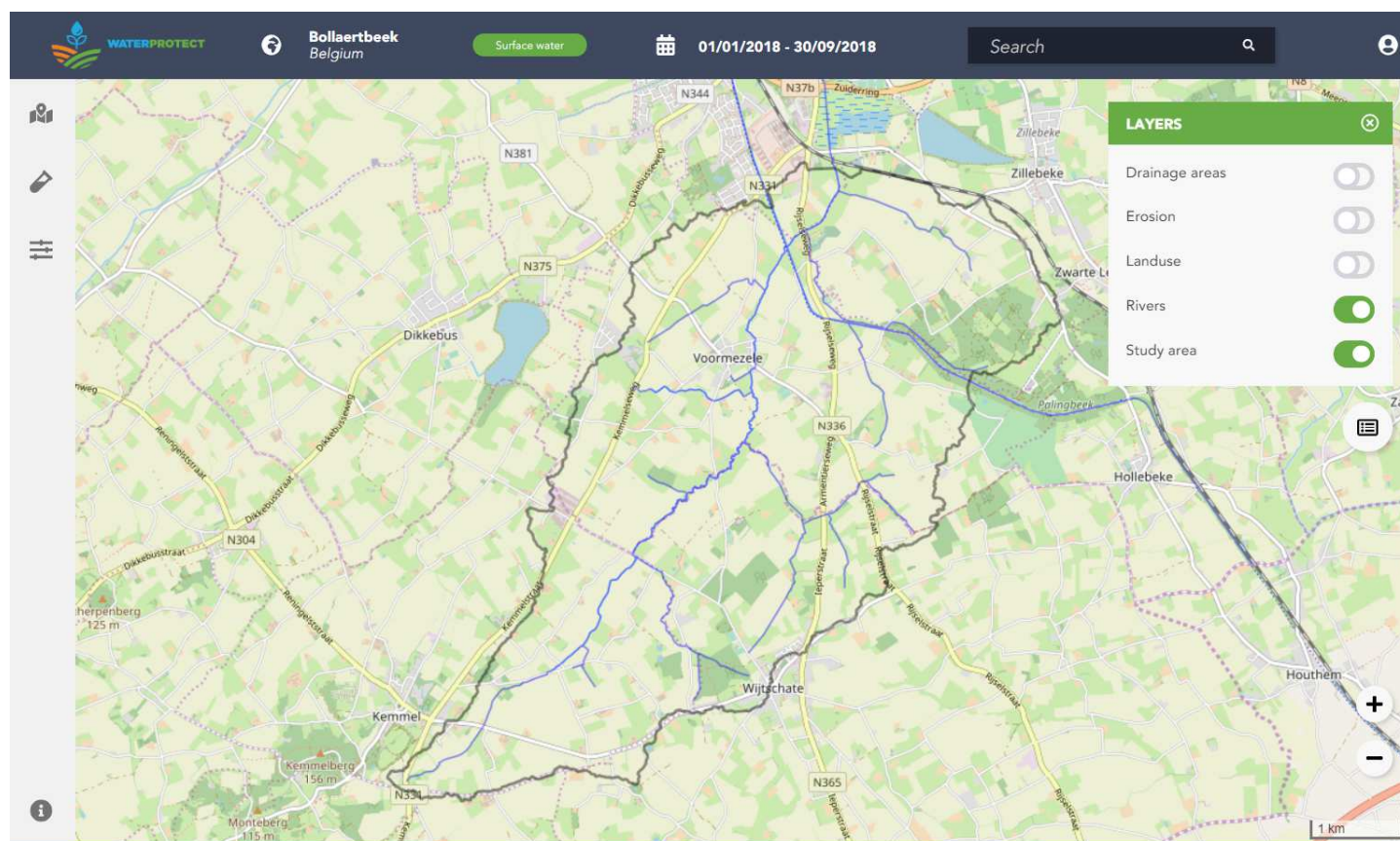


**Waterprotect app** to show monitoring results of the Bollaertbeek



**Workshops and information meetings** (3/year)

# Waterprotect app – geographical information layers

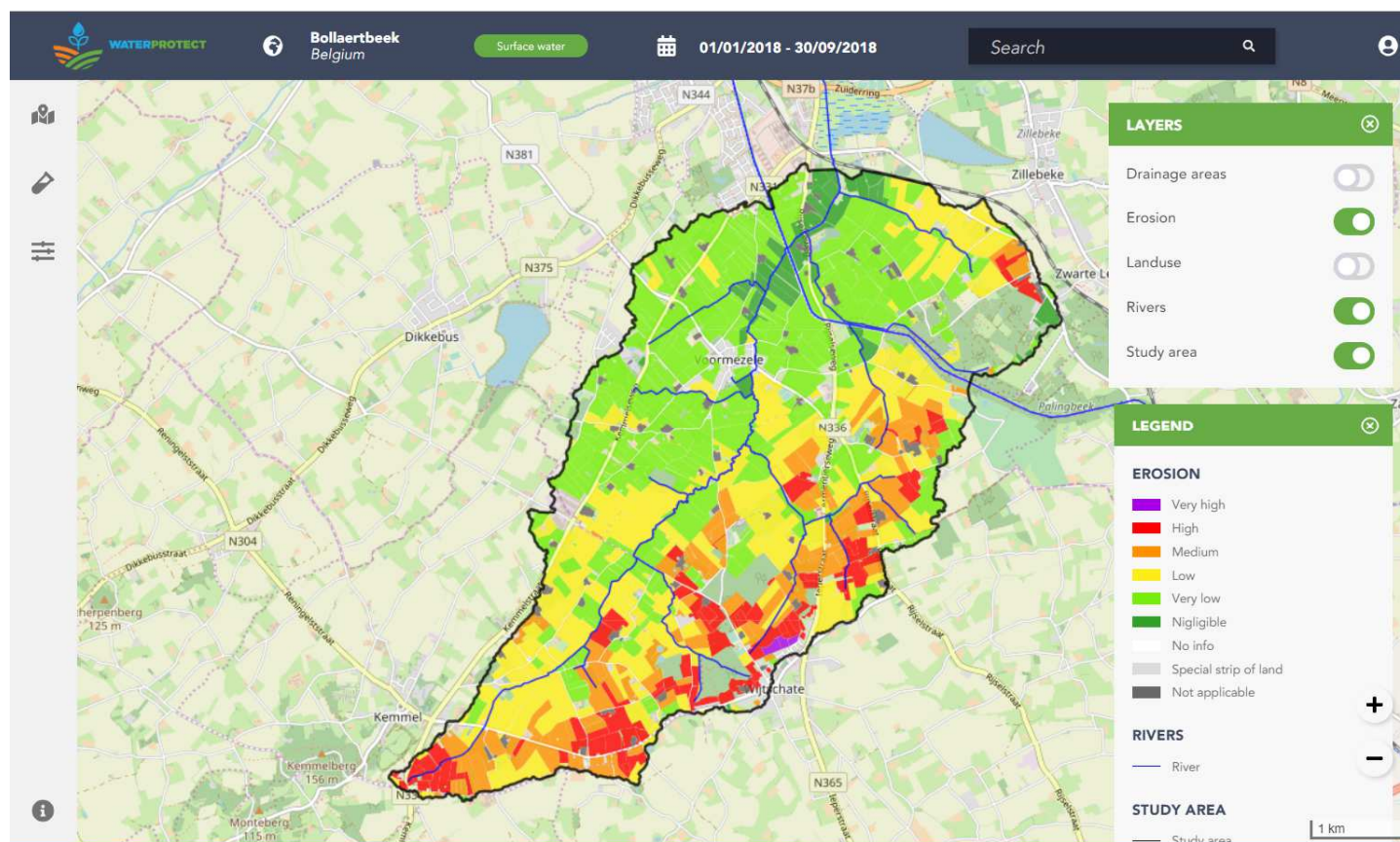


This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450





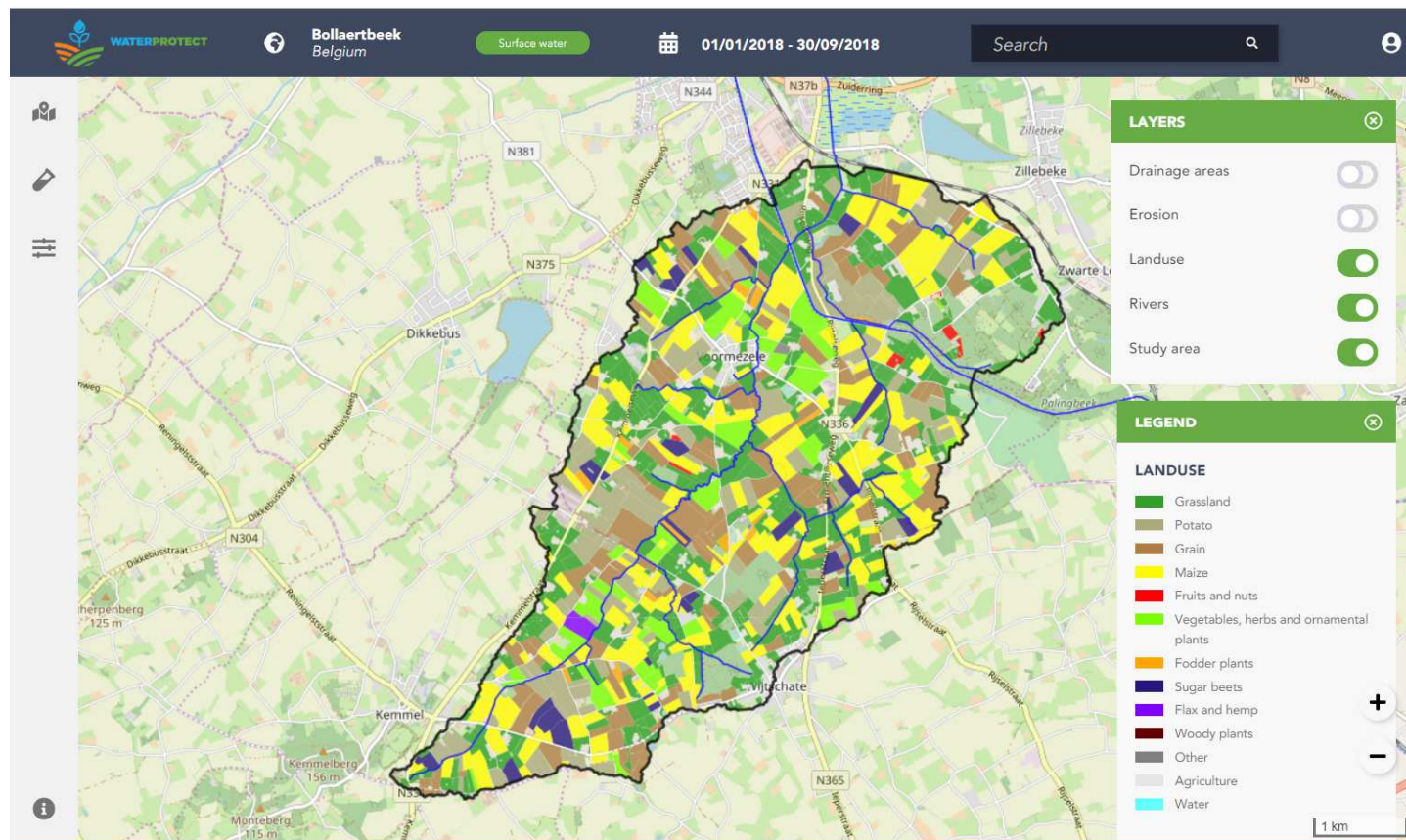
# Waterprotect app – erosion sensitivity map



This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450



# Waterprotect app – landuse map

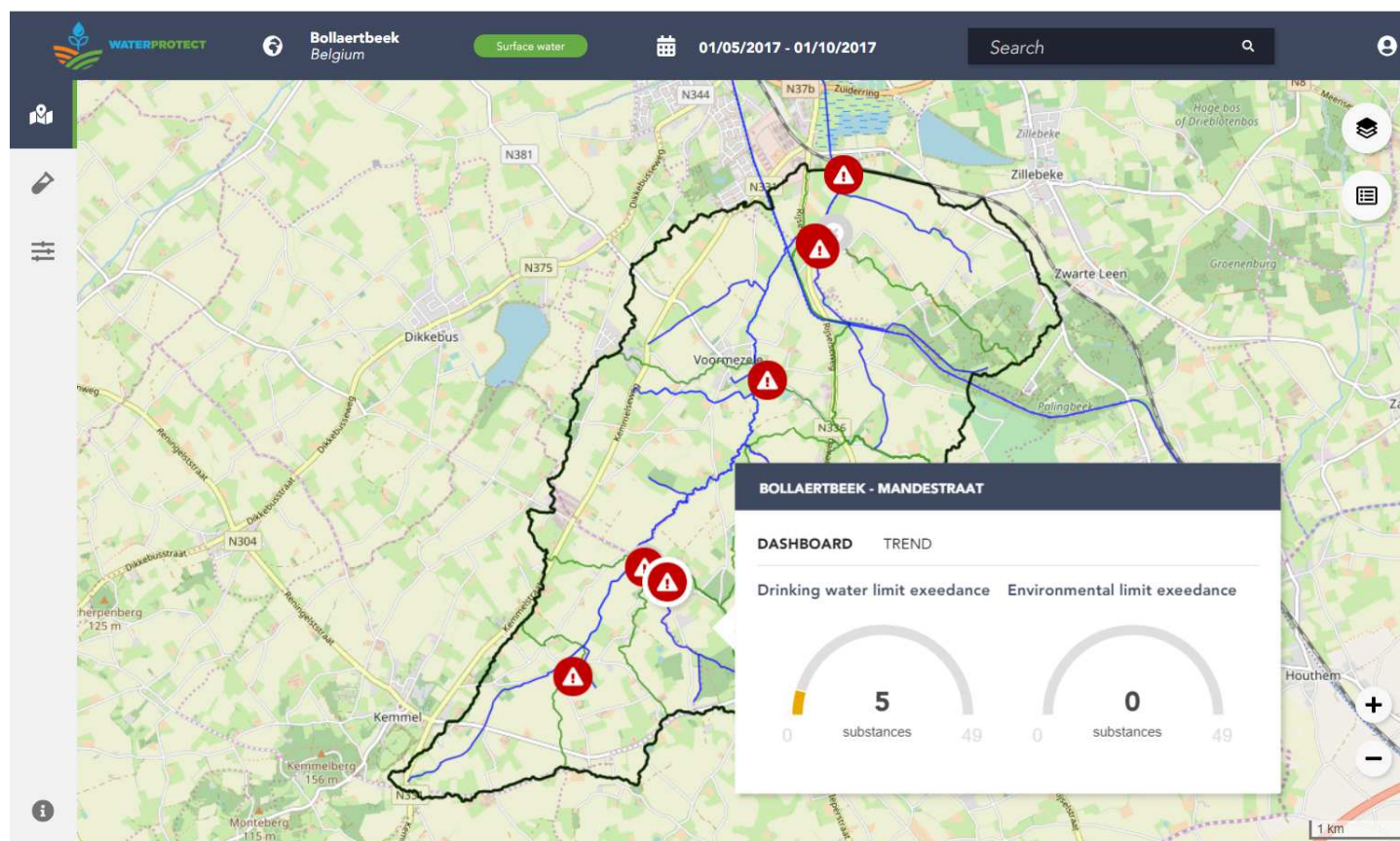


This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450





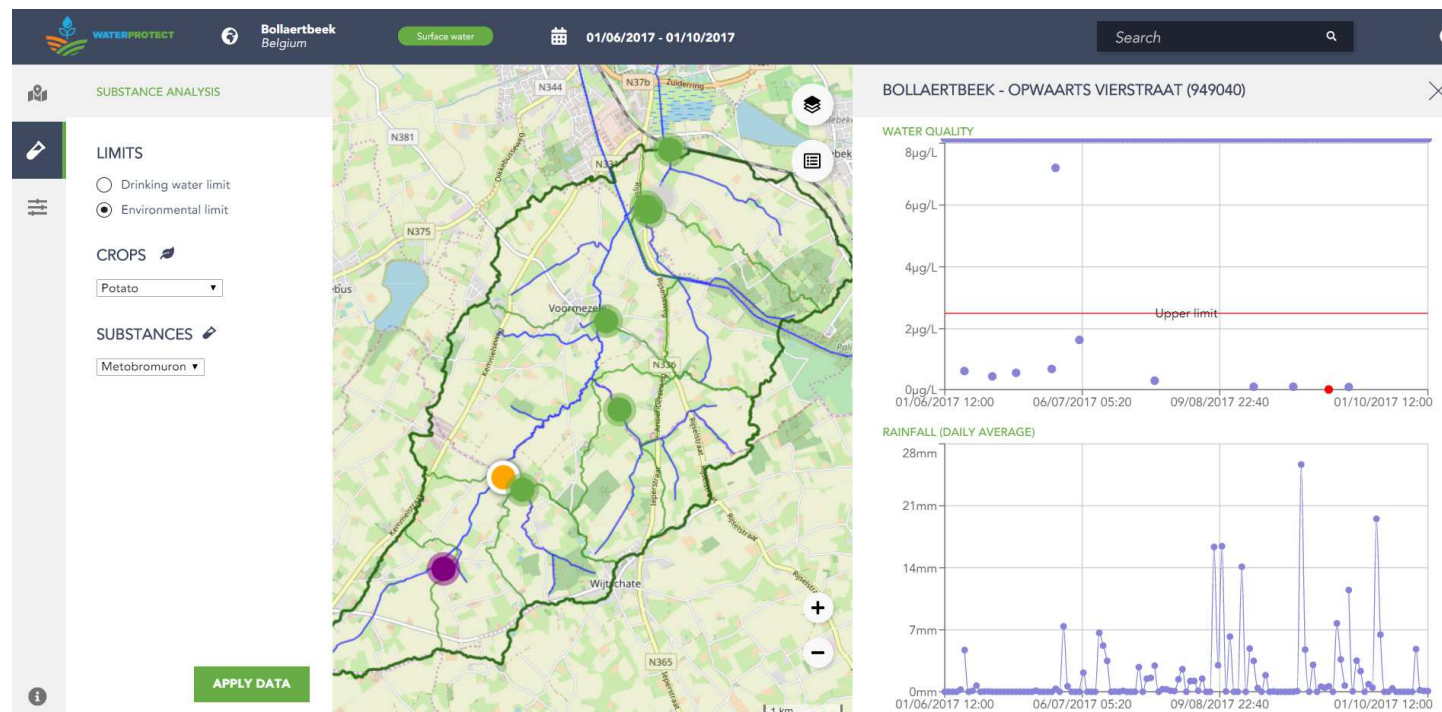
# Waterprotect app – water quality dashboard



This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450



# Waterprotect app – substance analysis

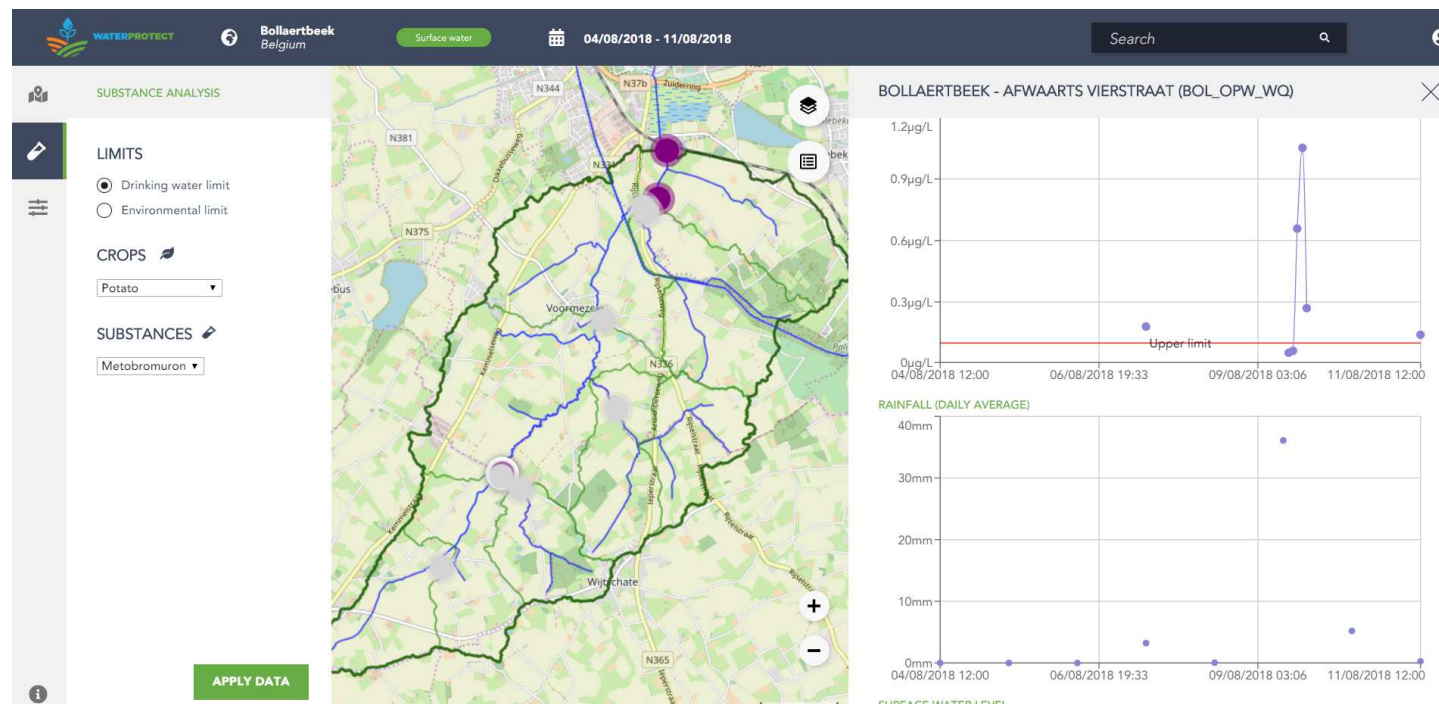


This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450





# Waterprotect app – substance analysis



This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450



## WORKING PATHS 2 & 3: TAKING MEASURES

### Working path 2: decrease of point pollution contamination of PPP

- **Stimulate adaptations at farm level**
  - Filling and cleaning on the field
  - Establish a filling and cleaning place on the farm
- **Methods**
  - F2F meetings and farmer advice on how to prevent point pollution
  - Alternative finances for a filling and cleaning place on the farm?
  - Methods to increase social pressure (F.e. coupling finances to demonstrations or to number of farmers who participate)?

### Working path 3: decrease of runoff and erosion of PPP

- **Stimulating the implementation of buffer strips**
- **Methods**
  - More communication on the current incentives for bufferstrips
  - Other (less strict) conditions for financial incentives for buffer strips for PPP
  - Alternative finances for bufferstrips?



This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450



## GENERAL CONCLUSIONS

- Monitoring results show water quality problems with PPP in the Bollaertbeek catchment
- Transparent and easy to access information on the monitoring results and communication needs to increase the awareness on the problem by farmers
- Implementation of BMPs will be stimulated by
  - Communication
  - Individual farmer advice
  - Alternative governance strategies (higher involvement of other actors, changes in current funding opportunities, other incentives, social pressure,...)
- Increasing the engagement of the farmers still needed



This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under grant agreement No. 727450



## More information:

- <https://water-protect.eu/7-action-labs/bollaertbeek-about-catchment-area>
- [www.inagro.be/bollaertbeek](http://www.inagro.be/bollaertbeek) *(Dutch)*



## Contact persons

- ✓ Elien Dupon, Inagro, [elien.dupon@inagro.be](mailto:elien.dupon@inagro.be)
- ✓ Ellen Pauwelyn, Inagro, [ellen.Pauwelyn@inagro.be](mailto:ellen.Pauwelyn@inagro.be)
- ✓ Els Belmans, ILVO, [Els.Belmans@ilvo.vlaanderen.be](mailto:Els.Belmans@ilvo.vlaanderen.be)
- ✓ Eva Kerselaers, ILVO, [Eva.Kerselaers@ilvo.vlaanderen.be](mailto:Eva.Kerselaers@ilvo.vlaanderen.be)
- ✓ Ingeborg Joris, VITO, [ingeborg.joris@vito.be](mailto:ingeborg.joris@vito.be)





# Thank you for your attention!



**vito**

**ILVO**

Flanders research institute for  
agriculture, fisheries and food

**inagro**

RESEARCH & ADVICE IN AGRICULTURE & HORTICULTURE

VLAAMSE  
MILIEUMAATSCHAPPIJ



Vlaanderen  
is milieu



De Watergroep  
ART. 48 W.V.B.M.C. DI. 1982/83