

9. PHYTOPIXAL	
FAIRWAY partner: Nicolas Surdyk (BRGM, FR)	
Brief description	
PHYTOPIXAL is based on a combination of indicators relating to the environmental vulnerability of the surface water environment (slope, soil type and distance to the stream) and the agricultural pressure (land use and practices of the farmers). The combination of these indicators for each pixel provides the contamination risk. The scoring of variables was implemented according knowledge in literature and of experts. To use PHYTOPIXAL a model is built with a GIS at pixel level of remote sensing.	
Contaminants covered (e.g. nitrate, pesticides etc.)	Pesticides
Intended end users (e.g. farmer, water quality manager, policy maker)	Farmers, Farm advisers, public stakeholder
Level of expertise and/or training required	Required skill in GIS. Need for a good understanding of multi-criteria modelling (Electre model) and multi-criteria analysis
Geographical resolution (e.g. field, catchment, national)	Catchment scale (watershed)
Temporal resolution (e.g. daily, annual, long-term).	Annual
Real-time component (e.g. live weather data, soil moisture data feeds etc.)	None
Number and type of mitigation measures included	No mitigation measures are included but thanks to the GIS-model association, different land use and practices of the farmers can be tested
Platform (e.g. paper-based tool, phone app, bespoke software).	GIS French (But many article available in English).
Frequency of updates	
Cost/availability	A request must be made to the research team
Number of users or number of copies distributed/downloaded/purchased	Not known
Links to demo material and other relevant information (e.g. user guides).	No demo material on-line See publication
Additional comments	tbc

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Input data required to run the DST	<p>The figure below presents the input data of the tool (step 1 according to the author)</p> <pre> graph TD Topography --> Slopes[Indicateur of slopes / pixel] Soil[Soil nature] --> SoilInd[Indicateur of soil / pixel] Hydrography --> HydroInd[Indicateur of hydrography / pixel] LandUse[Land use] --> PesticideInd[Indicateur of pesticide pressure / pixel] PesticideTreatments[Pesticide treatments] --> PesticideInd Slopes -- "+" --> Combined[] SoilInd -- "+" --> Combined HydroInd -- "+" --> Combined Combined -- "*" --> Final[] PesticideInd -- "*" --> Final Final --- Step1[Step 1: Combinaison of indicators / pixel] </pre>
Outputs (including links to water quality and economic or financial aspects)	<p>This method is used to target specific agricultural input transfer risks. There is no direct link to water quality (only potential). There no link to economic aspects.</p>
Age/provenance of supporting data used to develop the DST	Based on field experiments
Country-specific calibration or data requirements (including restrictions on use)	<p>This tool is site specific. A calibration on site and site data are needed.</p>
Details of validation and testing	Tested at a site in the south of France
Date developed/released (or planned release date)	Last updated in 2014
Author/developer names and affiliations	Macary et al. IRSTEA, university of Toulouse
Member state(s) where developed	FR
Member State(s) where currently used	FR
Key publication references (including url)	<p>Macary, Francis and Morin, Soizic and Probst, Jean-Luc and Saudubray, Frédéric A multi-scale method to assess pesticide contamination risks in agricultural watersheds. (2014). Ecological Indicators, 36 . pp. 624-639. ISSN 1470-160X, http://www.sciencedirect.com/science/article/pii/S1470160X13003336</p> <p>In this document the AZOPIXAL (for nitrogen) is also described: https://pdfs.semanticscholar.org/7bce/851275c7f2b56d3ed15df9f35b2fa4d0b58a.pdf</p>

