



Introducing FOOTPRINT

Functional **tools** for **pesticide risk**
assessment and management



FOOTPRINT call FP6-2004-SSP-4



- › Call published on 30/10/2005
- › Framework programme: FP6
- › Specific programme: Integrating and strengthening the European Research Area
- › Activity: "Policy support and anticipating scientific and technological needs" (SSP – Scientific Support to Policies)
- › Area: 8.1.B.1.5 Environmental assessment (soil, water, air, noise, including the effects of chemical substances)
- › Task: #1, Risks of pesticides use to surface and groundwater
- › Instrument: STREP (Specific Targeted Research Project)
- › Start: 1 January 2006



Facts and figures



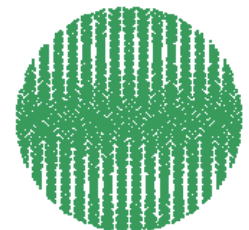
- Total budget: 1.7 M€ (EC: 1.2 M€)
- Duration: 3 years
- 15 partners
- 9 countries



FOOTPRINT partners



FOOTPRINT partners



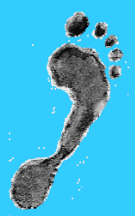
Institut National de la Recherche Agronomique



Geoscience for a sustainable Earth



UNIVERSITY OF
NEWCASTLE UPON TYNE



FOOTPRINT individuals



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Objectives of the project






- To develop a suite of three pesticide risk assessment and management tools for use by three different end-user communities:
 - Farmers and extension advisors at the local (farm) scale
 - Water managers at the catchment scale
 - Policy makers/registration authorities at the national/EU scale
- To evaluate the usability and performance of the FOOT tools through piloting and evaluation studies at their various scales of application



The three FOOT tools



	 FS	 CRS	 NES
End-users	Farmers Extension advisers	Water managers	Policy & decision makers
Scale	Local (farm)	Catchment	National / EU



The three FOOT tools



Each tool will help:

1. Identify the dominant pathways and sources of pesticide contamination in the agricultural landscape
2. Predict pesticide concentrations impacting surface water and groundwater
3. Make scientifically-based assessments of how the implementation of mitigation strategies will reduce pesticide contamination of water resources

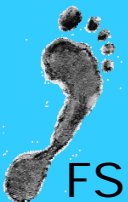
All three tools will share the same philosophy and underlying science.



The FOOT-FS tool



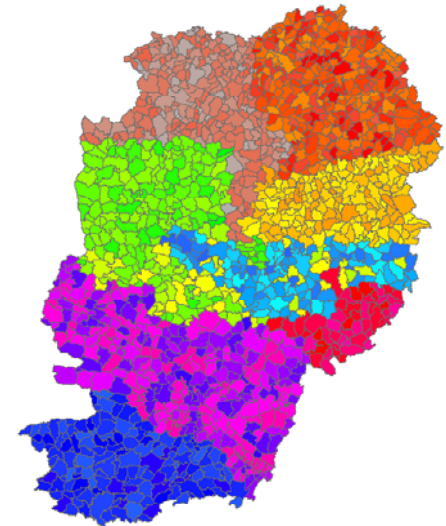
- To be used at the farm level by extension advisers and farmers
- Emphasis on:
 1. Identifying the pathways and areas most contributing to contamination of water resources by pesticides
 2. Providing site-specific recommendations to limit transfers of pesticides in the local agricultural landscape
- Stand-alone application & web portal



The FOOT-CRS tool



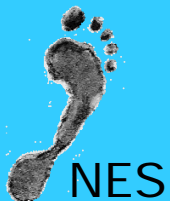
- To be used at catchment level by local authorities, stewardship managers and water managers
- Emphasis on:
 1. Identifying the areas most contributing to the contamination of water resources by pesticides
 2. Defining and/or optimising action plans at the scale of the catchment
- Add-on in ArcGIS



The FOOT-NES tool



- To be used at the large scale by EU and member states policy and decision-makers, and pesticide registration authorities
- Emphasis on:
 1. Identifying the areas most at risk from pesticide contamination
 2. Assess the probability of pesticide concentrations exceeding legal or ecotoxicologically-based thresholds
- Add-on in ArcGIS



Going operational



3 years

8 Work Packages (8 WP)

- o WP0: project launching and coordination
- o WP1: integrated knowledge reviews
- o **WP2: high-resolution scenario-based spatial zonation**
- o WP3: identification of landscape features and contamination pathways
- o **WP4: model parameterisation, meta-modelling and risk assessment**
- o WP5: development of functional tools
- o WP6: piloting and evaluation of tools
- o WP7: communication, dissemination, training and education

46 deliverables



So what's next?

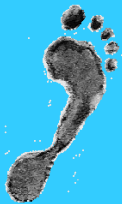


- Early 2006
 1. www.eu-footprint.org goes live
 2. Kick-off meeting in France

- On an annual basis
 - annual meetings
 - electronic newsletter

- At the end of the project
 - international conference
 - information relay workshops for each of the three tools

- Outside and beyond the project
 - information days
 - training sessions





How can I keep in touch? How can I ensure that the tools meet my needs?

- Become a member of the Advisory Committee (two levels of commitment possible)
- Attend annual meetings (France, Poland, Denmark, Italy)
- Attend the international conference
- Register with the FOOTPRINT electronic announcement list





FOOTPRINT – Functional tools for pesticide risk assessment and management

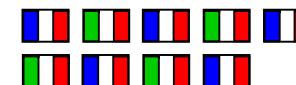


- About FOOTPRINT
- Project structure
- FOOTPRINT consortium
- FOOTPRINT products
- Pressroom
- Agenda

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FOOTPRINT

FOOTPRINT is a research project in the 6th Framework Programme that will allow... [More](#)

Discover how you can [get involved](#)

Discover...

Learn how pesticides can affect our water resources... [Visit](#) the multimedia corner

Discover how you can contribute to the protection of water... [Go](#)

Latest news...

8-7-05: the FOOTPRINT web site becomes live [More news](#)

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The science behind the tools



Identification of the dominant contamination pathways:

- o Combination of the CORPEN and HOST methodologies for FOOT-FS and FOOT-CRS
- o IDPR methodology for FOOT-NES

Estimation of pesticide concentrations

- o Based on pesticide fate models or carbon-copies of these models (model emulators)
- o Model for leaching and drainage: MACRO
- o Model for runoff: PRZM



The (meta)modelling context



Models in real time

- › At the local scale
- › through a web portal (submission / results)

AND

Metamodels running in a blink of an eye

- o carbon copies / emulators of models
- o Local, regional and national scales
- o concept: pre-run a large number of scenarios and infer results from these pre-runs



Representative scenarios



Definition of a large number of environmental scenarios covering the whole of the EU25, based on information on:

- › Climate
- › Cropping
- › Soil
- › (Subsoil)

We really mean LARGE!

- o 30 soils x 50 climates x 10 crops = 15,000 environmental scenarios
- o 10 Koc x 10 DT50 = 100 pesticide scenarios
- o Hence 1,500,000 MACRO and PRZM runs



Going beyond typical modelling activities



1,500,000 MACRO runs

- Assuming 1 hour per run
- 1,500,000 hours = 62500 days = 171 years
- yet the EC would only fund the project for 3 years (2 years of running in effect)!
- EC unlikely to accept a 168-year extension to the contract...



Available options



- Increase the speed of computers
- Increase the efficiency of MACRO
- Increase the number of machines running the model



Redefining modelling boundaries



3 approaches:

- o Use of European supercomputers
- o Use of smaller dedicated IT infrastructures (Linux clusters)
- o FOOTPRINT@work

SETI@home turns into FOOTPRINT@work

- o from extraterrestrial search to pesticide fate modelling
- o Concept: use the computing power of corporate machines which is not being used (e.g. outside working hours, during holidays)
- o 171 years of running on a single machine = 1 year of 342 machines running 12 hours a day (a night).
- o Development of an IT infrastructure enabling the automatic running of models across (multiple) computer networks



Contact point



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