European Network for the durable exploitation of crop protection strategies

IA3 Activity: *Human resource exchange*

ENDURE - Internal Mobility

Final activity report

(The form has to be filled in and sent to the activity leader – message should be sent to his p.a. federica.piccolo@ibaf.cnr.it – within 15 days after the end of the visit)

Topic of the visit

---

1. Information about researcher and sending partner

Name and surname: Aude Alaphilippe

Professional status: researcher

Sending partner: INRA Institut national de recherché agronomique

Institute/Department/Research Unit: SPE PSH Avignon/ UERI Gotheron

Address:
Domaine de Gotheron
26320 SAINT MARCEL LES VALENCE
FRANCE

E-mail and phone number of the researcher: aude.alaphilippe@avignon.inra.fr
+ 334 75 59 92 05

Supervisor name*:
Supervisor e-mail*:
Supervisor phone number*:
* Supervisor information only for PhD student, post-doc and junior researchers

2. Information about hosting partner

Hosting partner: *JKI* – Federal Research Centre for Cultivated Plants

Institute/Department/Research Unit:
Institute for Strategies and Technology Assessment in Plant Protection

Address:
Stahnsdorfer Damm 81
14532 Kleinmachnow
Germany

Supervisor name*: Jörn Strassemeyer

Supervisor e-mail*: joern.strassemeyer@JKI.bund.de

Supervisor phone number*:+49 33203 48366
* For senior scientist indicate the name of the collaborating colleague

3. Information about the visit

Starting date: February 2010, the 8. **Ending date:** March 2010, the 5.
(please specify starting date and ending date for EACH period of mobility, add lines if needed)

Total duration *(number of weeks)**: 4 weeks***

4. Description of the activities and outcomes

Background and context: *maximum 10 lines*
In agronomy, upscaling from the field to the landscape is a recent tendency. The goal of this upscaling is to evaluate scenarios capable of enhancing plant product quality while improving environmental sustainability from an applied point of view.
The model SYNOPS evaluates the potential risk of chemical plant protection products for both terrestrial and aquatic organisms. It combines use data of pesticides with their application conditions and their inherent properties and calculates the exposure (acute and chronic) of certain organisms (i.e. Daphnia, fish, earthworm…) using included models.

Objective: *maximum 10 lines*
The objective was to analyse the dataset of the observatory zone called “zone 13”, a 70 km² pomefruit orchard area in the Rhone Valley, where producer practices are collected since 2006, with the SYNOPS tool developed by the JKI for environmental risk assessment.

Activities carried out: *maximum 20 lines*
The figure below detailed the different step of the work accomplished within this exchange period.
The “zone 13” was already digitalised. This GIS data base contains characterisations of the hydrographic network, hedges and pome fruit orchards (step 1 and 6). Complementary information used by SYNOPS for the calculation were provided whether by INRA (i.e. steps 4 and 5: climatic and soil type information) or by Hair Gis related database.

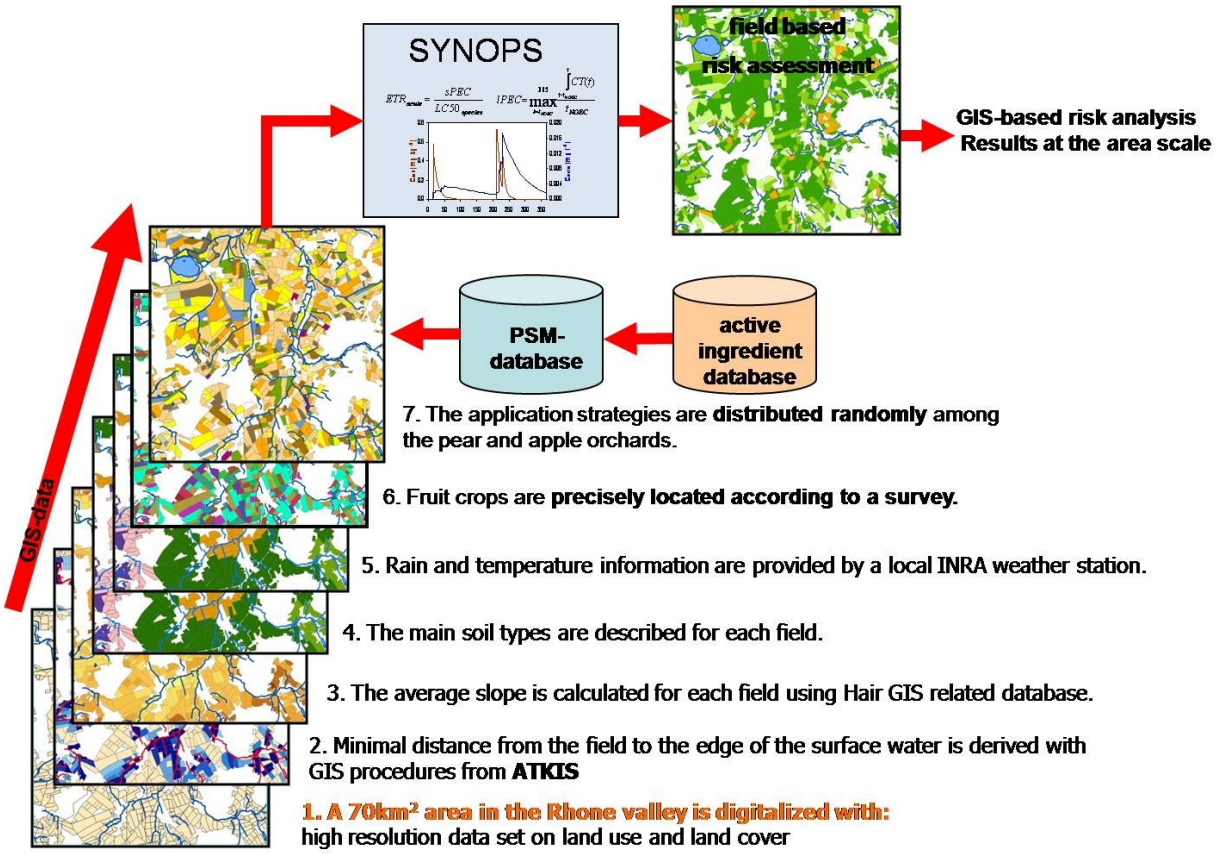

Figure1. The different steps for the synops risk assessment.

The dataset from the "zone atelier 13" includes over 70 different treatment calendars collected from a survey on year 2006, 2007 and 2008 and is in the step 7 then randomly distributed among the pear and apple orchards (over 3100 fields are included in this "zone 13").
The model SYNOPS then calculates the potential risk of chemical plant protection products for both terrestrial and aquatic organisms. It combines use data of pesticides with their application conditions and their inherent properties (fig.1.) and calculates the exposure (acute and chronic) of certain organisms (i.e. Daphnia, fish, earthworm…) using included models.
Results for the years 2006, 2007 and 2008 have been obtained during this one month stay. Based on expert knowledge and first experience, further scenarios for plant protection strategies including the use of the exclosure net (alt´Carpo) will be next tested.

5. Links between visit activity and ENDURE

Describe links and relevance of your visit in relation to a specific ENDURE activity(ies) and sub-activity(ies) – maximum 15 lines

In the frame of the ENDURE RA2.5 Orchard SCS activities, the environmental impact of the studied systems is being assessed with the risk assessment tools developed in RA3.3. One of them, SYNOPS, is a GIS-based model dedicated to evaluate environmental risk of pesticide use at landscape level.
Within RA3.3 it was planned to apply SYNOPS to 4 European orchard regions, among which an observatory zone in the Rhone Valley (dataset resource for the RA2.5) surveyed by PSH and Gotheron INRA units. This was successfully done during this exchange visit SYNOPS as we calculated SYNOPS aquatic and terrestrian risk of the pome fruit orchards

from this French area, providing new references for both RA2.5 and RA3.3. To achieve this, knowledge and geo datasets (landscape elements) from RA2.3 have been integrated in order to optimize the area description and the calculation with SYNOPS.

6. Impact

Added value for the researcher: *maximum 10 lines*

The objective of my work is to assess the environmental impact of different crop protection strategies for orchards. I work mostly with life cycle analysis tool at a field scale. In the frame of this exchange, I learned to work at a different scale, thus discovering the importance of landscape elements such as hedges or river proximity on the environmental impact evaluation. Moreover this stay offered me the opportunity to become familiar with GIS database and linked tools, as well as with Access.
Thanks to this exchange I learned to use the SYNOPS tool and will continue to further use it in order to test potential optimisation of crop protection strategies, including the regional scale in the conception of new strategies. This collaboration will thus last after this exchange period.

Added value for sending partner and hosting partner: *maximum 10 lines*

Within exchange visit the model SYNOPS could be successfully applied to a GIS dataset of the French orchard case study region. During this process JKI learned about problems and difficulties of adjusting the applied model SYNOPS to a foreign dataset and vice versa. The exchange visit and the process of applying SYNOPS gave new impulses to improve the model.
For INRA, this stay allowed upscaling environmental impacts of plant protection strategies from the orchard to the landscape scale, a very valuable contribution as one of our aims is to design landscape scenarios for crop protection. It is also very valuable that a permanent researcher from INRA learnt and applied this new evaluation tools.
Thanks to this successful exchange, both hosting and sending partners have opened a new and durable collaboration between our two institutes INRA and JKI. More work has been planned including the test of new scenarios for plant protection strategies.

Date of submission March 12, 2010

endure
diversifying crop protection

Dr. Maurizio Sattin
IA3 activity leader

Approved